ICJ, Vol. 3 No. 2, July 2026, 31-53 E-ISSN 3032-4173
DOI: 10.21512/icj.v3i2.15848

Textile and Fashion Systems and the Sustainable Development Goals: A Narrative Review of Sustainability Pathways in Ghana

Edward Apau[1], Benjamin Tawiah[2], Charles Frimpong[3], Ebenezer Kofi Howard[4]

[1] Department of Visual and Industrial Art, Sunyani Technical University, Sunyani, Bono region, Ghana
[234] Department of Industrial Art, Kwame Nkrumah University of Science and Technology, Kumasi, Ashanti Region, Ghana
edwardapass@gmail.com; tawiahb@gmail.com; cfrimp@yahoo.com; billhowardgh@yahoo.com

ABSTRACT

The textile and fashion industry plays a significant role in sustainable development due to its economic contributions, cultural relevance, and environmental implications. Despite growing scholarly attention to sustainability within the sector, limited research has systematically examined its relationship with the Sustainable Development Goals (SDGs), particularly in developing-country contexts. This study investigates how textile and fashion systems contribute to the SDG agenda, with a specific emphasis on Ghana. Adopting a narrative review methodology supported by a structured desk-based literature review, the study synthesises interdisciplinary scholarship on indigenous textile knowledge systems, sustainable production practices, circular economy strategies, labour conditions, and technological innovation. The review suggests that Ghana's textile and fashion sector aligns with multiple SDGs, particularly SDGs 6, 8, 9, 12, and 13, through contributions to employment generation, cultural heritage preservation, resource-conscious production practices, and emerging innovation initiatives. However, the literature indicates that the sector's sustainability potential is constrained by limited technological capacity, inadequate access to finance, weak institutional support, and increasing competition from imported textiles. The review further demonstrates that existing scholarship rarely positions textile and fashion systems explicitly within the SDG framework, resulting in a fragmented understanding of their sustainability contributions. This study contributes to the literature by providing an integrated SDG-based analytical framework for interpreting Ghana's textile and fashion sector, synthesising environmental, economic, cultural, and innovation dimensions that are often examined separately within existing scholarship.

Keywords: *Sustainable Development Goals (SDGs); Textile Sustainability; Circular Economy; Indigenous Textile Systems; Ghana*

I. INTRODUCTION

The adoption of the Sustainable Development Goals (SDGs) in 2015 established an integrated framework for addressing interconnected environmental, economic, and social challenges through coordinated policy, industry, and research actions (Adiyoso, 2022; Biermann et al., 2022; Currie-Alder, 2022). Within this framework, industrial sectors are increasingly expected to demonstrate measurable contributions to sustainability outcomes (Arena et al., 2023; Anastas et al., 2021). The textile and fashion industry occupies a significant position within this agenda due to its global supply chains, resource intensity, employment

contribution, and socio-economic relevance (Abbate et al., 2024; Koltai, 2023; Agrawal & Pal, 2017).

The textile and fashion sector remains one of the largest manufacturing industries globally, supporting millions of livelihoods while generating significant environmental pressures. Textile production requires substantial water, energy, and chemical inputs, particularly during fibre processing, dyeing, and finishing. The expansion of fast fashion has further intensified concerns regarding waste generation, emissions, and unsustainable production–consumption patterns (Siliņa et al., 2024; Sharpe et al., 2023; Stylios, 2021). Consequently, sustainability research within the sector has increasingly focused on circular production systems, sustainable materials, cleaner processing technologies, ethical supply chains, and responsible consumption practices (Kotapati & Brahmini, 2025; Ramírez-Escamilla et al., 2024; Yousaf & Aqsa, 2023; McNeill & Moore, 2015).

These sustainability concerns intersect with several SDGs, including SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), and SDG 12 (Responsible Consumption and Production) (Cai & Choi, 2020; Zhang et al., 2023; Ramírez et al., 2025). Environmental dimensions further connect textile systems with SDG 6 (Clean Water and Sanitation) and SDG 13 (Climate Action), while the sector's substantial female workforce links it with SDG 5 (Gender Equality) (Sandaruwan et al., 2026; Thakker & Sun, 2023).
Despite increasing scholarly attention, existing research remains fragmented, often examining environmental impacts, production efficiency, labour conditions, or consumer behaviour independently rather than systematically analysing their collective relationship with the SDG framework. Furthermore, sustainability discussions have predominantly focused on large-scale industrial systems and major manufacturing economies, leaving developing-country contexts comparatively underrepresented.

This gap is particularly relevant in Africa, where textile and fashion systems often combine artisanal production, small-scale enterprises, and emerging creative industries. Such systems integrate cultural heritage, local knowledge, and resource-conscious practices, creating opportunities for sustainability-oriented development (Boamah et al., 2024; England et al., 2021). In Ghana, textile and fashion activities, including handwoven fabrics, resist-dyeing traditions, and contemporary fashion enterprises, represent important components of cultural identity, creative economy development, and local livelihoods (Seidu et al., 2025; Amankwah et al., 2024; Anokye et al., 2024).

However, existing Ghanaian studies largely examine specific dimensions of the sector, including small and medium-sized enterprises, circular practices, resource utilisation, environmental challenges, curriculum development, digital marketing, and upcycling, without explicitly mapping these contributions within the SDG framework (Amankwah et al., 2024; Amankwah et al., 2023; Mensah et al., 2025; Zanu, 2023; Osei & Bosro, 2024; Lawoe et al., 2021). Consequently, the relationship between Ghana's textile and fashion systems and broader sustainable development objectives remains insufficiently synthesised.

This study therefore examines the relationship between textile and fashion sustainability research and the SDGs in Ghana by synthesising existing literature on cultural sustainability, economic participation, environmental management, circular practices, and technological innovation. Unlike previous studies that address individual sustainability dimensions, this review provides an integrated analytical perspective that positions Ghanaian textile and fashion systems within the broader SDG framework. The study contributes to sustainability scholarship by demonstrating how textile and fashion activities can be understood as interconnected socio-economic, cultural, environmental, and technological systems within developing-country sustainability transitions.

1.1 The Sustainable Development Goals Framework

The Sustainable Development Goals (SDGs), adopted in 2015, provide an integrated global framework for addressing interconnected environmental, economic, and social challenges through coordinated development strategies (Morton et al., 2017). The seventeen goals emphasise universality and interdependence, recognising that sustainability challenges require cross-sectoral responses rather than isolated interventions (Barbier & Burgess, 2017). As illustrated in Figure 1, the SDGs are structured as an integrated system in which progress in one domain is closely linked to outcomes in others.

Figure 1. The Seventeen Sustainable Development Goals of the United Nations Sustainable Development Framework. (Source: Adapted from the United Nations SDG framework, 2026)

Unlike earlier development approaches such as the Millennium Development Goals (MDGs), the SDG framework highlights the interaction between economic growth, environmental protection, and social equity. However, scholars have noted that implementation involves complex negotiations, particularly regarding potential tensions between economic development, environmental sustainability, and social objectives (Elder, 2025; Bengtsson et al., 2018; van Zanten & van Tulder, 2021; Henderson & Loreau, 2023). These complexities highlight the importance of examining how specific industries contribute to SDG implementation.

1.2 Sustainability Challenges in the Textile and Fashion Industry

The textile and fashion industry represents a major sustainability challenge due to its extensive global value chains, resource-intensive processes, and socio-economic significance. Textile production requires substantial water, energy, and chemical inputs, particularly during fibre processing, dyeing, and finishing, which are associated with significant environmental impacts (Rahaman et al., 2024; Gonzalez et al., 2023). The expansion of fast fashion has intensified these challenges through increased production volumes, shortened product

lifecycles, and rising textile waste generation (Shibly & Hoque, 2025; Bailey et al., 2022; Niinimäki et al., 2020).

In response, sustainability strategies within the sector increasingly emphasise circular economy approaches, including reuse, repair, recycling, and product life extension (Ramírez-Escamilla et al., 2024; Shirvanimoghaddam et al., 2020). However, implementation remains constrained by technological limitations, economic structures, and established consumption patterns. Beyond environmental concerns, textile sustainability also includes labour conditions and cultural dimensions. The sector employs millions globally, particularly in developing countries, but continues to face challenges related to wages, occupational safety, and labour inequality (Prentice, 2023; Brown, 2021; Bick et al., 2018).

Furthermore, fashion operates as a cultural and creative system through which identity, heritage, and social meanings are expressed. This dimension is particularly relevant in African contexts where clothing traditions and indigenous textile practices contribute to cultural continuity and social inclusion.

1.3 Textile and Fashion within the SDG Agenda

The textile and fashion sector intersects with multiple SDGs through its environmental, economic, social, cultural, and technological dimensions. Key linkages include SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation), and SDG 5 (Gender Equality).

SDG 8 reflects the sector's contribution to employment and economic participation, although challenges related to labour inequality and workplace conditions continue to limit inclusive development outcomes (Abbate et al., 2024; Cai & Choi, 2020). SDG 9 relates to technological transformation through sustainable materials, digital manufacturing, and process innovation (Harsanto et al., 2023; Zhang et al., 2023). SDG 12 addresses circular production approaches, including recycling, sustainable design, and responsible consumption practices (Das et al., 2025; Rehman et al., 2024).

Environmental dimensions connect textile production to SDG 6 and SDG 13, particularly through concerns surrounding water-intensive wet-processing operations, wastewater generation, emissions, and cleaner production technologies (Catarino et al., 2025; Chen et al., 2025; Liu et al., 2024). SDG 5 is also relevant due to women's substantial participation in textile and fashion production, while highlighting persistent inequalities in wages and occupational opportunities (Bharti, 2025).

Despite these established relationships, engagement across SDGs remains uneven. Existing scholarship concentrates strongly on environmental sustainability, circularity, and technological innovation, while socio-economic and cultural contributions remain comparatively less integrated. Table 1 synthesises the major sustainability themes within textile and fashion systems and their associated SDG linkages.

Sustainability Theme	Relevant SDG(s)	Key Issues Addressed	Representative Literature
Employment and labour conditions	SDG 8	Decent work, wages, occupational welfare, economic participation	Cai & Choi (2020); Abbate et al. (2024); Sharpe et al. (2023)
Industrial innovation and technology	SDG 9	Sustainable materials, digital manufacturing,	Harsanto et al. (2023); Zhang et al. (2023)

		technological upgrading	
Responsible production and circularity	SDG 12	Recycling, reuse, sustainable design, waste reduction	Das et al. (2025); Rehman et al. (2024); Niinimäki et al. (2020)
Climate and environmental management	SDG 13	Carbon emissions, energy efficiency, low-carbon production	Chen et al. (2025); Biswas et al. (2024)
Water and pollution management	SDG 6	Dyeing impacts, wastewater generation, water conservation technologies	Catarino et al. (2025); Liu et al. (2024); Hussain & Wahab (2018)
Gender and social inclusion	SDG 5	Women's participation, wage equity, labour inclusion	Bharti (2025); Thakker & Sun (2023)
Indigenous textiles and cultural sustainability	SDGs 8 & 11	Cultural heritage, artisanal livelihoods, local economies	Amankwah et al. (2024); Seidu et al. (2025); Anokye et al. (2024)

Table 1. A Table showing mapping of textile sustainability themes to relevant SDGs and representative literature

This mapping provides the basis for the conceptual framework presented in Figure 2, which synthesises the relationship between textile sustainability dimensions and SDG implementation within the Ghanaian textile and fashion context. The framework highlights how environmental management, economic participation, cultural sustainability, and technological innovation interact as interconnected pathways toward sustainable development.

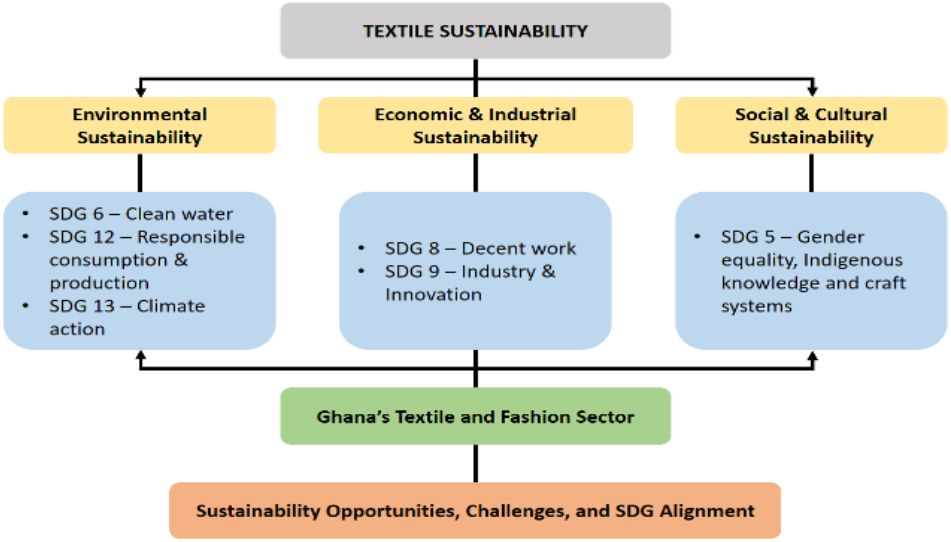

Figure 2. Conceptual Framework for Analysing Textile Sustainability and the SDGs (Authors' Construct, 2026)

II. METHODOLOGY

2.1 Narrative Review Approach

This study uses a narrative review methodology to synthesize research on the connection between textile sustainability and the Sustainable Development Goals (SDGs). This approach is suitable for interdisciplinary fields, enabling a strategic integration of diverse literature, unlike systematic reviews that adhere to predefined protocols and quantitative analysis (Ahmad, 2025; Hall & Leeder, 2024). This approach synthesizes theoretical, qualitative, quantitative, and expert-driven studies to identify patterns, gaps, and emerging themes in diverse literature, aiming for an integrative understanding of complex sustainability relationships rather than exhaustive enumeration.

This approach examines the link between textile sustainability and the SDG framework across environmental, industrial, socio-economic, and cultural aspects. It interprets global sustainability discourse in Ghana's textile and fashion industry, addressing the lack of SDG-focused empirical studies. The narrative approach facilitates contextual interpretation and theoretical synthesis in this under-explored field.

2.2 Desk-Based Literature Review Strategy

A structured desk-based literature review was conducted to identify, select, and analyse relevant scholarly and institutional sources related to textile sustainability and the Sustainable Development Goals (SDGs). This method allows for a systematic examination of existing knowledge by integrating peer-reviewed research, policy documents, and sectoral analyses.
The literature corpus included:

- peer-reviewed journal articles on textile sustainability and fashion systems
- academic publications examining industry–SDG linkages
- policy reports and sustainability assessments related to textile production
- studies focusing on textile and fashion systems in African and Ghanaian contexts

Primary sources were retrieved from major academic databases, including Scopus, Web of Science, and Google Scholar, complemented by institutional repositories and policy publications. Additional sources were identified through backward and forward reference tracking to ensure comprehensive coverage of relevant scholarship.

The search strategy employed combinations of keywords related to textile sustainability and the Sustainable Development Goals. Core search terms included “textile sustainability”, “fashion sustainability”, “sustainable textiles”, “sustainable fashion”, “textile industry and SDGs”, “fashion industry and SDGs”, “circular economy in textiles”, “textile production and environmental sustainability”, “textile innovation”, “indigenous textiles”, “African textiles”, “Ghana textile industry”, “Ghana fashion sector”, and “sustainable development goals and textile systems”. Boolean operators (AND, OR) were used to refine searches and identify relevant combinations of sustainability, textile, fashion, and SDG-related concepts.

The literature search was conducted between January and March 2025. To ensure alignment with the contemporary sustainability agenda, priority was given to publications produced between 2015 and 2025, corresponding to the post-adoption period of the SDGs. Earlier foundational studies were included selectively where they provided important theoretical or conceptual context.

To maintain focus, the review emphasized literature addressing sustainability challenges in the textile and fashion sector and its ties to the SDG framework. Studies unrelated to textiles were excluded, with particular attention given to Ghanaian textile systems. When Ghana-specific evidence was scarce, international literature provided comparative insights interpreted within the Ghanaian context, facilitating the identification of relevant sustainability themes while acknowledging the limitations of extrapolating findings from other regions.

2.2.1 Literature Screening and Selection Process

The literature was screened through a structured narrative review to align with study objectives, with two reviewers independently assessing publication relevance based on titles, abstracts, and keywords. Publications unrelated to textile sustainability, non-textile issues, or lacking links to the SDGs were excluded. Disagreements were resolved through consensus. Full-text examination identified relevant publications on textile sustainability, sustainable fashion, circular production systems, and socio-economic aspects of textile production, particularly in developing contexts like Ghana. The narrative review approach ensured transparency and rigor in the selection process, as outlined in Figure 3.

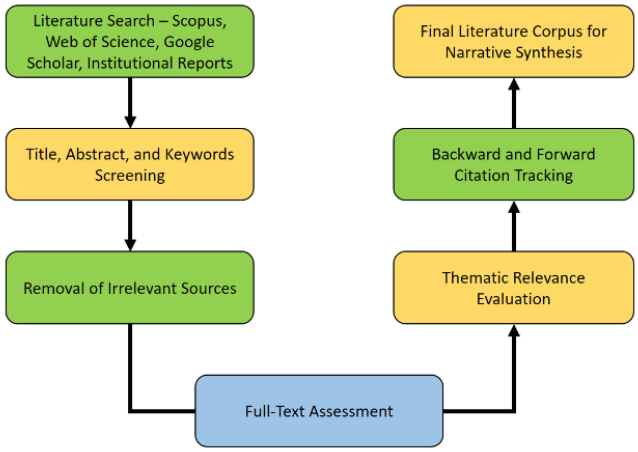

Figure 3. Literature Identification and Selection Process

2.3 Literature Selection Criteria

To ensure consistency and relevance, the literature inclusion criteria were based on: publications concerning sustainability in the textile or fashion sectors, studies on industrial contributions to the SDGs, research on textile production systems and sustainable fashion, literature focused on developing economies, particularly in Africa, and studies on Ghana's textile sector. Publications produced after 2015 were prioritized to align with the SDG framework's post-adoption period, with earlier foundational studies included only as necessary for conceptual support.

2.4 Analytical Framework

The analysis was guided by the conceptual framework presented in Figure 2, which links textile sustainability dimensions with the Sustainable Development Goals most relevant to the textile and fashion sector. The literature was analysed through a thematic framework that connects textile sustainability discourse to key Sustainable Development Goals (SDGs). The focus was on the following goals: SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation), and SDG 5 (Gender Equality). The framework enabled the literature to be synthesised across environmental, industrial, and socio-economic dimensions while identifying areas of convergence, divergence, and knowledge gaps within existing scholarship. It also provided a structured basis for examining the relevance of global sustainability discourse to Ghana's textile and fashion sector.

The selection of Sustainable Development Goals (SDGs) in the textile sustainability literature focused on those most directly related to textile production, employment, environmental management, industrial innovation, consumption practices, and gender participation. While other SDGs like No Poverty, Quality Education, Reduced Inequalities, Sustainable Cities and Communities, and Partnerships for the Goals are relevant, they were

often addressed indirectly. The analytical focus was a deliberate attempt to prioritise the goals most represented in the literature and linked to textile sustainability processes.
Within this framework, the literature was synthesised across thematic dimensions, including:

- environmental sustainability (resource use, emissions, waste)
- industrial innovation and production systems
- circular economy practices and sustainable consumption
- labour conditions and socio-economic participation
- gender roles and equity in textile production
- indigenous knowledge systems and artisanal practices

This analysis interprets the alignment of textile sustainability research with the SDG agenda in Ghana, revealing thematic gaps and regional disparities. Utilizing a contextual approach, it synthesizes global literature within a conceptual framework, focusing on Ghana's textile and fashion sector, and identifying areas of alignment and divergence based on existing studies.

2.5 Methodological Limitations

The narrative review on Ghana's textile and fashion sector acknowledges several limitations. First, there is a scarcity of literature directly linking this sector to the Sustainable Development Goals (SDGs), leading to the use of broader sustainability scholarship, which may cause contextual extrapolation. Second, unlike systematic reviews, the narrative analysis lacks quantitative synthesis and reproducible search metrics, rendering findings conceptual rather than statistically generalizable.

Although a structured search and screening process was applied, it does not claim to cover all relevant publications exhaustively. Additionally, the reliance on published sources may overlook emerging informal practices, particularly in artisanal textile systems, and lacks primary industry data or comprehensive national datasets. Despite these challenges, the review offers a coherent synthesis of existing knowledge on textile sustainability and the SDG framework, along with suggestions for future research.

III. RESULT AND DISCUSSION

3.1 Thematic Dimensions of Textile Sustainability within The SDGs Framework

3.1.1 Environmental Sustainability and Resource Intensity in Textile Systems

At the global level, environmental sustainability is important in textile production, which consumes large amounts of water, energy, and chemicals. The processes of fibre processing, dyeing, and finishing are resource-intensive and lead to significant environmental externalities (Rahaman et al., 2024; Gonzalez et al., 2023). Dyeing and finishing processes, in particular, are consistently identified as major pollution hotspots, contributing disproportionately to industrial wastewater discharge and chemical contamination (Liu et al., 2024; Khattab et al., 2020). These characteristics firmly situate textile systems within the operational scope of SDG 6 (Clean Water and Sanitation) and SDG 13 (Climate Action).

While technological innovations, such as low-liquor-ratio dyeing, digital printing, and supercritical carbon dioxide dyeing, demonstrate measurable potential for reducing water and chemical use (Hussain & Wahab, 2018), their diffusion remains uneven across global production systems. Similarly, advances in energy efficiency and cleaner production pathways offer viable mechanisms for emissions reduction (Chen et al., 2025; Biswas et al., 2024), yet their implementation is often constrained by capital intensity and infrastructural disparities between industrialised and developing contexts. This existing international evidence highlights a crucial tension between technological potential and practical scalability in textile

sustainability. It shows that environmental sustainability involves not only technical challenges but also industrial accessibility and policy support.

The literature reviewed emphasises the significance of addressing water consumption, chemical pollution, and greenhouse gas emissions. Although technological solutions exist, their implementation differs across production contexts, underscoring the need to integrate innovation with institutional capacity, infrastructure, and policy support for assessing contributions to SDG 6 and SDG 13.

3.1.2 Responsible Consumption and Circular Textile Systems

Across global textile systems, the environmental impact of textile production is closely tied to consumption patterns, especially in fast fashion, which features rapid production and fleeting product lifespans. The rise in global textile output has led to over 90 million tonnes of waste each year, highlighting a linear system that intensifies resource depletion and waste build-up (Shibly & Hoque, 2025; Bailey et al., 2022; Niinimäki et al., 2020). This production–consumption paradigm directly implicates SDG 12 (Responsible Consumption and Production).

Existing global studies suggest that circular economy strategies, encompassing reuse, recycling, repair, and product life extension, have emerged as corrective mechanisms aimed at decoupling growth from resource consumption (Ramírez-Escamilla et al., 2024; Shirvanimoghaddam et al., 2020). To achieve circularity in textiles, alignment across design, production, and consumption is essential, yet challenges like fibre-blend complexity, inadequate recycling infrastructure, and consumer habits impede widespread adoption. Circularity represents a systemic restructuring challenge that demands coordinated changes in value chains and consumption cultures.

While studies highlight circularity as important for sustainable textile systems, they also indicate that responsible consumption and production involve beyond merely technological recycling, necessitating shifts in product design, supply-chain organization, and consumer behaviour. Progress towards SDG 12 is contingent on effectively integrating sustainability efforts on both production and consumption sides.

3.1.3 Employment, Labour Conditions, and Inclusive Economic Growth

The textile and fashion sector employs 60 to 90 million workers globally, mainly in developing economies, focusing on labour-intensive production in garment manufacturing and small-scale textile enterprises (Sharpe et al., 2023; Brown, 2021; Bick et al., 2018). This positions the sector as a key contributor to SDG 8 (Decent Work and Economic Growth).

However, across global scholarships, this economic contribution is counterbalanced by persistent labour vulnerabilities, including low wages, precarious employment conditions, and inadequate occupational protections (Prentice, 2023; Wickramasingha, 2023). Structural inequalities in textile sustainability highlight a contradiction where the sector provides livelihoods while perpetuating socio-economic precarity. Systemic reforms in labour governance, supply chain transparency, and regulatory enforcement are needed to reconcile economic growth with social equity. The textile industry simultaneously contributes to employment and presents labour vulnerabilities, suggesting that evaluations of SDG 8 should consider not just job creation but also the quality, security, and inclusiveness of work opportunities in textile value chains.

3.1.4 Industrial Innovation and Technological Transformation

International scholarship indicates that technological innovation is key for advancing sustainability transitions in textile systems, closely linked to SDG 9. Innovations in sustainable

fibres, automated manufacturing, and digital design technologies can enhance resource efficiency and production precision (Harsanto et al., 2023; Zhang et al., 2023).

Digitalisation has revolutionized textile design and production through simulation-based development, reduced material waste, and mass customization. However, its benefits are uneven, with advanced systems prevalent in industrial economies while developing regions contend with infrastructural and financial challenges. This disparity highlights a significant concern in sustainability: without inclusive industrial development strategies, technological innovation could exacerbate inequalities.

Overall, the literature demonstrates that technological innovation plays a pivotal role in advancing textile sustainability. Nevertheless, the unequal distribution of technological capabilities across regions indicates that innovation alone is insufficient to achieve sustainability objectives. Progress towards SDG 9 therefore requires parallel investments in infrastructure development, knowledge transfer, and institutional support mechanisms.

3.1.5 Gender Dynamics and Social Inclusion in Textile Production

Gender dynamics significantly influence textile labour systems, making the sector crucial for advancing SDG 5 (Gender Equality). Women form a large part of the workforce, especially in garment manufacturing and informal production (Bharti, 2025; Thakker & Sun, 2023), yet they often occupy low-wage, insecure positions, reflecting wider socio-economic inequalities. Effective progress requires interventions targeting wage equity, leadership representation, and resource access, rather than solely increasing participation rates.

The findings reveal that gender inclusion remains both a strength and a challenge within textile production systems. While women constitute a substantial proportion of the workforce, persistent inequalities in remuneration, occupational advancement, and decision-making authority continue to limit progress towards SDG 5. This underscores the need for sustainability frameworks that integrate gender equity as a core rather than peripheral objective.

3.1.6 Indigenous Textile Systems, Cultural Sustainability, and Local Economies

Textile sustainability extends beyond industrial production, encompassing indigenous knowledge systems that blend cultural heritage with economic practices. Traditional methods like handweaving and resist dyeing exemplify resource-conscious production, relying on local materials and artisanal skills (Seidu et al., 2025; Amankwah et al., 2024; Anokye et al., 2024). In Ghana, these systems contribute to employment, cultural continuity, and creative industry development, aligning with SDG 8 and indirectly with SDG 11. Yet, their role in sustainability discourse is underdeveloped, particularly concerning formal SDG frameworks. While studies recognize their socio-cultural and economic value, they seldom quantify these contributions using structured sustainability metrics (Mensah et al., 2026; Amankwah et al., 2024; Zanu, 2023).

This disconnect highlights an epistemic gap where indigenous textile systems are seen mainly as cultural artefacts rather than essential parts of sustainable production. To bridge this, frameworks incorporating local knowledge into global sustainability debates are needed. The literature indicates that these systems enhance sustainability through cultural heritage, local economic involvement, and resource-efficient practices, yet their roles are often underrepresented in mainstream sustainability assessments. This calls for more inclusive approaches that acknowledge the importance of local knowledge within broader sustainability contexts.

Textile sustainability is a complex, multi-scalar system influenced by environmental constraints, economic structures, technological innovation, social inequalities, and cultural practices. These interdependent dimensions reflect the integrated logic of the Sustainable Development Goals (SDG) framework (Barbier & Burgess, 2017; Morton et al., 2017).

The analysis highlights that sustainability transitions in the textile sector involve ongoing tensions among innovation vs. accessibility, growth vs. equity, and efficiency vs. cultural preservation. To address these tensions, a systemic approach is necessary, viewing the textile and fashion industry as an interconnected socio-technical system within global development processes. This sets the stage for examining how these global dynamics manifest in Ghana's textile and fashion sector in the following section.

3.2 Implications for Ghana's Textile and Fashion Sector within the SDGs Framework

The synthesis demonstrates that Ghana's textile and fashion sector reflects interconnected sustainability dimensions, including indigenous knowledge systems, creative enterprises, environmental management, circular practices, and technological innovation. While these dimensions align with multiple Sustainable Development Goals (SDGs), their contribution remains constrained by structural limitations affecting institutional integration, scalability, and competitiveness.

3.2.1 Cultural Sustainability and Indigenous Textile Knowledge

Evidence from Ghana suggests that a defining feature of the textile sector is its strong foundation in indigenous knowledge systems, particularly in handweaving and resist-dyeing traditions. These practices operate as repositories of cultural identity, symbolic communication, and historical continuity (Seidu et al., 2025; Amankwah et al., 2024; Anokye et al., 2024). These sustainability systems serve as locally embedded production models that promote livelihoods and resource-conscious practices, aligning with SDG 8 through artisanal employment and cultural sustainability.

However, they face challenges in integrating with formal sustainability frameworks and are threatened by competition from low-cost imports and global textile markets, which jeopardizes the economic viability of traditional production methods.

As indicated in broader sustainability literature, the preservation of such industries requires policy approaches that move beyond cultural recognition toward economic formalisation and market integration (Arena et al., 2023; Opoku, 2022). Without such integration, indigenous textile systems risk marginalisation despite their intrinsic sustainability value.

The findings suggest that indigenous textile knowledge represents an important but under-recognised component of sustainable development within Ghana's textile sector. While these systems contribute simultaneously to cultural preservation, local employment, and resource-conscious production, their sustainability potential remains constrained by limited institutional support and market integration. Strengthening the economic viability of indigenous textile systems could therefore enhance the sector's contribution to SDG 8 while preserving culturally embedded forms of sustainable production.

3.2.2 Ghanaian Fashion Design, Creative Identity, and Sustainable Development

Ghanaian fashion extends beyond the production and consumption of textile products to function as a cultural and creative system through which identity, heritage, and social values are expressed and negotiated (Amankwah et al., 2024; Anokye et al., 2024). Contemporary Ghanaian fashion designers frequently draw upon indigenous textiles such as kente, kete, fugu, and adinkra-inspired fabrics to create products that communicate cultural identity while engaging with local and global markets (Seidu et al., 2025; Amankwah et al., 2023). In this regard, fashion operates not only as an economic activity but also as a mechanism of cultural representation and creative expression (Amankwah et al., 2024; Lawoe et al., 2021).

From an SDG perspective, fashion contributes to sustainable development through multiple pathways. It supports employment and entrepreneurship within the creative economy (SDG 8), encourages innovation through design-led value addition (SDG 9), and reinforces cultural sustainability by preserving and reinterpreting indigenous knowledge systems (Amankwah et al., 2023; Lawoe et al., 2021). Fashion also plays a role in shaping consumer awareness regarding sustainable production and responsible consumption practices, thereby contributing indirectly to SDG 12 (Abbate et al., 2024; Thakker & Sun, 2023).

Within Ghana, the growing integration of traditional textile aesthetics into contemporary fashion products demonstrates how cultural heritage can be transformed into economic value while maintaining social and symbolic significance (Seidu et al., 2025; Amankwah et al., 2023). This process highlights fashion's potential to connect cultural preservation and economic development. Yet, its role in sustainable development is often overlooked in textile sustainability research and policy discussions. Recognizing fashion as a creative and cultural industry, beyond just textile production, would enhance our understanding of its contribution to sustainability transitions (Thakker & Sun, 2023; Cai & Choi, 2020).

The findings indicate that fashion functions not only as a creative industry but also as a mechanism through which cultural sustainability, economic value creation, and responsible consumption can intersect within the SDG framework.

3.2.3 Economic Sustainability and Creative Textile Enterprises

Available Ghanaian studies indicate that the textile and fashion sector constitutes a significant segment of the creative economy, characterised by decentralised, small-scale, and labour-intensive enterprises. These include weaving clusters, tailoring operations, dyeing units, and emerging fashion enterprises functioning across both formal and informal systems (Amankwah et al., 2023; Lawoe et al., 2021). This structure reflects broader patterns in developing economies, where creative industries contribute substantially to employment generation and socio-economic resilience.

This aligns directly with SDG 8, particularly regarding inclusive employment and entrepreneurship. The sector’s labour intensity enables widespread participation across value chains, reinforcing its developmental relevance (Sharpe et al., 2023; Stylios, 2021). Evidence from national and industry reports suggests that Ghana’s textile and garment sector continues to face structural constraints, including high production costs, limited access to finance, energy-related challenges, and increasing competition from imported textile products (Bruce-Amartey et al., 2025; Dzreke & Dzreke, 2025; Majeed et al., 2019). These factors have contributed to the contraction of large-scale textile manufacturing and have reinforced the dominance of small-scale and informal production systems within the sector (Boateng et al., 2024; Sarpong et al., 2024). However, this same structural configuration also exposes systemic vulnerabilities. Limited access to finance, weak infrastructure, and fragmented market linkages constrain productivity and scalability. These constraints mirror findings across developing-country textile industries, where competitiveness is strongly mediated by institutional capacity and access to capital (Cai & Choi, 2020). Ghana's textile and fashion sector shows significant potential for economic growth through job creation and entrepreneurship. However, structural constraints hinder productivity and competitiveness, making it challenging to transition to higher-value production. To align with SDG 8, interventions must target both enterprise development and systemic institutional challenges.

3.2.4 Environmental Sustainability in Textile Production

Environmental pressures associated with textile production, particularly in dyeing and finishing, remain a major concern. These processes are characterised by high water

consumption, chemical use, and pollution risks, positioning the sector within the operational scope of SDG 6 and SDG 13 (Rahaman et al., 2024; Gonzalez et al., 2023; Khattab et al., 2020). In the Ghanaian context, traditional dyeing systems, such as plant-based and resist techniques, offer environmentally responsible production methods with reduced chemical dependency, supporting sustainability goals in water conservation and emissions reduction (Sandaruwan et al., 2026; Thakker & Sun, 2023). Comprehensive environmental performance data for Ghana's textile sector is limited; however, existing assessments highlight ongoing challenges in wastewater management, chemical handling, and pollution control in manufacturing, particularly in textile processing operations (Quansah et al., 2026; Zanu, 2023; Selase et al., 2021). However, their broader adoption is constrained by technical limitations, particularly regarding colour consistency, durability, and scalability. As highlighted in the literature, achieving industrial relevance for such systems requires scientific optimisation and process standardisation (Hussain & Wahab, 2018).

This text highlights the critical connection between traditional knowledge and modern textile science, indicating that sustainability improvements can be achieved through hybrid approaches that merge indigenous practices with empirical research. It notes that while sustainable production methods are present in Ghana's textile sector, especially in indigenous dyeing, their impact on Sustainable Development Goals (SDG) 6 and 13 is constrained by issues of scalability, standardization, and technological advancements. Future sustainability achievements will rely on the effective integration of traditional knowledge systems with scientific innovation.

3.2.5 Circular Fashion and Sustainable Consumption

The transition toward circular production systems represents a key sustainability pathway, particularly in response to increasing textile waste and resource depletion (Shibly & Hoque, 2025; Bailey et al., 2022; Niinimäki et al., 2020). Circular strategies, such as reuse, recycling, and product life extension, are central to SDG 12 and are increasingly promoted within global sustainability discourse.

Within Ghana’s textile sector, elements of circularity are already embedded within everyday consumption practices. Garment alteration, reuse, and repurposing reflect long-standing resource-efficient behaviours that align with circular economy principles (Amankwah et al., 2024). The growth of second-hand clothing markets in Ghana highlights textile reuse within consumption systems, extending garment lifespans and enhancing affordability. However, this trend raises complex issues related to textile waste management and the competitiveness of local textile producers (Mensah et al., 2026; Sumo, 2024; Acquaye et al., 2023). This indicates that circularity in Ghana is an extension of traditional cultural practices rather than an entirely new concept. To scale circular systems, improvements in infrastructure, especially in textile recycling technologies, are essential, as well as changes in consumer behaviour and market incentives. Successful transitions toward circularity depend on the integration of technological, economic, and socio-cultural factors (Ramírez-Escamilla et al., 2024; Shirvanimoghaddam et al., 2020). Ghana has potential for circular textile development through current practices of repair, reuse, and repurposing. However, a transition to a fully developed circular economy necessitates improvements in infrastructure, policy frameworks, and market incentives. This underscores the importance of enhancing systemic approaches to SDG 12, rather than depending solely on current consumer behaviours.

3.2.6 Innovation, Technology, and Future Industry Development

Technological innovation constitutes a major pathway for enhancing both sustainability and competitiveness within the textile sector. Advances in materials, digital design systems, and production technologies provide opportunities to improve efficiency, reduce waste, and

expand product capabilities (Harsanto et al., 2023; Zhang et al., 2023). These developments align with SDG 9, which emphasises sustainable industrialisation and innovation.

Innovation in Ghana is demonstrated through technological adaptation and creative design. Digital tools improve precision and reduce material waste in textile and fashion design, while integrating indigenous aesthetics into modern products fosters value-added production and cultural distinction (Amankwah et al., 2024). This dual pathway of technology and culture is a unique aspect of Ghana's innovation landscape. Assessments reveal that technological upgrading, research commercialization, and collaboration between industry and academia are still limited in the manufacturing sector, which hampers the broader adoption of advanced textile technologies and innovation-driven production systems (Tetteh, 2024; Odei et al., 2023; Abraham et al., 2022).

However, the diffusion of advanced technologies remains uneven. Structural barriers, including limited research infrastructure, insufficient investment, and weak industry–academia linkages, constrain the sector's capacity to adopt and scale innovation (Zhang et al., 2023). This limitation highlights a systemic issue in Ghana's textile sector, where innovation is not sufficiently supported by institutional frameworks. Strengthening innovation ecosystems through targeted policies, education, and collaborative research is essential for sustainable industrial transformation. Enhanced institutional support for technology adoption, research collaboration, and skills development is required to ensure long-term sustainability and competitiveness, aligning with the goals of SDG 9.

3.2.7 Synergies and Trade-Offs among the SDGs in Ghana's Textile and Fashion Sector

The review indicates that the relationship between Ghana's textile and fashion sector and the SDGs is characterised by both synergies and trade-offs. While many sustainability interventions contribute simultaneously to multiple development objectives, others may create tensions that require careful management.

A notable synergy exists between SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), and SDG 12 (Responsible Consumption and Production). Investments in sustainable production technologies enhance productivity, product quality, and waste reduction, boosting the competitiveness of textile enterprises while promoting economic growth and resource efficiency. This review highlights the interconnected benefits of cultural preservation initiatives, which support employment, local enterprise development, and sustainable practices.

Important synergies are also evident between SDG 6 (Clean Water and Sanitation) and SDG 13 (Climate Action). The adoption of eco-friendly dyeing technologies and wastewater management can minimize water pollution and reduce the environmental impact of textile production. Integrating these methods with indigenous knowledge and natural dyeing practices fosters both environmental sustainability and cultural preservation.

Efforts to expand textile production in Ghana to achieve SDG 8 may increase water use, energy demand, and pollution, particularly without investments in cleaner technologies and effective regulations. Revitalizing domestic textile manufacturing could escalate environmental pressures unless supported by advancements in production technologies and wastewater management. Moreover, rapid industrial modernization associated with SDG 9 may undermine traditional practices if it neglects indigenous knowledge and cultural heritage. These interactions highlight the need for integrated policy and research approaches in the textile sector, recognizing the interdependence of sustainability goals. Future strategies should focus on optimizing synergies and minimizing trade-offs. Ghana's textile and fashion sector shows significant potential for sustainable development through interconnected cultural,

economic, environmental, and technological avenues, though it faces challenges in technological capacity, financing, institutional support, and market competitiveness.

Overall, the review highlights that the sustainability potential of the sector is not fully realized. To achieve this potential, integrated policy frameworks, research agendas, and industry strategies that align with the SDG framework are necessary. This approach would enhance the sector's contribution to sustainable development while addressing the synergies and trade-offs influencing sustainability transitions in Ghana's textile and fashion system.

3.3. Implications for Research and Policy

The synthesis of literature indicates that Ghana's textile and fashion sector is significant but not well-integrated into sustainability dialogues concerning the SDGs. Although there is an implicit connection with various SDGs, it is not fully operationalized in research or policy. Enhancing this alignment requires interdisciplinary research, building institutional capacity, and coherent policy design.

3.3.1 Implications for Future Research

A central gap identified in this review is the limited number of studies explicitly linking textile and fashion systems in Ghana to the SDG framework. While existing scholarship provides important insights into cultural heritage, craft production, and fashion entrepreneurship (Seidu et al., 2025; Amankwah et al., 2024; Anokye et al., 2024), these contributions are rarely situated within integrated sustainability frameworks. This reflects a broader limitation within textile research, where sector-specific analyses often remain disconnected from global development policy discourse (Biermann et al., 2022; Currie-Alder, 2022).

Addressing the gap in textile studies requires interdisciplinary approaches that merge textile research with sustainability science, environmental analysis, and development economics. This integration will facilitate a systematic assessment of textile production's role in sustainable livelihoods, resource efficiency, and socio-economic transformation, especially in developing countries (Arena et al., 2023; Anastas et al., 2021). Importantly, this approach would move beyond descriptive accounts toward analytical frameworks capable of linking local production systems to global sustainability metrics.

Empirical investigation of environmental performance represents a key research priority. Textile processing stages, particularly dyeing and finishing, are widely recognised as resource-intensive and environmentally sensitive (Rahaman et al., 2024; Gonzalez et al., 2023). There is a clear need for laboratory-based and field-based studies that quantify water use, chemical discharge, and energy consumption within local textile systems. Parallel research should evaluate the technical feasibility and environmental performance of sustainable alternatives, including natural dyeing technologies and low-impact processing methods (Thakker & Sun, 2023). Such evidence is essential for translating sustainability principles into scalable industrial practices.

Research on design innovation and creative entrepreneurship also presents significant analytical potential. The integration of indigenous textile aesthetics into contemporary fashion systems reflects broader dynamics within creative economies, where cultural knowledge is transformed into economic value (Amankwah et al., 2023; Lawoe et al., 2021). However, these processes remain insufficiently theorised. Systematic investigation is required to understand how design innovation mediates the relationship between cultural preservation and market competitiveness, particularly within globalised fashion systems.

Furthermore, the role of digital technologies in textile production constitutes an important emerging research frontier. Advances in computer-aided design, digital fabrication, and smart manufacturing are reshaping global textile industries (Harsanto et al., 2023; Zhang

et al., 2023). Research on adapting technologies in Ghana's textile sector is essential for identifying pathways for technological upgrading. It should assess accessibility, scalability, and institutional readiness to ensure effective adoption in developing contexts.

Future studies must explore the role of fashion design and creative practices in sustainability, focusing on how Ghanaian designers use indigenous textiles to create economic value, enhance cultural identity, and promote sustainable consumption. This research will enrich the understanding of fashion within the Sustainable Development Goals framework, beyond its role in textile production.

3.3.2 Implications for Policy Development

The review emphasizes the necessity for integrated policy frameworks that reframe the textile and fashion sector as crucial to sustainable development. It notes that industrial sectors advance Sustainable Development Goals (SDGs) most effectively when backed by coherent and coordinated policy environments (Arena et al., 2023; Opoku, 2022).

A key policy priority is to strengthen artisanal and small-scale textile production in Ghana, which is vital for the textile economy. Due to its labour-intensive nature and importance for livelihoods, interventions like better access to finance, entrepreneurship support, and expanded market links are crucial for promoting inclusive economic growth aligned with SDG 8 (Sharpe et al., 2023; Cai & Choi, 2020). However, policy approaches must extend beyond subsistence-level support toward enabling value-chain upgrading and competitiveness within both domestic and international markets.

Investment in education and research infrastructure is crucial for promoting innovation. Enhancing institutions dedicated to textile design, sustainable production technologies, and fashion entrepreneurship fosters human capital development and supports knowledge-driven industrial growth, linking skills development and technological capability to sustainable industrialization (Zhang et al., 2023). Without such investments, the sector risks remaining constrained within low-technology production systems.

Environmental governance represents another central policy domain. Textile production processes, particularly dyeing and finishing, contribute significantly to water pollution and environmental degradation (Gonzalez et al., 2023; Khattab et al., 2020). Regulatory frameworks for wastewater treatment and chemical management are crucial. Policy interventions should merge regulatory enforcement with incentives to promote sustainable practices, integrating traditional dyeing knowledge with modern standards. This hybrid approach supports environmental performance and cultural relevance, aiding in the achievement of SDG 6 and SDG 13.

In addition, policies supporting circular production systems are increasingly necessary. As global textile industries transition toward circular economy models (Ramírez-Escamilla et al., 2024; Niinimäki et al., 2020), national strategies that promote recycling infrastructure, sustainable design, and responsible consumption behaviours will be central for aligning with SDG 12. However, effective implementation requires coordination across production systems, waste management infrastructure, and consumer engagement.

Policies for cultural and creative industries should acknowledge indigenous textiles as vital economic assets and symbols of cultural identity. By promoting cultural branding, intellectual property protection, and international market access, Ghanaian textile products can achieve greater global competitiveness while maintaining their cultural integrity (Amankwah et al., 2024). This dual recognition is crucial for aligning cultural sustainability with economic development. In Ghana's textile and fashion sector, effective implementation of sustainability policies requires collaboration among public-sector entities, industry players, academic institutions, NGOs, financial institutions, and consumer groups. Achieving sustainable transformation mandates strong governance to unite these diverse actors toward common

sustainability objectives. Table 2 presents a stakeholder mapping framework that identifies key actors and their potential roles in advancing sustainable textile and fashion development in Ghana.

Table 2. A Table showing key stakeholders and their potential roles in advancing sustainable textile and fashion development in Ghana.

Stakeholder Group	Potential Role
Ministry of Trade, Agribusiness and Industry	Industrial policy development, SME support, export promotion, and value-chain upgrading
Ministry of Tourism, Culture and Creative Arts	Promotion of indigenous textiles, cultural heritage preservation, and creative industry development
Ministry of Environment, Science and Technology and Environmental Protection Agency (EPA)	Environmental regulation, pollution control, sustainability standards, and monitoring
Ministry of Education and Technical Universities	Skills development, textile education, entrepreneurship training, and curriculum innovation
Universities and Research Institutions	Research, technology development, sustainability assessment, and industry collaboration
Textile Manufacturers and Fashion Enterprises	Sustainable production practices, innovation adoption, and market expansion
Artisan Weaving and Dyeing Communities	Preservation of indigenous knowledge, local production, and cultural sustainability
Industry and Professional Associations	Industry coordination, advocacy, standard-setting, and capacity building
Financial Institutions and Development Partners	Investment support, enterprise financing, and sustainability programmes
Consumers and Civil Society Organisations	Responsible consumption, awareness creation, and support for sustainable products

The stakeholder mapping reveals that Ghana's textile and fashion sector needs collaborative governance for effective sustainability transitions, moving beyond isolated efforts. Integrating policy development, research, industrial innovation, cultural preservation, and responsible consumption in a coordinated framework is essential for achieving the Sustainable Development Goals (SDGs). Currently, the sector's potential for sustainable development is under-utilized due to fragmented research and policy approaches, with the primary challenge being the disconnection among research, policy, and industry systems. A coordinated, systems-oriented strategy is necessary to embed textile sector development into a comprehensive sustainability agenda, positioning the industry as a driver of inclusive, environmentally responsible, and culturally aligned growth.

IV. CONCLUSION

This narrative review explores the connection between textile sustainability and the Sustainable Development Goals (SDGs), particularly within Ghana's textile and fashion sector. It synthesizes interdisciplinary literature, demonstrating the intersection of textile production with cultural preservation, economic development, environmental management, and industrial innovation.

The review emphasizes the sector's role in sustainable development through indigenous knowledge that preserves culture and supports artisanal livelihoods, promoting employment and creative economies via small-scale enterprises and inclusive economic participation..
Environmental sustainability in the textile industry is focused on resource-efficient production, circular design, and waste reduction. Technological advances are crucial for enhancing productivity and environmental outcomes. However, Ghana's textile sector struggles with inadequate technology, limited financial access, weak global integration, and import competition. Additionally, there is insufficient alignment with the Sustainable Development Goals (SDGs), which affects the sector's contributions to sustainable development.

The study identifies significant, untapped potential in Ghana's textile and fashion sector to contribute to the SDGs. It advocates for a shift from fragmented approaches to integrated strategies that connect research, policy, and industry.

Key recommendations include enhancing empirical sustainability research, adopting new technologies, improving environmental governance, supporting circular production systems, and developing balanced policies for cultural preservation and economic competitiveness. These strategies are essential for transforming the sector's sustainability potential into measurable development outcomes.

Future research should empirically investigate the contributions of textile and fashion activities to SDG indicators, focusing on quantitative assessments of environmental performance, labour conditions, circular economy practices, and innovation adoption in Ghana's textile sector to strengthen policy formulation and planning.

Comparative studies with other African nations can highlight transferable sustainability pathways and aid in creating regionally relevant textile sustainability frameworks, enhancing the understanding of how textile systems can promote sustainable development in developing economies.

Integrating textile and fashion systems with the Sustainable Development Goals (SDGs), this review advances sustainability research by synthesizing environmental, economic, cultural, and innovative aspects of textile sustainability. It highlights Ghana's underrepresented textile and fashion sector, emphasizing indigenous textile knowledge as a cultural asset and a contributor to sustainable development. This work establishes a foundation for future research, policy development, and strategies to enhance the sector's impact on sustainability.

REFERENCES

Abbate, S., Centobelli, P., Cerchione, R., Nadeem, S. P., & Riccio, E. (2024). Sustainability trends and gaps in the textile, apparel and fashion industries. *Environment, Development and Sustainability*, *26*(2), 2837–2864. https://doi.org/10.1007/s10668-022-02836-8

Abraham, I., Howard, E. K., & Acquaye, R. (2022). Technological innovation: An assessment of operational practices of small and medium textile enterprises in Ghana. *Journal of Textile Science and Technology*, *8*(3), 123–132. https://doi.org/10.4236/jtst.2022.83010

Acquaye, R., Seidu, R. K., Eghan, B., & Fobiri, G. K. (2023). Consumer attitude and disposal behaviour to second-hand clothing in Ghana. *Scientific African*, *21*, Article e01887. https://doi.org/10.1016/j.sciaf.2023.e01887

Adiyoso, W. (2022). The progress of the SDGs research. *The Journal of Indonesia Sustainable Development Planning*, *3*(2), i–iii. https://doi.org/10.46456/jisdep.v3i2.337

Agrawal, T. K., & Pal, R. (2017). Towards a secured traceability system for closed-loop textile supply chains. In *22nd International Symposium on Logistics (ISL 2017), Ljubljana, Slovenia, 9–12 July* (pp. 359–367). Centre for Concurrent Enterprise.

Ahmad, M. N. (2025). Narrative literature reviews in scientific research: Pros and cons. *Jordan Journal of Agricultural Sciences*, *21*(1). https://doi.org/10.35516/jjas.v21i1.4143

Amankwah, A. M., Appiah, E., Frimpong, C., & Kent, A. (2023). Examining the structure of the fashion industry in Ghana in ensuring the successful adoption of sustainable approach. *Sustinere: Journal of Environment and Sustainability*, *7*(2), 161–175. https://doi.org/10.22515/sustinere.jes.v7i2.304

Amankwah, A. M., Appiah, E., Frimpong, C., & Kent, A. (2024). The role of developing countries in the global fashion industry sustainability discourse: Ghana in perspective - A narrative review. *Sustinere: Journal of Environment and Sustainability*, *8*(1), 1–15. https://doi.org/10.22515/sustinere.jes.v8i1.357

Anastas, P. T., Nolasco, M. A., Kerton, F. M., Kirchhoff, M. M., Licence, P., Pradeep, T., Subramaniam, B., & Moores, A. (2021). The power of the United Nations Sustainable Development Goals in sustainable chemistry and engineering research. *ACS Sustainable Chemistry & Engineering*, *9*(24), 8015–8017. https://doi.org/10.1021/acssuschemeng.1c03762

Anokye, D., Ayesu, S., Howard, E. K., Godomey, B. S., & Fobiri, G. K. (2024). Adaptation of traditional hand-woven patterns in the production of Akan (Twi) philosophical designs for resist-dyed fabrics. *Journal of Innovations in Art and Culture for Nature Conservation and Environmental Sustainability*, *2*(1). https://doi.org/10.60129/jinces.v2i1.00224

Arena, M., Azzone, G., Ratti, S., Urbano, V. M., & Vecchio, G. (2023). Sustainable development goals and corporate reporting: An empirical investigation of the oil and gas industry. *Sustainable Development*, *31*(1), 12–25. https://doi.org/10.1002/sd.2369

Bailey, K., Basu, A., & Sharma, S. (2022). The environmental impacts of fast fashion on water quality: A systematic review. *Water*, *14*(7), Article 1073. https://doi.org/10.3390/w14071073

Barbier, E. B., & Burgess, J. C. (2017). The Sustainable Development Goals and the systems approach to sustainability. *Economics: The Open-Access, Open-Assessment E-Journal*, *11*(2017-28), 1–23. https://doi.org/10.5018/economics-ejournal.ja.2017-28

Bengtsson, M., Alfredsson, E., Cohen, M., Lorek, S., & Schroeder, P. (2018). Transforming systems of consumption and production for achieving the sustainable development goals: Moving beyond efficiency. *Sustainability Science*, *13*, 1533–1547. https://doi.org/10.1007/s11625-018-0582-1

Bharti, S. (2025). Women in textile manufacturing: Workforce participation and economic empowerment. *International Journal of Advanced Research in Science, Communication and Technology*. https://doi.org/10.48175/ijarsct-28220

Bick, R., Halsey, E., & Ekenga, C. C. (2018). The global environmental injustice of fast fashion. *Environmental Health*, *17*(1), Article 92. https://doi.org/10.1186/s12940-018-0433-7

Biermann, F., Hickmann, T., & Sénit, C. A. (2022). *Assessing the impact of global goals: Setting the stage*. Cambridge University Press.

Biswas, M. K., Azad, A. K., Datta, A., Dutta, S., Roy, S., & Chopra, S. S. (2024). Navigating sustainability through greenhouse gas emission inventory: ESG practices and energy shift in Bangladesh's textile and readymade garment industries. *Environmental Pollution*, *345*, Article 123392. https://doi.org/10.1016/j.envpol.2024.123392

Boamah, F., Tawiah, B., & Howard, E. K. (2024). Biomimetic design concepts in African textile prints: Embracing nature's influence on fashion and textiles. *Fashion and Textiles Review*, *5*(1), 22–39. https://doi.org/10.35738/ftr.v5.2024.08

Boateng, N. B. O., Amankwah, A. M., Ayesu, S. M., Chichi, C. A., & Fobiri, G. K. (2024). Quality issues in the garment industry: A perspective of Ghana's SMEs and

dressmakers. *Fashion and Textiles Review*, *5*(1), 58–77. https://doi.org/10.35738/ftr.v5.2024.02

Brown, G. D. (2021). Women garment workers face huge inequities in global supply chain factories made worse by COVID-19. *New Solutions: A Journal of Environmental and Occupational Health Policy*, *31*(2), 113–124. https://doi.org/10.1177/10482911211011605

Bruce-Amartey, E., Jr., Sumaila, S. M., & Mensah, R. O. (2025). Production trends and decline in Ghana's textile industry: Historical analysis and causative factors. *Discover Global Society*, *3*(1), Article 47. https://doi.org/10.1007/s44282-025-00185-6

Cai, Y. J., & Choi, T. M. (2020). A United Nations' Sustainable Development Goals perspective for sustainable textile and apparel supply chain management. *Transportation Research Part E: Logistics and Transportation Review*, *141*, Article 102010. https://doi.org/10.1016/j.tre.2020.102010

Catarino, M. L., Sampaio, F., & Gonçalves, A. L. (2025). Sustainable wet processing technologies for the textile industry: A comprehensive review. *Sustainability*, *17*(7), Article 3041. https://doi.org/10.3390/su17073041

Chen, Y., Zhang, J., He, Y., Liu, Z., & Pan, Y. (2025). Collaborative analysis and path exploration of atmospheric VOCs and carbon emissions in textile industry enterprises: A case study of Suzhou. *Atmosphere*, *16*(9), Article 1066. https://doi.org/10.3390/atmos16091066

Currie-Alder, B. (2022). The politics of the sustainable development goals. In *Handbook on the politics of international development* (pp. 315–328). Edward Elgar Publishing.

Das, A. K., Hossain, M. F., Khan, B. U., Rahman, M. M., Asad, M. A. Z., & Akter, M. (2025). Circular economy: A sustainable model for waste reduction and wealth creation in the textile supply chain. *SPE Polymers*, *6*(1), Article e10171. https://doi.org/10.1002/pls2.10171

Dzreke, S., & Dzreke, S. E. (2025). Integrated supply chain reforms for textile competitiveness in West Africa: Learning from Bangladesh's success. *Advanced Research Journal*, *12*(1), 50–65. https://doi.org/10.71350/3062192598

Elder, M. (2025). Integration versus prioritization in the Sustainable Development Goals: An argument to prioritize environmental sustainability and a just transition. *Sustainable Development*, *33*(1), 465–477. https://doi.org/10.1002/sd.3130

England, L., Ikpe, E., Comunian, R., & Kabir, A. J. (2021). Africa Fashion Futures: Creative economies, global networks and local development. *Geography Compass*, *15*(9), Article e12589. https://doi.org/10.1111/gec3.12589

Gonzalez, V., Lou, X., & Chi, T. (2023). Evaluating environmental impact of natural and synthetic fibers: A life cycle assessment approach. *Sustainability*, *15*(9), Article 7670. https://doi.org/10.3390/su15097670

Hall, S., & Leeder, E. (2024). Narrative reanalysis: A methodological framework for a new brand of reviews. *Research Synthesis Methods*, *15*(6), 1017–1030. https://doi.org/10.1002/jrsm.1751

Harsanto, B., Primiana, I., Sarasi, V., & Satyakti, Y. (2023). Sustainability innovation in the textile industry: A systematic review. *Sustainability*, *15*(2), Article 1549. https://doi.org/10.3390/su15021549

Henderson, K., & Loreau, M. (2023). A model of Sustainable Development Goals: Challenges and opportunities in promoting human well-being and environmental sustainability. *Ecological Modelling*, *475*, Article 110164. https://doi.org/10.1016/j.ecolmodel.2022.110164

Hussain, T., & Wahab, A. (2018). A critical review of the current water conservation practices in textile wet processing. *Journal of Cleaner Production*, *198*, 806–819. https://doi.org/10.1016/j.jclepro.2018.07.051

Khattab, T. A., Abdelrahman, M. S., & Rehan, M. (2020). Textile dyeing industry: Environmental impacts and remediation. *Environmental Science and Pollution Research*, *27*(4), 3803–3818. https://doi.org/10.1007/s11356-019-07137-z

Koltai, V. (2023). Slow fashion as a possible route to SDG 12 within the fashion industry. *Észak-magyarországi Stratégiai Füzetek*, *20*(2), 69–83. https://doi.org/10.32976/stratfuz.2023.17

Kotapati, S. P., & Brahmini, K. (2025). Integrating AI for sustainable supply chain optimisation in ethical fashion: A case study. *Asian Journal of Research in Computer Science*, *18*(6), 353–360. https://doi.org/10.9734/ajrcos/2025/v18i6705

Lawoe, J. D. E., Appiah, N. A., & Adom, E. M. (2021). Assessment of Technical Universities' curriculum contributions to sustainable fashion practices in Ghana. *Fashion and Textiles Review*, *3*, 132–141. https://doi.org/10.35738/ftr.v3.2021.08

Liu, Y., Chen, J., Duan, D., Zhang, Z., Liu, C., Cai, W., & Zhao, Z. (2024). Environmental impacts and biological technologies toward sustainable treatment of textile dyeing wastewater: A review. *Sustainability*, *16*(24), Article 10867. https://doi.org/10.3390/su162410867

Majeed, M., Zanu, J. A., & Adabla, G. P. (2019). Small & medium size textile manufacturers in Northern Region: Challenges and the way forward. *Fashion and Textiles Review*, *1*(1), 201–216. https://doi.org/10.35738/ftr.v1.2019.14

McNeill, L., & Moore, R. (2015). Sustainable fashion consumption and the fast fashion conundrum: Fashionable consumers and attitudes to sustainability in clothing choice. *International Journal of Consumer Studies*, *39*(3), 212–222. https://doi.org/10.1111/ijcs.12169

Mensah, L., Bentil, E., Agbekey, B. K., Nkrumah, G., Aidoo, I. A., Oti-Boakye, A., ... Sackey, L. N. A. (2026). Textile waste from fashion shops and imported second-hand clothing in the Greater Kumasi Sub-Region of Ghana: A call for policy change. *Environmental Challenges*, *12*, Article 101435. https://doi.org/10.1016/j.envc.2026.101435

Mensah, R. O., Frimpong, A., Jnr, E. B. A., Acquaye, R., Lamptey, L., & Opoku, D. (2025). A review of the sustainability strategies of Ghana's textile industry through the sociological theory of crime. *African Journal of Applied Research*, *11*(2), 339–366. https://doi.org/10.26437/ajar.v11i2.1040

Morton, S., Pencheon, D., & Squires, N. (2017). Sustainable Development Goals (SDGs), and their implementation: A national global framework for health, development and equity needs a systems approach at every level. *British Medical Bulletin*, *124*(1), 81–90. https://doi.org/10.1093/bmb/ldx031

Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., & Gwilt, A. (2020). The environmental price of fast fashion. *Nature Reviews Earth & Environment*, *1*(4), 189–200. https://doi.org/10.1038/s43017-020-0039-9

Odei, S. A., Odei, M. A., & Toseafa, E. (2023). Determinants of technological and non-technological innovations: Evidence from Ghana's manufacturing and service sectors. *Journal of African Business*, *24*(3), 467–490. https://doi.org/10.1080/15228916.2022.2113209

Opoku, A. (2022). Construction industry and the sustainable development goals (SDGs). In *Research companion to construction economics* (pp. 199–214). Edward Elgar Publishing.

Osei, E. R., & Bosro, F. E. S. (2024). Digital strategies for sustainable fashion: Insights from emerging Ghanaian fashion designers. *Fashion and Textiles Review*, *5*(1), 3–21. https://doi.org/10.35738/ftr.v5.2024.11

Prentice, R. (2023). Writing labour into ethical apparel production: A review of Kanchana N. Ruwanpura's Garments without Guilt? *Singapore Journal of Tropical Geography*, *44*(2). https://doi.org/10.1111/sjtg.12486

Quansah, S., Osei-Bonsu, D. P., Kusi, C. A., & Sai, A. O. (2026). Waste management strategies employed by selected textile firms in Ghana. *Fashion and Textiles Review*, *7*(1), 47–66. https://doi.org/10.35738/ftr.v7.2024.13

Rahaman, M. T., Pranta, A. D., Repon, M. R., Ahmed, M. S., & Islam, T. (2024). Green production and consumption of textiles and apparel: Importance, fabrication, challenges and future prospects. *Journal of Open Innovation: Technology, Market, and Complexity*, *10*(2), Article 100280. https://doi.org/10.1016/j.joitmc.2024.100280

Ramírez, O. A. M., Vivas, D. P., & Páez, G. L. D. (2025). Responsible consumption and production in textile industry: A critical analysis. *Perspectiva Austral*, *3*, Article 3. https://doi.org/10.56294/pa202598

Ramírez-Escamilla, H. G., Martínez-Rodríguez, M. C., Padilla-Rivera, A., Domínguez-Solís, D., & Campos-Villegas, L. E. (2024). Advancing toward sustainability: A systematic review of circular economy strategies in the textile industry. *Recycling*, *9*(5), Article 95. https://doi.org/10.3390/recycling9050095

Rehman, M., Petrillo, A., Ortíz-Barrios, M., Forcina, A., Baffo, I., & De Felice, F. (2024). Sustainable fashion: Mapping waste streams and life cycle management. *Journal of Cleaner Production*, *444Trace*, Article 141279. https://doi.org/10.1016/j.jclepro.2024.141279

Sandaruwan, I. P. T., Waidyasekara, K. G. A. S., & Illankoon, C. (2026). Towards sustainable development: Reducing organisational carbon footprint in textile fabric production. *Corporate Social Responsibility and Environmental Management*, *33*(2), 104–118. https://doi.org/10.1002/csr.70180

Sarpong, D., Ofosu, G., Botchie, D., & Meissner, D. (2024). A phoenix rising? The regeneration of the Ghana garment and textile industry. *Socio-Economic Review*, *22*(1), 81–105. https://doi.org/10.1093/ser/mwad022

Seidu, R. K., Eghan, B., Ofori, E. A., Fobiri, G. K., Afriyie, A. O., & Acquaye, R. (2025). Sustainable traditional natural dyeing practice in Daboya and Ntonso communities of Ghana. *Research Journal of Textile and Apparel*, *29*(2), 270–283. https://doi.org/10.1108/rjta-07-2023-0071

Selase, G. R., Divine, V., Mawuli, Q., & Edem, B. (2021). Waste management by small-scale textile industries in Ghana. *Journal of Chemical, Environmental and Biological Engineering*, *5*(2), 57–64. https://doi.org/10.11648/j.jcebe.20210502.12

Sharpe, S., Retamal, M., & Brydges, T. (2023). Beyond growth: A wellbeing economy for the textile and garment sector. *Public Health Research and Practice*, *33*(2), Article e3322313. https://doi.org/10.17061/phrp3322313

Shibly, M. A. H., & Hoque, M. M. U. (2025). Sustainability challenges of the textile industry. In *Textile industry and the environment: Challenges, recent development and future* (pp. 45–68). IntechOpen. https://doi.org/10.5772/intechopen.100234

Shirvanimoghaddam, K., Motamed, B., Ramakrishna, S., & Naebe, M. (2020). Death by waste: Fashion and textile circular economy case. *Science of the Total Environment*, *718*, Article 137317. https://doi.org/10.1016/j.scitotenv.2020.137317

Siliņa, L., Dāboliņa, I., & Lapkovska, E. (2024). Sustainable textile industry – wishful thinking or the new norm: A review. *Journal of Engineered Fibers and Fabrics*, *19*, Article 15589250231220359. https://doi.org/10.1177/15589250231220359

Stylios, G. K. (2021). Editorial – textile modelling. *International Journal of Clothing Science and Technology*, *33*(5), 681–682. https://doi.org/10.1108/ijcst-09-2021-206

Sumo, P. D. (2024). Textile waste management and recycling opportunities and challenges for Africa: A mini-review. *The Holistic Approach to Environment*, *14*(2), 57–70. https://doi.org/10.33765/thate.14.2.3

Tetteh, C. K. (2024). R&D, innovation and labour productivity: Evidence from the manufacturing sector in Ghana. *Scientific African*, *24*, Article e02136. https://doi.org/10.1016/j.sciaf.2024.e02136

Thakker, A. M., & Sun, D. (2023). Sustainable development goals for textiles and fashion. *Environmental Science and Pollution Research*, *30*(46), 101989–102009. https://doi.org/10.1007/s11356-023-29453-1

van Zanten, J. A., & van Tulder, R. (2021). Towards nexus-based governance: Defining interactions between economic activities and Sustainable Development Goals (SDGs). *International Journal of Sustainable Development & World Ecology*, *28*(3), 210–226. https://doi.org/10.1080/13504509.2020.1768452

Wickramasingha, S. (2023). Geographies of dissociation: Informality, ethical codes and fragmented labour regimes in the Sri Lankan apparel industry. *Journal of Economic Geography*, *23*(6), 1191–1211. https://doi.org/10.1093/jeg/lbad010

Yousaf, A. M., & Aqsa, R. (2023). Integrating circular economy, SBTI, digital LCA, and ESG benchmarks for sustainable textile dyeing: A critical review of industrial textile practices. *Global NEST: The International Journal*, *25*(1), 39–51. https://doi.org/10.30955/gnj.005145

Zanu, J. A. (2023). The performance of the textiles and apparel sector and the challenge of environmental sustainability in Ghana: A qualitative study. *Journal of Education and Practice*, *7*(2), 74–99. https://doi.org/10.47941/jep.1293

Zhang, L., Leung, M. Y., Boriskina, S., & Tao, X. (2023). Advancing life cycle sustainability of textiles through technological innovations. *Nature Sustainability*, *6*(3), 243–253. https://doi.org/10.1038/s41893-022-01004-5