



SUSTAINABILITY & CLIMATE RISKS

THOUGHT LEADERSHIP BRIEF SERIES

Can Public Policies Help Save Garment Disposals from Landfills?

Winnie Lo and Masaru Yarime

KEY POINTS



- ▶ Existing regulatory interventions have not effectively reduced landfill disposals. There is a significant lack of textile-to-textile recycling capacity globally.
- ▶ The lack of standardized definitions for disposed textiles and complicated waste management hinders effective recycling efforts. Additionally, bureaucratic complexities, cross-border trade issues, and gaps in data traceability further impede effective recycling measures.
- ▶ Governments should cultivate a supportive recycling environment through funding, education, data infrastructure, and regulatory support. Some governments have implemented extended producer responsibility (EPR) for producer accountability.
- ▶ The digital product passport (DPP) proposed by the EU will enhance data traceability, potentially transforming the garment supply chain globally.

ISSUE

When shoppers discard unwanted clothes or fashion operators dispose of off-season deadstock, the handling of these disposals leads to vastly different outcomes. Properly managed, one person's disposal can become another's treasure; improperly handled, vast amounts of garments become waste, occupying landfills and incurring high social costs.

In '[Part 1 - Why are Disposal Garments Still Found in Landfills?](#)' we explored the challenges facing businesses and consumers in pursuing circular fashion. Despite some stakeholders attempting to adopt green practices, there is a notable lack of significant textile-to-textile recycling capacity globally. The ongoing disposal of garments in landfills suggests that existing interventions by regulatory bodies are not effective enough.

Photography by Tom Fisk on Pexels



ASSESSMENT

Governments encounter numerous hurdles regarding garment disposal handling and recycling.

Non-Standardized Waste Management

Historically, governments have overlooked textiles in municipal waste management regulations due to varying definitions of disposed textiles. For example, various European countries classify discarded textiles differently based on specific collection methods or locations (Fig. 1). Compounding this issue is the significant role of the non-profit and informal sectors in collecting and handling garment disposals, labeling the disposals as ‘donated’ or ‘resold.’ The value generated from these activities is not included in official textile or waste data. Without accurate records, brands, collectors, recyclers, and waste managers struggle to invest in recycling process management and R&D, while governments find it challenging to facilitate the necessary recycling infrastructure and resources.

Figure 1: Definitions of disposed textiles among European countries

	Door-to-door	Bring point	Civic amenity site	In-store collection	Donation
Iceland	●	●	●	●	●
Slovakia	Considered as waste after sorting		●	Considered as waste after sorting	
Sweden	●	●	●	●	In person
Czechia	●	●	●	●	●
Austria / Luxembourg	●	●	●	●	●
Denmark	●	●	●	●	●
Portugal	●	●	●	●	●
Belgium / Estonia / Germany / Italy / Latvia	●	●	●	●	●
Finland	Excluding collection by charity organizations and reuse centers				●
Lithuania	Excluding collection by charity organizations				●
Romania	Disposer has the intention to throw away				●
Croatia / Cyprus / Netherlands / Poland	●	●	●	●	●
France	Considered as textile product after first sorting; Considered as waste after over-sorting				●
Slovenia	●	●	●	●	●

- Waste
- Textile product
- Not specified
- Depends on communication
- Considered as textile waste when sent for recycling

Source: European Environment Agency, ETC CE Report 2024/5, redrawn by the author

Local Regulatory Barriers

Bureaucratic complexities, ambiguous governmental directives, and regulatory inertia hinder the adoption of innovative recycling models. Industry pioneers face challenges in securing funding and navigating local regulatory landscapes.

For instance, the complexity of material variants and unclear guidelines necessitate significant process modifications and regulatory approval. High costs associated with obtaining government sustainability certifications hinder widespread adoption, highlighting the need for accessible certification mechanisms. The imposition of sales taxes on second-hand goods or recycled textiles, alongside taxes on virgin pieces, remains contentious.

Cross-Border Trade and Policy Coordination

To a certain extent, investing in regional recycling and reselling capabilities can foster economic development and job opportunities in importing countries. However, variations in national and regional definitions of ‘products’ and ‘wastes’ contribute to a fragmented reporting landscape, hampering accurate tracking of import and export data. The complex material flows within the textile waste stream and the lack of transparency in global material flows complicate waste management on an international scale. Furthermore, the informal garment disposal trade raises issues related to worker safety, pollution and inequity. Illegal trade undermines regulatory efforts, complicates material flow tracking, hinders optimal materials recovery, disrupts reverse cycles, and poses significant environmental risks.

Gaps in Data Traceability

While commodity codes offer some traceability for traded textile products, gaps persist in cross-border trade, leading to an unclear understanding of the trade’s magnitude. Existing reporting mechanisms for garment disposal exports and donated garments are fragmented, impeding the establishment of comprehensive infrastructure strategies. This lack of clarity also complicates the collection and distribution of garments globally. A revised Harmonized Commodity Description and Coding System (Harmonized System, HS) with updated codes specifically for used textiles and textile wastes is important to streamline reporting, enhance transparency, and facilitate customs clearance and tariff collection.



Discussion

After assessing the challenges faced by stakeholders in Part 1 and the governments in the previous sections, it is evident that the root causes of garment disposals ending up in landfills are multifaceted. To bridge the talk-action gap, governments play a crucial role in steering recycling practices in the fashion industry.

One of the primary bottlenecks hindering textile recycling is the lack of universally accepted definitions of textile wastes. Standardized and reliable reporting is crucial for mapping global material flows in the textile industry. Governments have to establish sustainable directives to shape the operational environment and data monitoring mechanism in the textile industry (Fig. 2). Some countries have formulated some specific rules to address the data challenges.

Figure 2: Governments' initiatives on fostering circular fashion

Data management and standardization
<ul style="list-style-type: none"> Aligning the definition of textile disposals and waste management Standardizing industry practices Establishing robust data management systems Working with non-profit organizations to capture donation data
Regulatory supports
<ul style="list-style-type: none"> Enacting stringent regulations that govern international trade of garment disposals Considering measures such as waiving sales taxes on second-hand goods, mandating recycling practices, and offering land incentives Enhancing tendering mechanism for municipal waste management and garments disposal collection, sortation and management
Infrastructure with technological applications
<ul style="list-style-type: none"> Facilitating smart textile collection box systems or kiosks in the community with AI identification of discarded garment details Coordinating private sectors in developing a pooling system for garment disposal collection with land support

Extended Producer Responsibility

To shift the responsibility for managing product waste to the manufacturers, importers, and distributors, many countries have pursued Extended Producer Responsibility (EPR) regulations (Fig 3). The EPR initiative is crucial for promoting sustainable waste management practices and encouraging producers to take greater responsibility for

their products. Currently, producer responsibility ends at the point of export under EPR requirements, while extending the geographical scope remains controversial, with voluntary implementation being tested in practice.

Figure 3: EPR programs

EU	<p>In the EU, the implementation of EPR programs has evolved over the past few decades, with various launch dates among member states. As of mid-2024, the EPR scheme for textiles was mandated only in France, Hungary and the Netherlands, while some regions in Belgium adopted it voluntarily. The ERP initiatives aim to encourage producers to design more sustainable products, promote waste prevention measures, and improve waste collection and recycling processes. EPR initiatives aim to reduce the environmental impact of the industry and promote a more circular approach to textile production and consumption.</p>
China	<p>China has implemented EPR programs for specific product categories since 2017. However, the program has yet to apply to the textile and garment industries. Even so, in 2022, the National Development and Reform Commission, alongside other ministries, jointly issued the <i>Implementation Opinion on Accelerating the Recycling of Waste Textiles</i>, focusing on the production, recycling, and comprehensive utilization of waste textiles. By 2025, China aims to establish a preliminary waste textile recycling system with a 25% recycling rate and production of 2 million tons of regenerated textile fibers.</p>
US	<p>In the US, EPR schemes have been established for various products across several states, with California signing the first EPR textile, apparel, and footwear recycling program into law in September 2024. The law mandates producers to create a producer responsibility organization for managing product lifecycles, including repair, recycle, and reuse. The initiative aims to reduce textile waste and combat the environmental impacts of fast fashion. Covered products include a wide range of apparel items, accessories, and textiles, with non-compliance resulting in penalties of up to US\$50,000 per day.</p>

Digital Product Passport

To address data traceability concerns, the European Commission has proposed the digital product passport (DPP) as a solution for overseeing cross-border trade and product life cycles. The DPP will become mandatory for garments in 2026/27, potentially transforming the garment supply chain not only in the EU but globally.



The DPP aims to enhance transparency from brand to product by disclosing information about specific goods and their manufacturing processes beyond the brand level. The DPP is expected to include information such as technical performance, materials, origins, lifecycle environmental impacts, and end-of-life treatment, allowing stakeholders along the value chain to make decisions regarding sustainability and regulatory compliance.

CONCLUSION

As we envision a future where clothing retains value until its intended end-of-life, ongoing research should explore innovative circular fashion business models with the aid of improved data traceability. It is

noteworthy that while branded fashion often dominates the discussion, the rise of white-labelled products, particularly in e-commerce, significantly contributes to waste. Governments and the commercial sector should explore avenues for recycling returned goods from the digital fashion landscape to mitigate waste accumulation and enhance garment utilization rates. Stakeholders should also invest in developing recycling technologies tailored for textiles and design-for-recycling principles. The collective efforts would catalyze a shift towards a more sustainable and circular fashion industry, fostering innovation, accountability, and collaboration for a greener future.



Winnie Lo is currently a part-time PhD student at the Division of Public Policy at HKUST, focusing her research on the circular economy. She believes embracing a circular model in any market requires collaboration among and support from communities, businesses, and governments. Her goal is to bridge the gap between the stakeholders along supply chains by conducting research that sheds light on the benefits and challenges of circular economy practices.

Besides, she serves as a full-time researcher at HKUST Li & Fung Supply Chain Institute. Her major research areas cover China's innovative business models, cross-border e-commerce, logistics, and supply chain. She has published a book, named 'Supply Chain Management – The Fung Group Experience (Chinese only, over 300 pages)' in 2021. She has also contributed chapters with the theme of China's retail logistics to the 'Blue Book of China's Commercial Sector' published by the Chinese Academy of Social Sciences.



Masaru Yarime is Associate Professor at the Division of Public Policy and Co-Director of the AI Ethics and Governance Lab at HKUST. He has appointments as Visiting Associate Professor at the Graduate School of Public Policy at the University of Tokyo and Honorary Associate Professor at the Department of Science, Technology, Engineering, and Public Policy at University College London. He is exploring data-driven innovation such as AI, IoT, blockchain, and smart cities for sustainability and implications for public policy and governance. He serves on the editorial board of international journals, including Sustainability Science, Environmental Science and Policy, Environmental Innovation and Societal Transitions, Frontiers in Sustainable Cities - Innovation and Governance, and Data & Policy. He received a B.Eng. and M.S. in Chemical Engineering at the University of Tokyo and California Institute of Technology, respectively, and a Ph.D. in Economics and Policy Studies of Innovation and Technological Change at Maastricht University.

Read all HKUST IEMS
Thought Leadership Briefs
at <http://iems.ust.hk/tlb>



T: (852) 3469 2215
E: iems@ust.hk
W: <http://iems.ust.hk>
A: Lo Ka Chung Building, The Hong Kong University
of Science and Technology, Clear Water Bay, Kowloon

With Support from

