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# Tackling Ghana's Textile-Waste Challenge

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## Executive Summary

The textile industry causes a massive amount of pollution, contributing up to 10 per cent of global greenhouse-gas (GHG) emissions. The industry also generates a huge amount of waste, with clothing either being dumped in landfill or shipped to lower-income countries to be sold, causing environmental, economic and social damage.

This paper looks at Ghana as a case study to explore the challenge of waste in the textile and apparel (T&A) industry and proposes practical solutions. Kantamanto, Ghana's largest second-hand clothing market, and one of the biggest in the world, receives over 15 million articles of used clothing every week. Forty per cent of T&A imports into Ghana end up as waste and is disposed of in already overburdened landfill. This causes severe pollution but also presents the opportunity to build large-scale regeneration and recycling zones in the country, with significant benefits for job creation.

There are challenges to building a circular textile economy, including the high cost of recycled fibres and the current linear system of apparel production which makes it difficult to separate different fibres for commercial recycling. However, recycling technology is improving rapidly and costs are going down. With a large labour force and availability of second-hand clothing usually sorted from a single source, there is a compelling opportunity for transformation through scaled recycling. Wasted textiles can become a useful raw material for environmentally aware retailers, rather than ending up in landfill and adding to the climate crisis.

We suggest seven strategies for public and private stakeholders to maximise the potential for a scaled circular textile economy, transforming this socio-environmental challenge into a transformational manufacturing opportunity:

1. Taking policy action to develop this nascent industry: the government of Ghana could introduce regulations that would incentivise the domestic processing of shredded fibres, ensuring optimal returns to the country.
2. Increase public awareness of climate change, with targeted campaigns to encourage the general population and actors engaged in industrial production to adopt greener practices.
3. Attract investors into the circular textile economy through a proactive, incentive-based and targeted campaign.
4. Invest in the necessary research to develop and scale recycling technologies with the potential to be commercially viable.
5. Fund research and development (R&D) into designing a circular textile economy.
6. Improve the industrial infrastructure base to support successful operationalisation. To be

competitive to global buyers, the entire ecosystem, from production processes to labour efficiency, needs to be further developed.

7. International development agencies can offer technical, financial and procurement support.

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## The Textile and Apparel Industry and the Climate Crisis

The textile and apparel (T&A) industry<sup>1</sup> is the third-largest manufacturing sector globally, generating some \$2.4 trillion of revenue in 2019. More than 300 million people are employed across its entire value chain, including fibre producers, designers, manufacturers, retailers, content providers and many others. The industry has witnessed rapid growth with a doubling of production since 2000, and today we are consuming 60 per cent more clothes than we did 15 years ago. If current consumption patterns persist, clothing use could rise by more than 60 per cent between 2019 and 2029.<sup>2</sup>

However, this growth is accompanied by substantial pollution and environmental impact; in fact, the industry is one of the world's most polluting and waste-generating sectors. Every year, businesses along its value chain use over 93 billion cubic metres of water – equivalent to the water needs of 5 million people. Most of this usage happens in upstream activities such as fabric dyeing and treatment, leading to high levels of waste, estimated at around 20 per cent of global wastewater.

The industry loses around \$500 billion annually, due to lack of recycling and clothes being dumped in landfills: of the total fibre input used for clothing, around 87 per cent is discarded. Globally, that is the equivalent of one rubbish truck of textiles being burned or going into landfill every second. Overall, the sum of these activities is estimated to cause around 10 per cent of annual greenhouse-gas (GHG) emissions, and if this pace of growth continues, the fashion industry's GHG emissions could surge more than 50 per cent by 2030.

### Addressing the Problem

Companies, policymakers and other stakeholders need to find viable and sustainable solutions to transition the industry towards a greener future. Consumers are increasingly demanding that the fashion industry face its environmental, social and governance (ESG) responsibilities. Between 2018 and 2021, the global fashion search engine Lyst saw a 66 per cent hike in searches for sustainable fashion and a 187 per cent increase in page views for sustainable denim brands. The Covid-19 pandemic has also led to an increased interest in climate change and social issues from consumers. A 2020 McKinsey survey on consumer sentiments on sustainability in fashion showed that 67 per cent of respondents from the UK and Germany considered the use of sustainable materials to be an important purchasing factor; 57 per cent reported making substantial changes to their lifestyles to decrease their environmental footprint.

With increasing consumer awareness and demand for more sustainable fashion practices, several brands are turning to more eco-friendly ways of working. [PVH](#), whose brands include Calvin Klein and Tommy Hilfiger, is committed to eliminating all hazardous chemicals and microfibres from water leaving its wet processors by 2025; [Nike](#) has launched “Flyknit” running shoes made entirely from recycled polyester; [Adidas](#) has committed to using only recycled polyester from 2024 onwards, and [The North Face](#) has pledged to ensure that 100 per cent of the materials it most frequently uses for apparel will be recycled, regenerative (that is, using farming practices that draw down carbon from the atmosphere and restore soil health) or renewable by 2025. [Levi Strauss](#) has also committed to using 100 per cent renewable energy in all its facilities and to reducing GHG emissions by 40 per cent throughout its global supply chain by 2025.

As the world works to fight climate change, there is a clear need to adopt more sustainable solutions throughout the fashion value chain to help reach net-zero targets. These solutions include embracing renewable energy, using virgin fibres in place of polyester, applying cleaner textile-dyeing technologies and developing “eco” industrial parks.

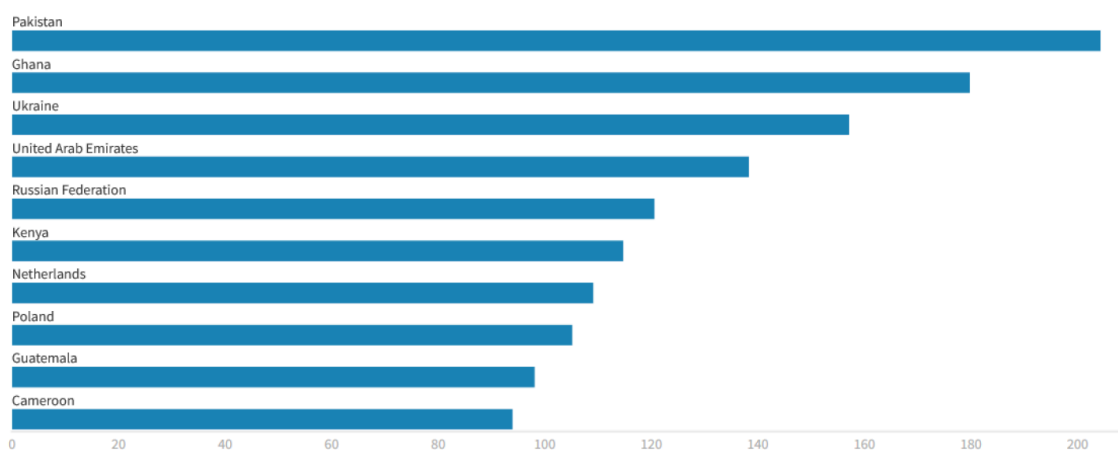
Overconsumption is another cause of waste, particularly in high-income countries. Supported by agile supply chains and technology, retailers feed off of high demand and have shortened production cycles to accommodate it. In some cases, new clothes arrive in stores every few weeks – a dramatic departure from the traditional two fashion seasons.<sup>3</sup> With new designs arriving in stores faster, it has become easier to discard “old” clothes in favour of trendier and cheaper new ones.

Resale of used clothing is one popular solution to the problem of post-consumer fashion waste. The total value of global trade in second-hand clothing exceeded [\\$3.5 billion in 2020](#), with high demand in developing countries for used clothing from the West, including clothing donated to charities in high-income countries. In this model, used clothing re-enters the economy through resale and reuse, which appears, at first glance, to embody the sustainable virtues of a circular T&A economy as clothing remains in use for longer.<sup>4</sup> However, the practice also exports many environmental, social and economic challenges to the recipient countries.

## The Used-Clothing Trade in Ghana

Ghana has a substantial second-hand clothing market. With a global market share of 5.1 per cent and approximately \$180 million in used clothing imports in 2020,<sup>5</sup> the West African country comes second only to Pakistan in global second-hand clothing imports.

**Figure 1 – Value of top 10 countries' second-hand clothing imports in 2020**



Source: TBI using ITC Trade Map data

Containers of second-hand clothing arrive at the Tema port in Ghana every week from across the globe, with the UK the largest supplier. The containers are then driven to Accra's Kantamanto market – the biggest second-hand market in West Africa and one of the biggest in the world – where every Wednesday and Thursday approximately 100 containers, holding around 15 million items, are unpacked. Kantamanto market's retail side alone sits on around seven acres in the centre of the capital, Accra, and includes around 5,000 shops, with roughly 30,000 people working there: retailers, tailors, upcyclers, textile dyers, haulage operators, head porters (known as Kayayeis), food sellers and many others. The import side, which supports all the retail operations, occupies an additional 15 acres. In total, more than 70 per cent of all second-hand clothing imports to Ghana are brought to Kantamanto.

### A Challenge for the Ghanaian Economy

Despite the vibrancy and commercial activity supported by the market, at least 6 million items go to waste every week<sup>6</sup>: some clothes arrive damaged beyond repair, and others are of such low quality that customers have little interest in them. Also, supply outstrips local demand. Ghana has a population of 31 million people, so it is unlikely that all the 30 million garments that arrive every fortnight will be sold.

This means that around 40 per cent of these clothes do not fulfil the mission of the charities and recyclers in high-income countries that collect and export them to Ghana, creating a significant environmental issue.

Textile waste from Kantamanto is disposed of in a few main ways. Some is dumped in already overburdened open landfills following established procedures; according to the Accra Metropolitan Assembly<sup>7</sup> (AMA) team interviewed by the [OR Foundation](#), clothing waste collected from Kantamanto represents the single largest consolidated waste stream in the entire city of Accra, possibly in all of Ghana. The rest are discarded improperly into open drains, where the waste ultimately ends up in the ocean, or sent off to be burned in unofficial dumpsites, the largest of which is along the Korle Lagoon feeding into the Gulf of Guinea.<sup>8</sup>

The waste generated by the market has devastating consequences for the local ecosystem:

- The unofficial dumpsites pose severe health hazards to around 80,000 people who live in nearby slums. Moreover, clothing waste clogs drains, promoting flooding and, therefore, diseases like cholera and malaria. The impact of leached dyes, decaying fibres and microplastics on aquatic life is substantial, and also can impact human health.
- It is environmentally and economically unsustainable for the local ecosystem. Ghana lacks the adequate infrastructure to manage the 40 per cent of imported second-hand clothing that ends up as waste. The underfunded AMA spends hundreds of thousands of dollars every year to dispose of this waste. Moreover, there have been cases of landfill explosions caused by methane build-up from dumped second-hand clothing which impacts the moisture- and bulk-density of these disposal sites.
- It stifles the local T&A manufacturing industry. Local textile manufacturers and clothing makers cannot compete with these cheaper second-hand clothes, threatening the survival of a domestic industry that has already struggled to be competitive in the global apparel trade following the termination of WTO's Multifibre Arrangement in 2005.

## What Can Be Done?

There is a way to turn this into an economic opportunity for Ghana. The circular economy provides substantial economic and environmental benefits, helping to reduce the industry's carbon footprint. For instance, the Ellen MacArthur Foundation and McKinsey estimate that recycling apparel and doubling the number of times each item is worn could lower [GHG emissions from the industry by as much as 44 per cent on average](#). Exploring ways to recycle at scale the 40 per cent of textile waste from the Kantamanto market would not only help tackle the pollution crisis but also create jobs and raise incomes. Exploring this opportunity in Ghana is critical for at least three reasons:

- There is a [growing market for recycled fibres](#) that is likely to increase in the coming years. As



previously mentioned, due to the push towards greener fashion-industry practices, more international brands are pivoting to the use of recycled and regenerative virgin fibres in their production processes. Post-consumer textile waste can also be reused for other products like insulation, mattress filling and even pavement blocks. The future of fashion is sustainability, and there is economic incentive to further exploit this. Private and public actors who anticipate the industry's future demands and take steps towards sustainability now will be tomorrow's winners.

- This could revitalise Ghana's T&A industry and grow the economy. Large-scale textile recycling would help build a new ecosystem around fashion waste, creating thousands of jobs along the formal and informal value chain. With over 60 per cent of Africa's cotton produced in West Africa, accounting for some 15 per cent of world exports, there is immense opportunity to rebrand by combining virgin fibres with recovered materials to create new recycled fibres. This, combined with the abundance of sustainable natural fibres derived from hemp, coconut, pineapples, bananas and other plants, as well as man-made cellulose, <sup>9</sup> offers immense scope for transformation using locally sourced natural fibres that are kinder to the environment compared to synthetic fibres derived from fossil fuels. <sup>10</sup> Local manufacturers can increasingly make use of these more sustainable fibres and, in concert with other greener production methods, become more attractive to international buyers looking for sustainable apparel suppliers.
- There is a transformational opportunity for the government of Ghana to rebrand the country as a circular T&A manufacturing hub, helping to attract direct foreign investment into local industry and facilitate job creation for a significant share of unemployed youth and new entrants to the labour market. Moreover, there are many small-scale recyclers already engaged in the used-clothing trade today who can be recruited to support larger-scale, more sustainable recycling initiatives.

## Challenges to Developing a Circular T&A Sector

While the case for recycling fibres and materials from used clothing is compelling, a solution at the industrial scale will not be straightforward. Currently, recycling remains very low in the global T&A industry. According to the Changing Markets Foundation, only 12 per cent of post-use clothing is sent for "cascaded recycling" – or downcycling – to applications of lower value, such as building insulation, cleaning rags and carpet padding. Recent estimates of the percentage of fibre-to-fibre recycling currently range from 1 per cent to as little as 0.1 per cent. Many factors account for this, including the higher cost of recycled fibres, compared to natural and synthetic virgin fibres.

Further, the current linear system of apparel production usually blends different fibres, making them extremely difficult to separate for commercial recycling. Many countries do not have systems in place to collect and sort clothes for recycling at scale. This has resulted in very few commercially viable fibre-to-fibre recycling processes available in the world today. However, it is important to highlight that innovation is increasing at speed and recycling technologies are becoming more readily available with potential to scale.

## How Can Ghana Maximise the Potential for a Circular T&A Economy?

There is a significant role for different actors to advance this ambitious agenda and build a circular T&A sector in Ghana. Collaboration between private and public actors will be key to ensuring the availability of resources and other factors needed for scalable solutions. We offer some high-level proposals for the way forward:

- Taking policy action to develop this nascent industry: the government of Ghana could introduce regulations that would incentivise the domestic processing of shredded-up fibres, ensuring optimal returns to the country from this niche market. There is a risk that after the labour-intensive separation and shredding of textile waste has been completed locally, the waste is then shipped to other parts of the world with more advanced technologies to complete the recycling process. Taking steps to discourage this from happening would incentivise importing recycling technologies to Ghana while also encouraging innovation in the local ecosystem. Several countries are introducing legislation that places their T&A industries on a more sustainable track, propelling a shift towards a more circular economy. Examples include the Dutch government's Agreement on Sustainable Garments and Textiles, Germany's Partnership for Sustainable Textiles and the European Union's Green Deal. In the same way, the government of Ghana's support and facilitation with appropriate policy instruments would help bolster laudable initiatives to develop the domestic circular textile sector.
- Attract investors into the circular textile economy through a proactive and targeted campaign. This would serve to demonstrate the government's strategic vision for the growth of an environmentally sustainable T&A industry. Suggested actions might include offering tax benefits on both local and foreign initiatives bringing recycling machinery and processes into the country. This could be modelled on the current export-processing-zone programme but designed to suit the particular needs of the nascent T&A industry.
- Facilitate peer exchange and learning through study tours to other pioneer regions for manufacturers and representatives of government.
- Increase public awareness of climate change, with targeted campaigns to encourage the general population and actors engaged in industrial production to adopt greener practices. The Ghanaian culture has traditionally been circular with a strong focus on zero waste. A return to these practices through raising awareness and incentivising greener initiatives would be a step in the right direction.
- Invest in the necessary research to develop and scale recycling technologies with the potential to be commercially viable. This is critical as technology and research are foundational to shifting the fashion industry towards more sustainable practices, driven by both the public and private actors. Moreover, further studies into natural dyes and technologies that use significantly less water (or none) to dye recycled textiles are vital. The OR Foundation, a US and Ghana registered charity, has

recently commissioned a decomposition study and developed a circularity lab project aimed at finding solutions to the waste challenge. Initiatives in other parts of the world include Ashoka's partnership with the C&A Foundation's global Fabric of Change programme, and Fashion for Good, which support innovation throughout the T&A production cycle. Worn Again is an example of a successful large-scale post-consumer textile recycling initiative.

- Fund research and development (R&D) into designing a circular textile economy: stakeholders, including government, innovators, local manufacturers and NGOs can explore applying to climate funds. BCG and Fashion for Good estimate there is a financing opportunity of \$20 billion to \$30 billion per annum to be directed towards the development of disruptive technologies and business models to achieve a step change in sustainability by 2030. This would not be limited to the end-of-life of products already in circulation but would be expanded into introducing innovations during the design process that allow for easier repurposing and reuse later. Financing will be easier to secure into the industry if all stakeholders come together to improve conditions that promote manageable risk, attractive returns and measurable impact.
- Improve the industrial infrastructure base to support successful operationalisation. To be competitive to global buyers, the entire ecosystem, from productive processes to labour efficiency, needs to be further developed. The establishment of industrial parks and other processing locations for manufacturing must be geared towards providing eco-friendly features like cost-competitive renewable-energy sources such as hydro and solar, and improved processes such as zero-hazardous-waste discharge to meet industry's needs. Several private industrial enclave developers in Ghana are already working to meet these climate-friendly targets. Examples include LMI Holdings' 2,700-acre Dawa Industrial Zone Enclave (25 kilometres from Ghana's Tema industrial city), the Westpark 70-acre development in the country's western region and Akosombo Textile Ltd.'s (ATL) 70-acre enclave located within the country's garment triangle in Akosombo.
- The private sector should consider sustainability not only as a component of corporate social responsibility (CSR) for brands and other industry actors but also as a revenue generator. Brands could support this by placing orders from innovators pioneering circular textile technologies and strategically invest in projects promoting circularity in the domestic T&A sector.
- International Development Agencies can offer technical, financial and procurement support. Ongoing initiatives like GIZ's Ghana Apparel, aimed at training a high-quality labour force for the T&A industry, need to be sustained and scaled to develop the necessary skills base to support an expanded T&A sector. Other notable examples include the United Kingdom's Foreign, Commonwealth and Development Office's (FCDO) technical support to the government of Ghana to assist with T&A sector development and investment facilitation.

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Special thanks to Liz Ricketts, co-founder of OR Foundation for granting us interviews and sharing information her team collected from the Kantamanto ecosystem.

*Chart created with Flourish.*

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## Footnotes

1. ^ In this paper, we broadly define “textile and apparel” (T&A) to include all the actors working along the fashion industry’s textile, apparel, footwear and leather supply chains, including design, manufacturing, distribution, marketing, retailing, advertising and all types of promotion.
  2. ^ Ellen MacArthur Foundation research. Similarly, [Statista](#) estimates that demand for clothing may grow by 63 per cent in some emerging markets over the next ten years.
  3. ^ Or more recently four times, that is, Spring/Summer, Autumn/Winter, Resort, and pre-Fall.
  4. ^ Our Climate Change and Economic Transformation in Africa paper expands on the circular economy model, which is essentially [built on three principles all driven by design: eliminating waste and pollution, keeping products and materials in use, and regenerating natural systems](#).
  5. ^ According to ITC’s Trade Map analysis, while total annual import figures fell by 6 per cent for Pakistan between 2016 and 2020, Ghana’s grew by 8 per cent in the same period, signalling a trend that began even before the Covid-19 pandemic.
  6. ^ Primary research carried out by OR Foundation.
  7. ^ Accra Metropolitan Assembly (AMA) is the political and administrative authority for the city of Accra.
  8. ^ Research by Liz Ricketts, co-founder of OR Foundation.
  9. ^ These are regenerated fibres made from the dissolved wood pulp (“cellulose”) of trees. Examples include viscose, lyocell, acetate and modal, etc.
  10. ^ The carbon footprint of a single polyester shirt is 5.5 kilograms compared to 2.1 kilograms for a cotton shirt. This is reported by UK Parliament Environmental Audit Committee (2019) Fixing fashion: Clothing consumption and sustainability [ONLINE] Available at: <https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/1952/full-report>.
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