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Understanding the Fashion and Textile Waste Stream in Accra, Ghana

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Abstract

Purpose: This study aims to investigate and characterise the fashion and textile (FT) waste stream in Accra, Ghana. Specifically, it focuses on identifying significant sources of FT waste, current management practices, and the potential of upcycling. As the global fashion industry increasingly addresses sustainability challenges, understanding localised waste patterns is crucial for developing effective, circular, and sustainable interventions tailored to the needs of the developing world.

Methodology/Design: Employing a qualitative approach, semi-structured interviews were conducted, utilising snowball sampling to recruit 11 participants who are experts and key stakeholders in the fashion, waste management, and sustainability sectors in Accra. In-depth data were collected through online interviews conducted via Microsoft Teams and WhatsApp, with all sessions audio recorded. The data were analysed with NVivo software, enabling systematic thematic coding and interpretation. Participant interviews were supplemented with government reports and academic literature, triangulating the data to provide a broader context. The study received ethical approval from De Montfort University (DMU) and followed DMU's research ethics policy, including obtaining informed consent from all participants.

Findings: Initial findings reveal that the FT waste stream in Accra is primarily driven by imports of second-hand clothing, surplus from local production, and inadequate waste sorting. Participants emphasised the lack of formal infrastructure (e.g., dedicated textile recycling centres), limited public awareness, and weak enforcement of relevant policies. However, there was consensus on the emergence of community-led movements/initiatives focused on upcycling and reuse. The findings also suggest growing awareness of the economic and environmental benefits of reducing textile waste by creating valuable products.

Practical and Social Implications: This study provides policymakers, environmental organisations, and social entrepreneurs with actionable strategies to improve the sustainable management of FT waste. Furthermore, it raises social awareness by highlighting how community-driven solutions and active stakeholder engagement can foster eco-innovation and advance circular economy practices in urban Ghana.

Originality: The study addresses an important research gap by presenting one of the first qualitative analyses of the fashion and clothing waste context in Accra. By integrating local perspectives with global sustainability discourses, it offers a unique contribution to the field. Its emphasis on upcycling and the inclusion of diverse stakeholder voices enhances its originality, positioning it as a valuable addition to both theoretical and practical research on sustainable fashion and waste reduction in sub-Saharan Africa.

Keywords
Fashion and textile waste, upcycling, reuse, sustainable fashion, waste management.

1 | INTRODUCTION

As Bhardwaj and Fairhurst (2010) posit, the global fashion industry is a significant economic force, but also one of the most environmentally burdensome sectors. Driven by the rise of fast fashion – influenced by changes in consumer behaviour and increased fashion consciousness – and by a prevailing linear production model, there has been a significant increase in output since the 2000s. With continuous production growth at an annual rate of 2% (Niinimäki et al., 2020), the fashion and textile (FT) consumption now generates vast amounts of annual waste. Each year, an estimated 80 billion garments are produced (Bick et al., 2018; Nguyen et al., 2021), posing significant ecological and social challenges

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in deprived communities (Bonelli et al., 2024). Mensah (2023) notes that global clothing consumption is currently estimated at 62 million tonnes annually and is projected to rise to 102 million tonnes by 2030. Consequently, staggering volumes of these clothing items end up in landfills or incinerators after only minimal use. As countries in the Global North grapple with overproduction and excessive consumption, much of their textile waste is exported to developing nations, including in Africa (UNECE & ECLAC, 2023), which disproportionately bear the burden of second-hand clothing imports (waste) (Andreadakis & Owusu-Wiredu, 2023; Bailey et al., 2022). While this approach can extend the life span of commodities and make clothing more accessible and affordable across social classes in developing nations (Baden & Barber, 2005), it also raises complex social and environmental concerns. Studies show that developing nations rely heavily on second-hand clothing (SHC) due to financial constraints, as it provides a cost-effective alternative to new garments (Wang et al., 2025). For example, about 90% of the Ghanaian population (Adow & Arsenault, 2012) and 80% of the Nigerian population depend on used apparel (Baden & Barber, 2005; Mensah, 2023). However, this dependence contributes to a mounting textile waste crisis, adding to the 75% of discarded textile goods globally (Wagaw & Babu, 2023).

Ghana, and its capital city Accra, has become a major recipient of second-hand clothing – commonly referred to as "obroni wawu" or "dead white man's clothes" – transforming the city into a critical node in the global textile waste network (Mensah, 2023). Kantamanto, one of the largest second-hand textile markets, receives about 15 million tonnes of items each week, of which 40% are deemed unsellable due to poor quality and are eventually sent to landfills (Marc, 2023). While second-hand imports are often framed as development aid or affordable clothing alternatives (Mensah, 2023; UNECE & ECLAC, 2023), they carry unintended consequences. Accra's formal waste infrastructure is under-resourced and ill-equipped to manage the growing volume of low-quality textile waste, much of which ends up in open dumps, drains or burned in informal settings, exacerbating environmental degradation and public health risks (Marc, 2023). Simultaneously, domestic textile production – both industrial and artisanal – contributes additional waste, often unmanaged due to the lack of sector-specific recycling pathways or circular systems. Despite these challenges, a growing number of local actors are reimagining waste as a resource through upcycling, reuse, and creative redesign, offering context-specific solutions to this global problem (Ghana News Agency, 2025; Oduraa-Osei & Tetteh-Ademtsu, 2024).

Academic attention to the fashion waste crisis has surged in recent years, with most research concentrated in the Global North or focused on consumer behaviour and technological innovation (Mihalyi et al., 2023). In sub-Saharan Africa, however, a significant research gap remains regarding the structure, flow, and governance of FT waste. In other words, there is a limited understanding of how textiles move through local systems, including collection, redistribution, and disposal pathways. Key concepts such as "structure" refer to the organisational setup of waste management and second-hand markets, "flow" denotes the movement of textiles across formal and informal channels, and "governance" encompasses the policies, regulations, and informal rules that shape these processes. By explicitly defining these concepts, the study situates its focus on localised practices and socio-economic dynamics of second-hand markets and grassroots sustainability initiatives. Understanding the structure, flow, and governance of FT waste in sub-Saharan Africa is critical to developing effective, contextually relevant waste management strategies. Without this knowledge, policymakers and practitioners risk implementing interventions that are ill-suited to local conditions, potentially perpetuating inefficiencies and environmental harm. Moreover, neglecting the socio-economic dynamics of second-hand markets and grassroots sustainability initiatives limits insight into the livelihoods, entrepreneurship, and community resilience that these systems support. Addressing this gap is therefore essential to inform evidence-based policies, promote circular economy practices, and enhance both environmental and socio-economic outcomes in the region.

Addressing this gap, the present study investigates the fashion and textile waste stream in Accra, Ghana, through a qualitative lens. The primary aim of this research is to investigate and characterise the fashion and textile (FT) waste stream in Accra, Ghana. To achieve this aim, the study focuses on the following key objectives: (i) To identify the significant sources and pathways of FT waste in Accra. (ii) To evaluate current management practices and the infrastructural challenges associated with FT waste in Accra. (iii) To explore the potential of upcycling as a sustainable and context-specific intervention for reducing textile waste in Accra. The study addresses an important research gap by presenting one of the first qualitative analyses of the fashion and clothing waste context in Accra. By integrating local perspectives with global sustainability discourses, it offers a unique contribution to the field. The findings provide valuable guidance for policymakers, environmental organisations, and social entrepreneurs,

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raising social awareness by highlighting how community-driven solutions can foster eco-innovation and advance circular economy practices in urban Ghana.

2 | LITERATURE REVIEW

2.1| The Global Fast Fashion System and Waste Generation

The global fashion and textile industry plays a crucial role in economic development; nevertheless, it operates predominantly on a linear "take-make-dispose" model, rendering it one of the world's most environmentally damaging sectors (Silva & Rosenbach, 2021; Von Uexkull & Buhaug, 2021). The rise of fast fashion, depicted by the rapid production, low costs, and frequent changing, has exponentially accelerated clothing consumption and disposal rate of these essential commodities, raising significant environmental concerns (Dissanayake & Pal, 2023). This wasteful practice generates about 92 billion tonnes of waste annually (Niinimäki & Karell, 2020; Reike et al., 2023). This cycle of overproduction and overconsumption generates significant waste (Kamble & Behera, 2021a), with the majority of the discarded textiles ending up in landfills (Moazzem et al., 2021) or incinerators after a short lifespan, creating profound ecological and social challenges, particularly in deprived communities (Oteng-Ababio, 2024).

2.2| Global Textile Waste Flows and the Second-Hand Economy

As the Global North grapples with its waste crisis, a significant portion of its textile waste is exported to developing countries (Brooks, 2013) under the guise of charity and economic opportunity, with the Global South serving as the endpoint for much of the developed nations' waste streams. For instance, in 2010, the UK gathered 319,998 tonnes of used clothes, valued at $425 million, for distribution to various developing nations, including those in Sub-Saharan Africa. Similarly, the European Environmental Agency (EEA, 2023) reports that the volume of exports of used textiles from the EU tripled between the year 2000 and 2019, increasing from 550,000 tonnes in 2000 to 1.7 million tonnes in 2019, with about 46% destined for African markets. This trade presents a complex duality. On one hand, SHC provides affordable clothing for a large segment of the population in developing countries, with dependence rates as high as 90% in Ghana (Mensah, 2023). In Nigerian life, used clothes are inevitable, meaning most Nigerians purchase SHC regularly (Africa Collect Textiles, 2020), although a substantial fraction of the imported SHC is non-resalable. This adds to the overwhelmingly limited waste management infrastructure of recipient countries (Juanga-Labayen et al., 2022; Stanescu, 2021). On the other hand, it has been heavily criticised for threatening the survival of domestic textile producers in local industries (Sarpong et al., 2024). These dynamic frames the SHC trade not just as a flow of commodities, but as a primary vector for the transboundary movement of textile waste, disproportionately burdening nations in the Global South (Andreadakis & Owusu-Wiredu, 2023). While these textiles are intended to extend the lifespan of commodities, the overwhelming volumes of low-quality, non-resaleable textiles arriving in developing nations exacerbate environmental challenges (Brooks & Simon, 2012; Encino-Munoz & Yilan, 2025). Consequently, the sustainability of the SHC trade is questioned regarding its environmental and socio-economic impacts in recipient countries. In Accra, Ghana, the rapid influx of low-grade textile waste has created an urgent need to address management inefficiencies and mitigate environmental consequences.

2.3| The Research Landscape: A Northern Focus and a Southern Gap

The textile waste crisis has gained traction in academic and policy responses in recent years. However, these contributions remain heavily skewed towards the Global North, with a focus on themes such as recycling (Baloyi et al., 2023; Zhang et al., 2023). While valuable, this technological focus often overlooks the distinct realities of the Global South, where waste management is characterised by high informality, limited infrastructure, and unique socio-economic dynamics (Ghana News Agency, 2025; Oduraa-Osei & Tetteh-Ademtsu, 2024). However, within the limited body of research on FT waste in Africa, the emphasis has largely been on the macroeconomic impacts of the SHC trade on local manufacturing or on general solid waste management, where textiles are often subsumed under a broad "other waste" category (Ghana Statistical Service, 2020; Oteng-Ababio, 2024). A critical gap exists in localised, qualitative studies that investigate the entire FT waste stream, from import and local generation to disposal and recovery, within a specific urban context.

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2.4| The Ghanaian Context

Ghana, and its capital Accra, has emerged as a critical node in the global textile waste network. The country is a major importer of SHC, known locally as "obroni wawu" ("dead white man's clothes") (Mensah, 2023). Kantamanto market in Accra, one of the world's largest second-hand markets, receives an estimated 15 million items weekly, of which 40% are unsellable and become waste immediately (Ellen MacArthur Foundation, 2024; Mensah, 2023). This deluge of low-quality textiles, combined with waste from domestic garment production, has created a severe environmental challenge, with waste often dumped in open areas or water bodies or burned informally (Mensah, 2023). As Anokye et al. (2024) assert, this problem is compounded by a fundamental lack of public services: urban waste collection efficiency is only about 60%, leading to improper disposal and pollution, posing severe health risks. Recent reports, particularly from NGOs such as The OR Foundation (2021) and the Ellen MacArthur Foundation (2024), have begun to shed light on the scale of the problem, highlighting the lack of recycling infrastructure and the emergence of upcycling initiatives. However, these reports, while invaluable, set the stage for a qualitative study to delve into the stakeholder perspectives, practices, and structural constraints. This study directly addresses this gap. By building upon the foundational work of these reports and the limited academic literature, it seeks to provide one of the first structured, qualitative analyses of the FT waste stream in Accra, integrating the voices of local actors to bridge the divide between global waste narratives and the specific, lived realities of Ghana's capital, Accra.

3 | METHODOLOGY

A semi-structured interview approach (Adeoye-Olatunde & Olenik, 2021) was used to engage 11 experts and stakeholders in the fashion, waste management, and sustainability sectors in Accra. This sample size aligns with Sharma et al. (2024), who suggest a sample size of 10–20 participants for a qualitative study. Participants were purposively identified (Campbell et al., 2020) as information-rich cases, including garment producers, upcyclers, textile artists, regulators, academics, and SHC consumers. The researchers' network was further expanded through snowball sampling (Crouse & Lowe, 2018). This sampling strategy was appropriate because the study required insights from stakeholders with specialised knowledge of textile imports, production, upcycling, regulation, and waste management. This network was expanded through snowball sampling (Gierczyk et al., 2024), which was essential for reaching hard-to-reach actors such as NGO practitioners. The interviews were conducted between April and June in 2025 via Microsoft Teams and WhatsApp. All sessions were audio recorded and transcribed, though two interviews were documented by note-taking. Transcripts were generated using a built mobile application (Android device) that simultaneously recorded and converted the audio (English) to text, but was deficient in accuracy due to variations in tone and diction. The transcripts were therefore refined by cross-referencing the audio with the text to ensure the data accurately reflected the participants' shared ideas.

The data were analysed reflexively with NVivo software to provide initial codes for the transcripts. The systematic thematic analysis process was augmented using AI assistant tools, specifically ChatGPT and Claude.ai, to enhance coding efficiency and provide comparative perspectives on the raw data. To ensure analytical rigour and trustworthiness, AI-generated outputs were treated as preliminary suggestions for grouping and labelling themes. The final determination, refinement, and contextual validation of all themes and sub-themes were conducted solely by the lead researcher. This validation involved a meticulous comparison of the AI-suggested structures against the original interview transcripts and the systematic NVivo coding to ensure that researcher judgment and the accurate representation of participant voices remained central to the study's findings. The study was conducted in full compliance with institutional ethical guidelines and received formal ethical approval from De Montfort University (DMU). To ensure anonymity, participants for the study are referred to as PT1 (Participant 1) to PT11 (Participant 11).

4 | RESULTS AND DISCUSSION

4.1| The Participant Demographics

Table 1 presents an overview of the participants involved in the study. A total of 11 participants were engaged, representing diverse roles across academia, government regulation, garment production, upcycling initiatives, non-governmental organisations, and consumers. This mix of perspectives was selected to provide a holistic understanding of issues surrounding textile waste in Accra.

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Table 1. Demographic profile of interview participants

Participant	Role	Organisation	Category
PT1	HOD (School of Fashion)	BlueCrest University College	Academic
PT2	Field Operation	Environmental Protection Agency, Ghana	Government/Regulator
PT3	Designer	Birrd 99 Fashion Enterprise	Garment Producer and upcycler
PT4	Founder	Reclaim Textile Network	Academic and Upcycler
PT5	Artist	Kokrobitey Institute	Upcycler
PT6	Found	Gamel Clothing	Garment Producer and upcycler
PT7	Fashion tutor (Assistant lecturer)	Gambaga college of education	Academic
PT8	HOD	Ransford university	Academic and Upcycler
PT9	Re-manufacturing Lead	OR Foundation	Upcycler/NGO
PT10	Consumer		Public Consumer
PT11	Consumer		Public Consumer

Through NVivo-assisted coding and iterative theme development, five overarching themes emerged from the participants' data. The table below illustrates how initial codes were grouped into sub-themes and overarching themes. A total of 35 codes were developed, grouped into 14 sub-themes, and finally, into five broad themes. These are illustrated in Table 2 below.

Table 2. Developed codes and themes from interviews

Participants	Initial Codes	Sub-themes	Themes
PT1	"The used clothes flood the market daily… with a greater portion unsalable."	Burden of second-hand imports	**Theme 1: Imported and Locally Generated Textile Waste as Dual Sources**
PT5	"Most bales contain poor-quality textiles; only a few items can be sold."		
PT7	"Misleading labels"		
PT3	"They supply to us as a donation to maybe help with poverty. "		
PT4	"To sew a simple open shirt with two yards of fabric, about 30% goes to waste as offcut."	Local production inefficiencies	
	"African print"		
PT7	"Sometimes fabrics are defective; we cannot use them, so they are discarded."		
PT1	"The waste is poorly managed, however, with the help of NGOs that are coming in, I think it's going to help a lot."	Absence of sorting systems	**Theme 2: Inadequate Infrastructure and Management Practices**
PT2	"Separating textile waste from a mixed pile of municipal solid waste is extremely difficult." "Typically, they landfill in the open or incinerate."		
PT4	"They are disposed of indiscriminately, in the sea, landfills, gutters or incinerated"		
PT6	"Waste collectors play an essential role, but their work is under-recognised."	Informal collection role	
PT3	"There is no recycling facility dedicated to textiles."	Lack of recycling infrastructure	
PT10	"I know of plastic recycling, but not heard of textile recycling in Ghana"		
PT11	"Establishing a textile recycling plant will be a game changer"		

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PT7	"Asaasaa patchwork", when other designers mend t-shirts, they try to add a touch of the African prints to it."	Creative reuse practices	**Theme 3: Community-Led Upcycling as Resistance**
PT3	"I deliberately choose the ones that can't sell to work with."		
PT8	"We turn scraps into new items to sell at festivals."		
PT9	"The Obroni Wawu October festival showcases how waste can be reused sustainably."	Initiatives	
PT11	"I think the upcycling I see is nothing close to recycling, as recycling allows material transformation for innovation"		
PT2	"Most textile waste is disposed of with limited regulatory oversight."	Weak enforcement	**Theme 4: Policy Gaps and Regulatory Weaknesses**
	"No, currently, there is no policy. We are transitioning to become an authority, and our act has been consolidated because we had a hazardous waste classification under a different act. Now, we are trying to merge them with some strong conditions, so that all these waste and all these industries would be factored in and then properly regulated and enforced."		
PT7	"there are no strict policies guiding the importation of second-hand clothing. The use of secondhand clothings? How to dump them? What happens when it is not what you want? No, there are no policies. I haven't seen any."		
PT8	"A levy in that case targeting the importers of the second-hand goods can also help"		
PT1	"Textiles are classified as 'other waste', so no specific data is collected."	Regulatory gaps	
PT6	"I don't think so. I don't think there's been any policy that I know of. If there is, there probably will be for the larger Industries, like those who are. Producing for the international market for them."		
PT2	"Our annual budget does not account for sustainability initiatives."	Financial constraints	**Theme 5: Systemic Barriers to Sustainable Waste Management**
PT6	"I had instructed my staff to reserve offcuts… but instead they discarded them."	Operational/technical capacity issues	
PT6	"In terms of the policy drafting, one of the things I'm going to push for is education. People need to understand the impacts of the activities there back in on every day. And we show them real results of what that little negligence could end up into"	Awareness and education gaps	
PT2	"After proper campaigning about proper Waste Management. Now, some people are reutilising the textile, making other things from them and reselling."		
PT2	"Before we can roll out the policy, I think we must do an extensive education campaign. A lot of people need to understand,"		
PT2	"Some of the challenges include logistics like funding and going on some of these radio stations and campaigns. Also, the annual budget is prepared before the year begins and such sustainability campaigns had not been factored in, hence it is challenging to initiate anything with little funds at hand."		
PT4	"Lack of stakeholder collaborations is my main challenge to my upcycling initiative."	Collaboration and institutional gaps	

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PT7	"We lack funding and training opportunities to expand recycling."	Capacity and resource limitations

4.2| Dual Sources of Textile Waste

4.2.1| Second-hand imports

Across participants, the study revealed that the FT waste stream in Accra originates from both imported and locally generated sources, with imports dominating in scale and visibility. SHC accounts for a substantial proportion of waste, largely due to the volume of unsellable items in imported bales. PT1 explained,

> "*the used clothes flood the Kantamanto market daily from common sources from the global North, with a greater portion of the bales unsalable.*"

PT5 added that

> "*most bales contain poor-quality textiles; only a few items can be sold.*"

PT3 mentioned that

> "*the used clothes are supplied as donations to maybe help with poverty*," further expressing the proportional disposal of SCH to consumption.

Together, these perspectives illustrate how Accra's markets have become oversaturated with low-grade imports, creating a structural imbalance where garments circulate only briefly before becoming waste. Consistent with global critiques of the second-hand clothing trade, the Ghanaian context is shaped by the influx of garments from developed nations. PT1, PT7, PT8 and PT9 repeatedly mentioned that,

> "*the US, Netherlands, Canada and China are common exporters, with the UK being a major supplier of SHC to Ghana*", often characterised by low quality.

This confirms reports indicating that large shares of imported textiles are discarded. The Ellen MacArthur Foundation (2024) reports that 111,329 tonnes of used textiles entered Ghana in 2022. Of this, 63% went to Kantamanto market, 30% to other domestic markets, and 50% was re-exported. At Kantamanto, 20% was retained for resale, 60% of which was saleable, while 40% was landfilled. The report notes that 30% of Kantamanto's textile waste is landfilled, while 70% is abandoned in the environment. This confirms PT1 to PT11's assertion that

> "*they are indiscriminately disposed of in the sea, landfills, gutters or incinerated*," eventually contributing to persistent local environmental challenges.

Although the precise origins of SHCs are difficult to determine, PT9 avers that brand labels on these items often reveal their histories. These patterns emphasise that waste generation is embedded not only in local consumption but in the very composition of imported bales, positioning Accra as a terminal point in extended global supply chains rather than a site of meaningful reuse. Although this issue has largely been framed as a waste management challenge, it strongly indicates policy opportunities to establish minimum quality standards, modelled on import restrictions. This could reduce the proportion of unsellable goods, easing pressure on local disposal systems.

4.2.2| Local production

In addition to waste from clothing imports, local manufacturing generates significant textile and clothing waste through offcuts, unsold stock, and production defects. PT4 mentioned,

> "*to sew a simple open shirt with two yards of fabric, about 30% of the textile goes to waste as offcut*," highlighting inefficiencies within local production processes.

This finding aligns with Enes and Kipöz (2020), who emphasise that fabric cutting is crucial to the FT waste streams but remains understudied. This is because they have few direct end markets (Davis Sumo, 2024). As a result, a substantial portion of these fabric pieces is disposed of, largely due to inadequate infrastructure to manage them effectively. PT7 is of the view that

> "*sometimes locally manufactured fabrics with defects are also not used but discarded*."

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While smaller in volume than imports, domestic production waste from 'African prints' stems from systemic inefficiencies in design and quality control that could be mitigated through better training and technology. PT4 further mentioned collecting

> "*four big sacks of fabric cut-offs every week*"

from one garment manufacturing company, indicating that local waste generation is substantial, though less publicly visible. Thus, textile waste in Accra emerges from a dual-stream system, one dominated by external inflows and the other rooted in local manufacturing practices, that collectively burden existing waste management structures.

4.3| Inadequate Infrastructure and Management Practices

4.3.1| Absence of sorting systems

Across participants, there was a broad consensus that textile waste management in Accra is

> "*poorly managed*" (PT1–PT11), "*with landfill disposal and incineration serving as the primary methods.*"

Supporting this view, Oteng-Ababio (2024) affirms that Ghana's current waste management model relies heavily on landfills, as existing policy regimes do not support composting, recycling, or reuse initiatives. This situation is consistent across both rural and urban areas of Accra. Moreover, there is no available formal data on the sorting of discarded textiles in Ghana, as

> "*separating textile waste from a mixed pile of municipal solid waste (MSW) is extremely difficult*" (PT2),

emphasising the operational challenges faced by regulators, typically undertaken by both parties, the importer (wholesaler) and the buyer (trader) (Ellen MacArthur Foundation, 2024). These observations collectively indicate that the city lacks a coherent system for handling textiles as a distinct waste stream, leading to reactive rather than strategic management. The absence of sorting systems suggests a policy window to initiate decentralised (public–private) sorting hubs and collection partnerships for used textiles. Implementing textile-specific sorting guidelines within municipal waste systems would contribute to Ghana's broader shift toward differentiated waste handling.

4.3.2| Informal collection role

Building on this premise,

> *"the high demand for discarded textiles and fabric cut-offs necessitates the involvement of waste pickers in collection and separation even though they are not often recognised"* (PT4 and PT6),

particularly among upcycling organisations such as the OR Foundation, Gamel Clothing and Reclaim Textile Network. Waste collectors, therefore, play an essential role, not only undertaking material separation but also accounting for the subsequent processes required for effective reuse, recycling, upcycling, or disposal. Their involvement demonstrates how grassroots actors compensate for institutional deficiencies by recovering materials that would otherwise be destined for landfills, effectively serving as an informal backbone of Accra's textile recovery ecosystem. The limited adoption of technological advancements in textile reprocessing further strains this labour-intensive system. Despite the critical role of informal actors, such as waste pickers and upcycling artisans, in diverting waste from landfills, their contributions remain underrecognised. Velis (2017) attributes this to the persistent reliance on social and market imperatives, rather than policy mandates, to drive resource recovery. A similar situation is observed in Nairobi, Kenya, where the informal sector serves as the primary mechanism for material recovery (UN-Habitat, 2025), yet remains largely disconnected from formal waste governance structures.

4.3.3| Lack of recycling infrastructure

According to Kamble & Behera (2021b), textile waste classification for reuse is uncommon globally. Participants noted that

> *"there is no recycling facility dedicated to textiles,"* and argued that "*establishing a textile recycling plant could be a game changer for the local FT industry."*

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Such comments highlight an infrastructure vacuum that limits Ghana's ability to transition from disposal-oriented practices to circular systems capable of fibre recovery, material transformation, and industrial-scale reuse. In corroboration, PT10 mentioned that

"I know of plastic recycling in Ghana but have not heard of textile recycling."

Textile waste is often overlooked in official classification systems, often grouped with plastics or categorised as 'other waste'. This data invisibility undermines resource allocation, reinforces the perception that textile waste is insignificant, masking its growing environmental impacts and prevents policy development. The profound implications are evident in Ghana's official waste composition data (see Table 3 and Figure 1), where textiles consistently disappear into the "other" category – a lack of data that directly hinders the development of the targeted recycling infrastructure requested by participants.

In Ghana, municipal waste statistics, as shown in Table 3, typically report categories such as organic matter, paper, plastics and rubber, metals, and glass, with any materials outside these groups being recorded under the vague category of 'other solid waste'. The absence of textiles as a distinct category likely stems from their perceived insignificance in volume compared to organics or plastics; however, this perception overlooks the growing contribution of textile waste driven by second-hand clothing imports, fast-fashion consumption, and local garment production. Classifying textiles under 'other' effectively obscures the scale of the issue, undermines efforts to design targeted circular interventions, and results in textiles being treated as residual waste destined for landfills. This institutional blind spot, confirmed by PT2's statement on governmental silence regarding textile fibres, means the

"problem is rooted in policy and practice."

Critically, this practice reflects data gaps and policy neglect, hampering Ghana's ability to address the socio-environmental impacts of textile waste, including landfill congestion, microfibre pollution, and the loss of opportunities for textile reuse and recycling.

Table 3. Solid Waste Composite in Accra. Adapted from (Ghana Statistical Service, 2020)

Waste Component	Years	
	2005-2009	2010-2015
Organic	69%	60.7%
Paper	4%	8.3%
Plastic and rubber	12%	18%
Metal	2%	4.3%
Glass	3%	2.7%
Others	10%	6%

On the other hand, Figure 1 shows textiles as a percentage of Ghana's total MSW. It demonstrates that organic waste dominates Ghana's MSW at 62%, followed by paper (9%), plastics (8%), and other materials, including textiles, metals, glass, and miscellaneous items, which make up smaller percentages. However, this broad category does not indicate the specific fibre types that constitute the textile waste. This reflects PT2's assertion,

"the government waste management sector has been silent on the specific textile fibres that are included in the total MSW."

This silence at the policy level translates into a free-for-all at the disposal level. The vague 'other' category means textiles are treated as residual waste, defaulting to the environmentally damaging practices described by PT1 to PT11, who attested that waste is

"indiscriminately disposed of in the sea, landfills, gutters or incinerated."

Furthermore, this lack of categorisation obscures the material composition of the waste, which is critical for designing recycling solutions. Building on this, PT9 added that

"SHC retailers often express a common concern about the weekly bales they receive," noting that *"more than half of the contents are predominantly synthetic-based garments."*

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The fact that such a specific and challenging waste stream (synthetics) is hidden within a generic category like 'other' demonstrates how the current system is ill-equipped to develop targeted, effective management strategies. Ultimately, addressing Accra's textile waste crisis must begin by making it visible in the data, providing the foundational evidence needed to justify the dedicated policy, funding, and infrastructure that participants indicate are needed.

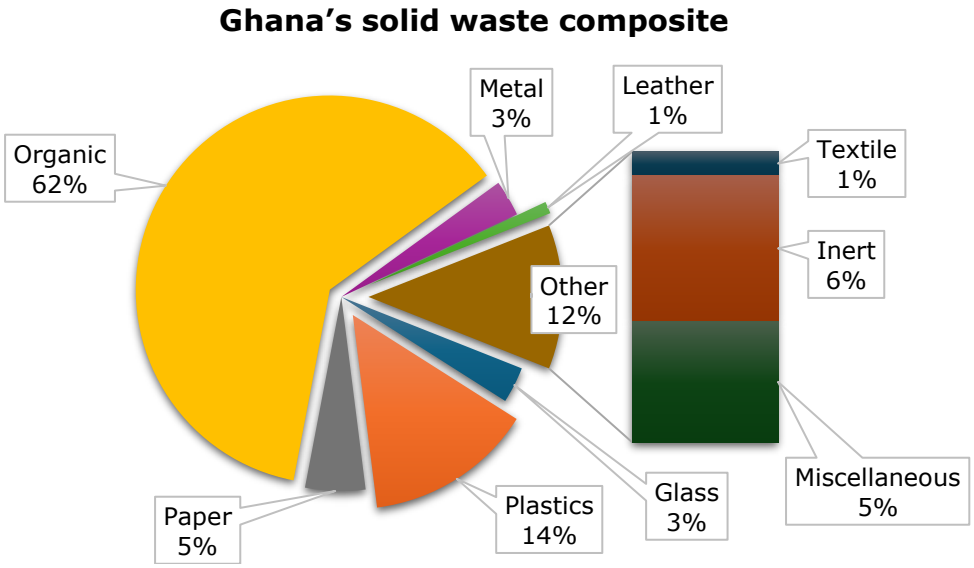


Figure 1. Ghana's solid waste composite. Reprinted from Tahiru et al. (2024), CC BY licensed 2024 by the authors.

4.4| Community-Led Upcycling as Resistance

4.4.1| Initiatives and creative reuse

Despite systemic gaps, the data revealed a growing movement of individuals and community-based initiatives focused on the reuse of used textiles. Findings show that creative upcycling has been a major contributor to curtailing textile waste in Accra, particularly among NGOs and SHC operatives. This movement is not only an environmental intervention but also a significant source of socio-economic resilience, creating pathways for youth employment and community entrepreneurship. It was observed that creatives at the SHC market commonly mend used clothes with "African prints." PT7 said,

> *"when other designers mend t-shirts, they try to add a touch of the African prints to it."*

This is evident with the OR Foundation and similar emerging organisations such as Accra We Dey, and Reclaim Textile Network, which are playing a leading role in

> *"engaging waste pickers and artisans, creatively reworking discarded textiles into value-added products such as fibre boards, accessories, home décor, and fashion pieces"* (PT9).

These initiatives serve as informal incubators for microenterprises, offering young people low-barrier entry into the creative economy amid high unemployment. In support, PT3 stated,

> *"I deliberately choose the ones that can't sell, to work with,"* while PT6 "*repurposes shredded textile offcuts into pavement blocks."*

Such practices demonstrate the ingenuity of creative actors in repurposing undesirable or low-value materials, transforming them into meaningful, commercially viable products. Furthermore, PT9, a representative of the OR Foundation, explained that the organisation

> *"has recently launched a programme called the Obroni Wawu October (OWO) festival, which celebrates creativity and reuse within the second-hand clothing sector."*

PT8 added that

> *"we turn fabric scraps into new items to sell at festivals."*

These activities collectively position upcycling not merely as an environmental practice but as a form of social and economic resistance, enabling artisans to reclaim agency within a waste system dominated by external imports. This direct link between upcycling and income generation underscores its role as a

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viable livelihood strategy. These local initiatives resonate with international literature on the socio-economic potential of upcycling, particularly in contexts of high youth unemployment (Toniolo et al., 2023). By transforming waste into economic value, these grassroots efforts empower individuals and communities, fostering a locally rooted form of circular entrepreneurship. They also reflect growing public engagement with circular economy principles, even in the absence of strong local policy drivers. Other participants, PT2, PT6, PT10, and PT11, observed that creative upcycling can obscure the broader potential of used clothing as a valuable resource for technology-driven innovation, in contrast to recycling. Creative upcyclers typically utilise SHC in their products, relying on basic sewing equipment and creativity with minimal technological input. Consequently, the transformative potential of recycling remains unexplored, restricting material innovation and scalability. This gap may stem from the limited availability and accessibility of infrastructure and facilities that drive innovation in the recycling sector. PT7 further acknowledged that,

> *"in the absence of facilities and modern recycling technologies, some of these waste goods cannot be turned into something useful."*

Similarly, the Ellen Macarthur Foundation (2024) emphasises that Ghana lacks infrastructure and public awareness for textile recycling, leaving valuable resources underutilised. Positioning textile reprocessing as a business could help address economic challenges while creating new opportunities in employment and local trade – an approach increasingly recognised across Africa (Akinyi Ogutu & Kathambi, 2023). These findings highlight the opportunity for the government to create dedicated funding streams to support upcycling enterprises. By formally recognising upcycling as part of a national circular economy strategy, policymakers could integrate community-led models into broader textile recovery systems, strengthening the link between informal innovation and national waste governance.

4.5| Policy Gaps and Regulatory Weaknesses

Across participants, it was agreed that no comprehensive management policy currently exists to address either the influx of SHC imports or the textile waste generated locally by garment manufacturers. PT2 confirmed that

> *"most textile waste is disposed of with limited regulatory oversight."*

This absence of dedicated legislation creates a policy vacuum in which textiles circulate without structured accountability, allowing environmentally harmful practices to persist unchecked. PT2 further explained that although

> *"a pilot initiative on Extended Producer Responsibility (EPR)" – a policy approach that shifts responsibility for end-of-life product management to producers is underway, it remains in its early stages and has yet to be evaluated for its long-term effectiveness in managing textile waste."*

The limited scope of the current initiative suggests that Ghana is still far from integrating textiles into its waste governance frameworks, despite the sector's growing significance. This policy gap results in most textile waste being landfilled or incinerated – practices recognised as detrimental and indicative of weak regulatory oversight. Such approaches fail to address potential resource recovery, and pose environmental and public health hazards due to the unregulated dumping and burning of fabrics, some of which may contain hazardous chemicals or synthetic fibres (Gbadegbe et al., 2021). This situation parallels broader waste management challenges in Ghana, where informal practices and inadequate infrastructure investment predominate due to the lack of effective, enforceable policies (Ellen MacArthur Foundation, 2024; Tang, 2023). A recent report from the Ellen MacArthur Foundation highlights the absence of robust processing infrastructure and underscores that policy design must meaningfully integrate the operational realities of informal actors to ensure efficacy and legitimacy in any future regulatory framework (Ellen MacArthur Foundation, 2024). Importantly, while textile waste streams continue to rise, driven largely by SHC imports, policy attention has thus far centred primarily on plastics, with no planned extensions to include textiles (GhanaWeb, 2025). While existing regulatory frameworks for plastics could, in principle, provide a foundation for future textile waste policy, these systems themselves have long been weakened by poor enforcement, limited financing, and low stakeholder engagement (Akon-Yamga et al., 2021). Any future textile strategy risks inheriting these same structural limitations if such issues remain unaddressed. Globally, innovative approaches to textile waste management, encompassing

> *"recycling, sorting, and upcycling technologies"* (PT2, PT11 and PT4),

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are increasingly driven by the transition towards circular economy models (Tang, 2023). However, PT7 noted that Ghana's capacity to adopt such approaches is

> *"constrained by technological, logistical, and financial barriers"*.

High costs and scalability challenges further complicate the local implementation of advanced recycling methods, underscoring the need for external investment alongside tailored capacity-building initiatives. The situation in Ghana echoes broader challenges seen in developing regions, where informal and formal sectors often coexist uneasily, and policies for sustainable waste management achieve only limited traction due to socio-economic, infrastructural, and cultural constraints (Zhang et al., 2024). Ultimately, any comprehensive textile waste policy must address these deeply rooted and multifaceted barriers – ranging from infrastructure deficits and informality to stakeholder exclusion, limited public education, and regulatory loopholes (Boateng et al., 2023). Critically, the absence of effective textile-specific waste management undermines Ghana's broader transition towards a more circular, resource-efficient economy. Without targeted, inclusive policy design – supported by substantial investment in infrastructure – efforts to promote sustainability and circularity in the textile sector risk remaining aspirational rather than actionable (Brydges et al., 2022; Charnley et al., 2024).

4.6| Barriers to Sustainable Textile Waste Management

The challenges surrounding sustainable textile waste management in Accra are multi-layered, encompassing financial, technical, cultural, and institutional dimensions. Participants highlighted that despite growing awareness of environmental issues, systemic barriers continue to undermine progress.

4.6.1| Financial constraints

Financial constraints remain a persistent obstacle to sustainable textile waste management. Several participants (PT1, PT4, PT5, PT6 and PT7) noted that practices such as upcycling or responsible disposal require funding that institutions and individuals often lack. Findings indicate that limited budgets restrict outreach and public awareness campaigns, which are essential for shifting consumer behaviour and fostering community participation (Williams et al., 2023). PT2 highlighted these limitations, citing

> *"inadequate logistics and funding, including the inability to support radio campaigns, while the pre-planned annual budget does not accommodate sustainability initiatives,"*

while PT8 noted

> *"research funding and limited awareness"*

as central barriers, reflecting the challenges of resourcing sustainability initiatives in both academic and practical contexts. These concerns suggest that, without dedicated funding streams and consistent policy support, sustainable textile waste initiatives remain marginal, restricting innovation, education, and the long-term operationalisation of sustainable practices. Among students, PT4 observed that the effort and cost involved in producing upcycled goods often outweigh the benefits,

> *"the stress involved discourages many, even when they are motivated by sustainability."*

This suggests that, without subsidies or affordable access to tools and equipment, sustainable practices are likely to remain small-scale or niche (Bhandari et al., 2022). Supporting this, a South African study found that financial constraints prevent the integration of textile recycling into municipal waste streams, leaving sustainability dependent on donor-funded projects (Sonnenberg et al., 2022), a dependency also observed in several Ghanaian upcycling initiatives. These parallels suggest a region-wide struggle with funding, enforcement, and public trust, necessitating solutions that are not only technologically appropriate but also socially and economically inclusive (Ayeni & Kazeem, 2024).

4.6.2| Capacity and Knowledge Gaps

Beyond finances, limited technical capacity and knowledge gaps hinder the scaling of sustainable practices. PT6 revealed how even staff within organisations sometimes struggle to understand and engage with sustainable practices,

> *"I had instructed my staff to reserve some offcuts for a pilot project, but instead they discarded and sent them to the landfill."*

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Such examples reveal how gaps in knowledge at the micro level accumulate into systemic inefficiencies, reducing the feasibility of circular approaches within both formal and informal sectors. As PT6 noted,

> *"The challenge is compounded by the fact that much of our work involves people from the informal sector, where levels of understanding of sustainable practices are generally low."*

Such accounts highlight the need for systematic education and training to accompany infrastructural investment. Findings further revealed that the waste management systems in Accra remain underdeveloped, with poor infrastructure for collection and sorting and no dedicated textile recycling plant. This aligns with Davis Sumo's (2024) assertion that no formal textile recycling facility has been established in West Africa, despite Ghana being identified as one of the largest SHC trade markets in Africa. PT2 illustrated this gap clearly, noting that

> *"some community members resort to burying textile waste simply because it is the only disposal method they know."*

Such practices reflect both a lack of knowledge and the absence of viable alternatives. The challenge of regulating massive SHC imports is widespread across African nations, yet policy responses vary considerably. Rwanda offers a striking example of strict protectionism; its 2015 Made in Rwanda policy banned SHC imports and simultaneously invested in domestic textile manufacturing to improve quality and reduce waste, demonstrating a coordinated approach that combines regulation with capacity building (Behuria, 2019; Kagayo, 2022). Kenya has taken a more moderate route, relying on high tariffs and periodic debates on restrictions to manage inflows while accommodating market forces, resulting in a mixed ecosystem where a struggling textile industry coexists with a flourishing SHC trade (Liu et al., 2025). South Africa's more industrialised context has produced yet another model, focused less on blocking imports and more on strengthening local competitiveness through incentives and stricter quality controls (Paulo, 2020). When placed alongside these examples, Ghana's situation appears both familiar and distinct: it faces the shared challenges of a dominant informal sector, overwhelming SHC volumes, and policy gaps, but the scale and economic centrality of the Kantamanto market make its configuration unique. These comparative cases highlight a fundamental trade-off, ensuring affordable clothing for the population while protecting the domestic textile economy. For Ghana, the most viable path forward is unlikely to lie in replicating any single national model; rather, it requires a hybrid strategy that builds on its vibrant informal upcycling culture while introducing targeted policies to manage imports and invest in local recycling and manufacturing capacity.

4.6.3| Regulating Textile Flows

Another significant challenge lies in the sorting and regulation of textile flows. PT7 argues that the sheer volume of incoming used textiles is a challenge;

> *"without regulatory measures to control these inputs, effective management becomes difficult."*

This highlights a feedback loop where uncontrolled imports intensify management challenges; these difficulties, in turn, limit regulatory enforcement and jeopardise the economic viability of local textile initiatives. Similarly, PT6 noted that sorting waste streams is nearly impossible due to the trend-driven nature of supply chains,

> *"effective waste stream sorting is nearly impossible when supply chains follow unpredictable fashion trends, leaving creative upcyclers to work with inconsistent material flows rather than stable, sortable waste categories."*

These insights highlight the systemic challenges in managing textile flows at both the input and disposal stages – a problem also observed in Kenya and South Africa, where second-hand clothing imports dominate local markets (Odero, 2023). This underscores a direct policy opportunity to implement import-control tools, such as quality standards and import levies, to curb the inflow of low-value waste into the SHC trade, while preserving the local market viability of Ghanaian textile producers.

4.6.4| Collaboration

Institutional weaknesses and limited stakeholder collaboration were also repeatedly mentioned. PT4 expressed frustration over unsuccessful attempts to collaborate with educational institutions:

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> *"Lack of stakeholder collaborations is my main challenge to my upcycling initiative… I sent some letters to some schools… I visited the schools several times, but I was not given the green light."*

This absence of partnerships not only isolates innovators but also undermines collective action across the textile value chain. Weak coordination between stakeholders in Accra reflects a more pervasive pattern across much of the developing world, where NGOs, businesses, and regulators often operate in silos rather than within collaborative frameworks. PT2 emphasised enforcement challenges, particularly those arising from limited budgets for monitoring and public education. For instance,

> *"even when bans on open burning exist, communities may resist compliance if viable alternatives are not provided."*

This mirrors experiences in Nigeria, where efforts to regulate waste disposal often fail due to community distrust and perceptions of impractical regulations (Fakunle, 2024). By contrast, Scandinavian countries such as Sweden demonstrate the benefits of strong inter-stakeholder collaboration. There, partnerships between municipalities, businesses, and communities have enabled integrated recycling systems in which textile waste is systematically collected and reprocessed into new fibres (Government of Sweden, 2017). While the financial and technological contexts are vastly different, the Swedish model illustrates the fundamental importance of a cohesive, multi-actor framework, a lesson for Ghanaian policymakers seeking to build a more formalised system.

5 | IMPLICATIONS OF FINDINGS

Infrastructure and Technological Implications

The study highlights the pressing infrastructural deficits that limit effective textile waste management. The absence of specialised recycling plants, ineffective sorting operations, and insufficient technology capacity undermines resource recovery. Low-cost, recycling technology and decentralised waste collection networks would fill these gaps. Public–private partnerships and collaboration with foreign partners could also play a key role in mobilising technical know-how and finances to augment Ghana's ability to process textiles on a large scale.

Environmental Implications

The excess imports of SHC and locally sourced textile offcuts have imposed severe environmental pressures on Accra. The primary management pathways are landfill disposal and unofficial incineration, resulting in soil contamination, drainage channel clogging, greenhouse gas emissions, and microfibre pollution. The lack of textile recycling infrastructure exacerbates these risks, leading to ongoing loss of valuable resources. This underscored the need to mainstream textiles into waste management planning with urgency and to make recycling and reuse key components of Ghana's broader environmental sustainability agenda.

Socio-Economic Implications

While SHC imports provide affordable clothing for much of the population, they simultaneously undermine domestic textile industries and overwhelm local waste management systems. However, the findings highlight opportunities for socio-economic empowerment through creative reuse and upcycling. Grassroots initiatives and NGOs are already transforming waste into valuable products, generating employment and fostering entrepreneurship. Supporting these initiatives through training, funding, and infrastructure could expand job creation, reduce financial dependency, and position upcycling as a viable pathway for sustainable development.

Policy and Governance Implications

The findings reveal a critical governance gap in the regulation of textile waste. Textiles, especially fibre types (that constitute fabric waste), are often excluded from official waste categorisation and subsumed under 'other waste', rendering them largely invisible in policy frameworks. Providing a complete fibre share of the waste accumulation is fundamental to understanding the broader textile waste stream in Ghana. This invisibility undermines data collection, planning, and the design of targeted interventions. The absence of a national policy for textile waste management indicates that Ghana is unprepared to address the scale of the issue. Stronger governance measures – including Extended Producer Responsibility (EPR) schemes, tighter regulation of SHC imports, and inclusive policies that

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engage informal actors such as waste pickers – will be crucial for developing an effective and sustainable waste management system for FT waste.

6 | LIMITATIONS OF THE STUDY

The study has several limitations. First, the empirical research involved only 11 participants, a sample too small to represent the full diversity of stakeholders within Accra's fashion and textile waste stream. Second, the absence of qualitative and quantitative data from a broader range of participants and respondents, including consumers and informal actors, limits the ability to construct a comprehensive narrative of the city's waste ecosystem. Third, the use of snowball sampling, while practical, may have introduced selection bias by focusing on specific stakeholder networks. Because initial participants were drawn from the researchers' networks, subsequent referrals tended to come from individuals within closely connected social and professional circles. This increases the likelihood of homogeneity in viewpoints and levels of awareness about sustainability, upcycling, and textile waste issues. As a result, voices from less-connected or marginalised groups, such as informal waste pickers and consumers without institutional affiliations, may have been underrepresented. Additionally, the reliance on online interviews, conducted remotely from De Montfort University, UK, excluded participants without reliable digital access, potentially omitting critical perspectives from lower-income or more informal sectors. Finally, the lack of longitudinal data means seasonal or temporal variations in waste flows were not captured, thereby reducing the generalisability of the findings.

7 | CONCLUSION AND FUTURE STUDIES

This research set out with the primary aim of investigating and characterising the complex fashion and textile (FT) waste stream in Accra, Ghana. Through a comprehensive qualitative study engaging key stakeholders and experts, this aim was successfully met by systematically addressing the stated objectives. First, the objective of identifying the principal sources and composition of FT waste was fully met. The research clearly delineated the dual-stream nature of Accra's waste problem, characterised by a massive influx of low-quality, often unsellable SHC from the Global North, coupled with significant inefficiencies and offcut generation from local garment production. This finding is central to understanding the scale and specificity of the challenge, moving beyond a generalised notion of "textile waste" to a precise characterisation of its origins. Second, the study fulfilled its objective of evaluating current management practices and the policy landscape. The findings reveal a system in crisis, defined by inadequate infrastructure, a total absence of formal textile recycling pathways, and a critical governance gap. The reliance on landfilling and informal incineration, confirmed by both stakeholder accounts and secondary data, and the explicit confirmation from regulatory bodies that no textile-specific waste policy exists, provide a stark, evidence-based evaluation of the current, unsustainable management regime. Third, the research effectively explored the potential and challenges of upcycling. It uncovered a vibrant, though nascent, ecosystem of community-led resistance and innovation. The documentation of initiatives such as the *Obroni Wawu* October festival and the creative reuse practices of local designers, artists, and NGOs demonstrate a significant latent potential for grassroots circular-economy solutions. Concurrently, the study also identified the systemic barriers: Financial constraints, limited technical capacity, and a lack of collaboration, that currently inhibit these initiatives from scaling, thus providing a balanced assessment of both the promise and the pitfalls of upcycling in Accra.

In synthesising these findings, it is evident that the study has fully met its overarching aim. By providing a multi-stakeholder analysis of the sources, management, and alternative pathways for FT waste in Accra, it offers a foundational characterisation that was previously lacking. The research demonstrates that while the global inequities and local inefficiencies shape the waste stream, the potential for sustainable progress lies in leveraging existing community-driven initiatives. However, the persistence of systemic barriers, including insufficient infrastructure, limited policy enforcement, and financial constraints, continues to undermine sustainable progress. Addressing these challenges requires a coordinated, inclusive approach that integrates informal-sector practices, strengthens institutional frameworks, and fosters innovation through education, investment, and partnerships. Ultimately, this study provides the evidence to argue that by leveraging both local knowledge and global sustainability discourses, Accra can transform its textile waste crisis into a pathway to economic resilience, social empowerment, and environmental sustainability.

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Future research should expand participant numbers to ensure broader representation and integrate mixed methods by combining interviews with ethnographic or participatory approaches that capture the lived experiences of textile waste. Moreover, future studies should explore (i) the economic and technological feasibility of establishing local textile recycling infrastructure in Ghana, and (ii) the socio-cultural dynamics of consumer behaviour and community-led initiatives that influence waste generation, reuse, and upcycling practices.

By mapping the structure, flow, and governance of fashion and textile waste in Accra, this study establishes an essential diagnostic foundation for understanding the scale and complexity of the problem. However, diagnosis alone cannot account for how alternative futures might be materially rehearsed within the very conditions that produce waste. The prominence of informal, creative upcycling practices identified in this research suggests that transformation may not emerge solely through policy reform or technological infrastructure, but through situated, embodied engagements with discarded materials. This insight points toward the value of practice-based research, in which upcycled textile art is explored as a form of intervention – using creative practice and autoethnography to reimagine discarded textiles through constructive, future-oriented experimentation.

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DATA AVAILABILITY STATEMENT

The data supporting this study's findings were collected through qualitative interviews with stakeholders in the fashion, waste management, and sustainability sectors in Accra, Ghana. Due to the inclusion of personal and sensitive information, the full interview transcripts are not publicly available to protect participant confidentiality. Anonymised excerpts and thematic coding outputs are available from the corresponding author upon reasonable request.

ETHICAL APPROVAL STATEMENT

The Ethics Committee at De Montfort University, Leicester, approved the set of questions before data collection. The participants were informed about the purpose of the study; therefore, their consent was obtained before they proceeded to answer the interview questions. Also, the confidentiality and anonymity of respondents were assured.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this work, the author(s) utilised AI tools such as Scispace, Quilbot, Grammarly, Claud.ai, and ChatGPT to paraphrase and enhance the text and grammar of the manuscript. After using these tools/services, the author(s) reviewed and edited the content as needed and take full responsibility for the content of the publication.

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