

# SORTING FOR CIRCULARITY **PROJECT REWEAR**



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# ABOUT US

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**Fashion for Good** unites the entire fashion ecosystem—brands, retailers, suppliers, innovators, and funders—to foster collaboration and spearhead change towards a regenerative industry. At its core, Fashion for Good empowers groundbreaking innovators on their journey to scale, offering hands-on support, access to capital, and a rich network of experts. This accelerates the introduction of the most impactful innovations to the market, driving significant systemic change.

This transformative work is made possible by the support of Laudes Foundation, co-founder William McDonough and corporate partners, adidas, Arvind Limited, BESTSELLER, Birla Cellulose, C&A, CHANEL, Inditex, Levi Strauss & Co., Norrøna, ON, Otto Group, Paradise Textiles, PDS Limited, PVH Corp., Ralph Lauren, Reformation, Shahi Exports, Target, Teijin Frontier, and Zalando.



**Circle Economy** is driving the transition to a new economy by helping businesses, cities, and nations leverage business opportunities, reduce costs, create jobs and inspire behavioural change. As a global impact organisation, our international team equips business leaders and policymakers with the insights, strategies, and tools to turn circular ambition into action. Since 2014, Circle Economy's Textiles Programme cultivates a fair and regenerative textile industry by empowering the value chain stakeholders and communities to collectively reimagine and redesign our systems.

# PROJECT PARTNERS



**THE REVIVAL**  
UPCYCLE CULTURE

**Artfiction** is a creative consultancy founded and led by Eric Agyare, dedicated to addressing social, economic, and environmental challenges through a combination of research, policy dialogue, and innovative creative solutions.

One of Artfiction's key collaborations is with **The Revival**, a community-driven initiative tackling the growing textile waste crisis in Ghana. Together, they focus on sustainable practices that blend advocacy, education, and practical action.

Based in Accra's Kantamanto Market—the heart of Ghana's secondhand clothing trade—The Revival is committed to transforming the fashion ecosystem from the ground up. By upcycling discarded garments and promoting circular fashion practices, The Revival creates economic opportunities for youth and women while raising awareness about the environmental impact of global fashion waste.

Through this partnership, Artfiction and The Revival Earth aim to build a more resilient, equitable, and sustainable fashion future—starting at the community level and extending globally.

**Artfiction** (led by Eric Agyare) served as the Ghana lead researcher for the study. **The Revival** (led by Yayra Agbofah) was the lead collaborator in Ghana.



**Knowtex** is a multistakeholder consortium bringing together universities, industry, and government sector organisations to advance textile research for socio-economic impact in Pakistan.

**The National Textile University (NTU)**, is Pakistan's premier institution for textile education, research and innovation. Established in 1959, it plays a vital role in advancing the country's textile and apparel sector through specialised academic programmes, industry collaborations, and its commitment to technological progress and sustainable development.

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# EXECUTIVE SUMMARY

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Project Rewear investigates diverse economies of Rewear as a global practice of circularity. The study brings forward new data from a wide range of stakeholders to illustrate the multiple realities, tensions, and provides more granularity to the potentialities within Rewear innovation and Rewear ecosystems.

## The Challenge

The fashion industry is built on a take-make-waste model that drives environmental extraction and exploitation at scale. Today, only 0.3% of materials are kept in circulation, while over 92 million tonnes of textiles are discarded annually.<sup>1</sup> In this context, Rewear economies cover reuse, repair, upcycling and other practices, all of which can contribute to multiple environmental, social, and economic benefits thanks to actors that enable clothing to remain in circulation. Yet without more targeted interventions at different parts of the value chain to strengthen waste management infrastructure, and rebalance global trade, Rewear risks functioning as a parallel market rather than acting as a circular counterbalance to solve fashion's waste problem.

## The State of Rewear in Europe

Our analysis of 8,280 garments across four EU countries shows a fragmented, trend-driven Rewear market, where perceived desirability often outweighs actual quality in determining resale value. Most garments were technically rewearable, 37% had no damage, and 41% had only minor flaws, but simple value-adds like cleaning or repairs are rarely performed, largely because the costs outweigh the potential profit. Beyond economic constraints, a lack of preparation for reuse reflects broader gaps in skills and infrastructure. Renewal activities like cleaning, depilling, repairs and restoration require dedicated skillset, resources, space, and technology. Many operators, particularly non-profits, are unable to prioritise or strategise around this activity at scale and even when preparation for reuse occurs it tends to be marginal compared to the overall volumes being processed.

Rewear businesses and non-profit operators face multiple challenges. Demand is volatile, and only a small share of garments (the top 5–10%) command premium prices. Consumer expectations are shaped by the artificially low cost of new clothing, while operational costs for logistics, authentication, and other services remain high. While there is a well-established and diversifying ecosystem of charities, social enterprises, resale platforms, and repair providers, the viability of these efforts is variable. Some repair and rental startups see success and growth, while others struggle to turn a profit.

**In short, this report affirms that Europe has abundant technically rewearable stock and growing infrastructure, as well as a proactive and comparatively progressive policy environment. Yet without additional policy and market shifts that reward preparation-for-reuse and counter fashion's price pressures, most garments will never realise their Rewear potential.** One possible opportunity for more synergy is in the new EU-wide textiles Extended Producer Responsibility (EPR). The revised Waste Framework Directive entered into force on the 16th October 2025, making EPR mandatory for textiles and footwear. EPR fees will be modulated, which could in principle help to allay some of these market failures.

## The Global Picture: Ghana and Pakistan

Rewear economies in Ghana and Pakistan reveal both scale and complexity of global secondhand clothing flows. Accra's Kantamanto Market, where it is estimated that around 15 million garments arrive weekly, functions as a genuinely circular economy, with a dynamic ecosystem of traders, upcyclers, repairers, and other actors who divert vast quantities of textile waste from landfill or spilling into the environment. Yet the sheer volumes and the fact that many garments arrive damaged despite being imported as 'rewearable'<sup>2</sup>, cause financial risks and waste management burdens disproportionate to capacity and social protection of local actors.

Pakistan plays a different, but equally important, role in the global used textiles system. The country has become a hub for sorting, re-export, and recycling, importing over 800,000 tonnes annually and employing tens of thousands, especially in the Karachi Export Processing Zone. Large volumes are then re-exported, mainly to East Africa, with smaller shares entering local reuse markets and a recycling sector. **Together, these case studies show that Rewear economies can operate and sustain livelihoods at scale as part of global trade systems, however are embedded in deep-rooted inequalities. This underscores the urgent need for fairer, and better-resourced systems that consider all actors and communities involved.**

## Piloting Rewear Innovation: New Potentials and Lessons Learned

Three distinct pilots were completed within the Rewear project, each aiming to address current limitations preventing Rewear economies from scaling: incomplete business case rationale, repairs on low and medium value items and lastly, most efficient sorting for Rewear. Save Your Wardrobe created an open source Aftersales Diagnostics Tool that helps brands identify the most strategic opportunities within care and repair, by outlining two out of seven most applicable cost-saving or revenue driving scenarios. United Repair Centre, teamed up with Kringloopwinkel and Modare to divert 164 pieces from middle to low value export, towards higher value European second hand market through repairs and creative repairs calculating the value increase. Lastly, reverse.fashion developed and piloted AI-enabled solutions for capturing maximum value, most efficiently at the sorting stage.

## A Call to Action

Analysing both EU-based and export destination Rewear economies through environmental, economic, and justice-oriented lenses, this report highlights how the transformative potential of Rewear depends on enablers such as policy support, market incentives, technologies, and cultural shifts. Realising this potential will require multi-tiered interventions across the value chain. Key roles for stakeholders include:



**Brands and retailers:** Design products with Rewear in mind where appropriate, taking a proactive approach to engaging with and learning from end-of-use actors to refine design criteria. Embed Rewear as a core business objective with measurable targets, such as increasing the share of overall revenue from rewear and repair. This approach can enable brands to gradually downscale new production while driving the systemic transformation needed for a truly circular fashion system.



**Social circular enterprises and charities:** Non-profit actors have long played a central role in Rewear ecosystems, with missions primarily focused on social outcomes and Rewear revenues supporting broader activities. However, new regulations and shifting market dynamics are requiring these actors to take on more operational and strategic roles within downstream circular value chains. They may need to redefine their value proposition to position themselves and their impact in circular textiles systems.



**Policymakers:** Rebalance market incentives in a landscape that currently favours cheap new clothing. This could include removing subsidies that privilege virgin material production and supporting repair and reuse actors (for example, through VAT exemptions), and by designing immanent EPR schemes in a way that supports widespread impact with eco-modulated fees allocated to all actors across the reverse supply chain (not just collection, sorting and recycling but also reuse and preparation for reuse.)



**Investors and financial institutions:** Integrate resource risks into oversight and decision-making, enabling the recognition and valuation of Rewear business models and supporting long-term market shifts.

Ultimately, this report contends that Rewear can only be transformative if paired with measures that constrain overproduction and promote global equity. Scaling Rewear alone, without reducing new clothing production, will have limited to no impact. But under the right conditions, businesses, governments, the financial sector, social enterprises, communities and charities can mobilise collectively to effectively mobilise Rewear as a viable alternative to linear consumption. This type of transformation requires economy and society wide changes: the changes and outcomes desired will not be achieved with tweaks and interventions at the margins of the existing system. An overhaul of existing norms around what is valued, incentivised, and prioritised is needed - the extent of this change requires deep cultural shifts as well as economic ones...



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# INTRODUCTION

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## THE COST OF THE CURRENT FASHION SYSTEM

The human and environmental costs of today's fashion system are well-known.<sup>3 4 5</sup> The fast fashion model runs on an accelerated 'take-make-waste' cycle, which while highly profitable is deeply entwined with resource depletion and exploitation.<sup>6 7 8</sup> Although data is scarce, some estimates suggest that less than 2% of garment workers make a living wage,<sup>9</sup> with women and marginalised groups—58–80% of the workforce—the most affected.<sup>10</sup> The textiles industry is responsible for 2–8% of global greenhouse gas (GHG) emissions,<sup>11</sup> uses around 15,000 chemicals,<sup>12</sup> consume 215 trillion litres of water annually, and contribute roughly 9% of global microplastic pollution.<sup>13</sup>

Despite brands' sustainability pledges, just 0.3% of materials are kept in use or recovered through circular practices.<sup>14</sup> Production is surging, with clothing consumption projected to rise 63% between 2015 and 2030.<sup>15</sup> While exact outputs are rarely disclosed,<sup>16 17</sup> estimates suggest 100–150 billion garments are produced each year, with up to 30% never being sold.<sup>18</sup> This overproduction drives intensive waste generation: about 92 million tonnes of textiles are discarded annually,<sup>19</sup> with 61.4% landfilled or incinerated, 6.3% recycled, and only 8% reused.<sup>20</sup>

Against the backdrop of fashion's growing waste crisis, extending the life of garments through Rewear is gaining recognition as a critical strategy. The EU Strategy for Sustainable and Circular Textiles identifies reuse and Rewear as essential interventions, yet they remain under-prioritised and under-funded compared to recycling and ecodesign. Strengthening Rewear systems is vital for building a genuinely sustainable and inclusive, circular fashion future—a goal at the heart of this report.

### The rise of 'ultra-fast fashion': Accelerating the challenge

Ultra-fast fashion represents a sharp escalation of the industry's growth model, with business structures built on real-time trend responsiveness, ultra-low prices, and algorithm-driven marketing. The scale is unprecedented: in April 2022, H&M had added 4,414 new styles to its website (and Boohoo 18,343.) Meanwhile, Shein had already introduced 314,877. Shein has since become the world's largest apparel retailer (2023–2024) and the most Googled brand globally, overtaking Nike and adidas. Such relentless product turnover undermines the potential impact of downstream circular strategies like Rewear. Without upstream measures to slow down production, Rewear becomes a parallel market that coexists with, rather than counters, the environmental damage of fast and ultra-fast fashion.

## WHAT IS REWEAR?

As an informal practice, rewear has been around as long as clothes have been worn. The collection, sorting and trading of discarded clothing as a more formal business and trade goes back to around 1850.<sup>21</sup> In this report, 'reuse' refers specifically to using clothes again, while 'Rewear' encompasses a broader set of activities that extend garment lifetime, including: secondhand and vintage shopping; borrowing; flea markets; rental; clothing libraries; swaps; as well as upcycling; repair; and enabling logistics. Over time, secondhand clothing markets have been shaped by shifting social meanings, economic inequalities, and colonial histories.<sup>22 23</sup> Today, rewear offers both affordability and an ethical choice for consumers, drawing new actors, from brands to innovators, into the market. Yet, most rewear occurs far from the point of product consumption and disposal. Around 25% of the EU's separately collected textiles are exported—roughly 46% to Africa and 41% to Asia.<sup>24</sup> While these items often find a second and third life, they are also at some point discarded in these destination countries,

shifting the environmental and social costs of European overconsumption to communities with minimal waste infrastructure available who have played little to no part in creating the problem.

Recognising Rewear as a circular practice, and a part of global economy, *Sorting for Circularity: Project Rewear* examines the present and future of Rewear in the EU, Ghana, and Pakistan. Exploring what, where, and how clothing is reworn, this report questions how Rewear contributes to a more sustainable fashion and proposes system-level interventions required to realise this potential.

## REWEAR ACROSS UNEVEN GEOGRAPHIES

The scale of the secondhand clothing export economy is vast, with a net movement of discarded textiles from high-income, high-consumption countries towards low-income and low-consumption countries around the world. The scale of exports has surged dramatically. EU exports of used textiles have tripled since 2000, rising from just over 550,000 tonnes to nearly 1.7 million tonnes in 2023.<sup>25</sup> Actors in this globalised Rewear value chain include consumers, collectors, sorters, traders, middlemen, retailers, regulators, and others—each with distinct interests, incentives, and power. As a result, media, policy, industry and cultural perspectives on Rewear differ, and often the most popular representations and opinions simplify the social, environmental and economic impacts and the complex co-existence of jobs, innovation, and systemic injustices.

### Textiles exports on a global market

Textiles intended for Rewear are exported under product code HS 6309 ('worn clothing and other worn articles') in the Combined Nomenclature system,<sup>26 27</sup> while waste is classified under HS 6310 ('used rags, sorted or unsorted textile waste'). In practice, items exported under HS 6309 are often market surplus, poor quality or culturally misaligned. Exporters may avoid using the HS 6310 code because of stricter regulations on waste shipments, classifying both reusable and non-reusable textiles under HS 6309.<sup>28</sup> As the case studies in this report will illustrate, items exported under HS 6309 frequently include market surplus, poor-quality garments, and items that are culturally misaligned with destination markets, rendering them effectively unsellable on arrival. Misclassification obscures the true composition of exports and limits the ability of receiving countries to anticipate or manage incoming waste volumes.

The problem is compounded by inconsistent enforcement. Customs authorities in exporting countries rarely have the capacity or mandate to inspect bale contents, and declarations rely largely on self-reporting by exporters. As a result, the data underpinning global trade statistics for secondhand clothing may significantly underrepresent the proportion that constitutes waste, distorting both policy debates and corporate sustainability claims built on resale and rewear narratives.

On the one hand, the global secondhand clothing trade supports a wide range of jobs in both exporting and importing countries, from sorters and traders to market retailers, tailors and transporters. A 2024 study by Humana estimates that over 1.28 million people are employed in the secondhand clothing sectors of Angola, Guinea-Bissau, Malawi, Mozambique, and Zambia, with each tonne of imported secondhand clothing linked to an average of 6.5 jobs.<sup>29</sup> On the other hand, it is essential to recognise that many jobs linked to imported secondhand are informal, necessity-driven and perpetuate cycles of poverty.<sup>30</sup> In Ghana and Kenya, informal traders purchase bales of clothing from importers, the last formal actors in the value chain, without guarantees of quality or resale potential. Many take on debt to secure these bales, assuming both the financial risk and the cost of disposing of unsellable garments.<sup>31 32</sup>

Additionally, one of the most widely cited social impacts of secondhand clothing exports is that it provides affordable apparel to low-income populations: exported used textiles from Europe offer people in receiving countries access to clothing that might otherwise be unaffordable for large segments of the population. However, like jobs, the provision of this exported clothing for Rewear cannot be viewed as a neutral or uncontested social good.

The influx of Western-style clothing ostensibly meets a consumer preference in many places. However, the quality of clothing reaching secondhand markets is declining over time. At the same time, it has been critiqued for reinforcing a form of cultural imperialism, in which the aesthetics and norms of dress rooted in the Global North are privileged over local styles or traditional textiles.<sup>33</sup> Academics have also critiqued the universalisation of Global North designs and aesthetics that is significantly reproduced through the secondhand clothing export system, asserting that the apparent demand for secondhand clothing in the Global South does not actually reflect ‘local needs’, but rather an implicit need for colonialist assimilation.<sup>34</sup> Further, the perception that clothing which is no longer ‘good enough’ to be reworn, or impossible to sell in Europe, is ‘good enough’, or even altruistic, for people in recipient countries requires attention.

From an environmental perspective, textile waste disposal in export destinations is linked to significant environmental and health harms. The lack of waste management systems in place means that significant volumes of textiles are informally dumped or burned, with wide ranging impacts on surrounding ecosystems.<sup>35</sup> <sup>36</sup> Many of these adverse environmental impacts stem from the increasing prevalence of synthetic fibres in clothing. Fossil fuel-based synthetics have come to dominate global fibre production, with polyester alone now accounting for around 59% of total output, of which approximately 88% is fossil-based.<sup>37</sup> with polyester alone making up more than half.<sup>38</sup> When discarded in unmanaged landfills or burned in the open, synthetic microfibres enter ecosystems, where they do not biodegrade and can persist in soil and marine environments for centuries.<sup>39</sup> <sup>40</sup> Burning textiles releases heavy metals, acid gases, particulates, and dioxins into the air, contributing to a range of adverse health effects.<sup>41</sup> The full range of risks posed by fibre fragment pollution remains poorly understood as they can disrupt natural systems even at trace levels.<sup>42</sup> Microfibres are highly mobile, making it difficult to quantify their distribution and accumulation across air, soil, and water, with existing research focused predominantly on aquatic pathways. Natural fibres also shed significantly and can persist in the environment, and their biodegradability depends not only on material origin but on environmental conditions and the chemical and mechanical treatments applied during production.<sup>43</sup> <sup>44</sup> Adverse environmental impacts affect low-income and historically exploited countries where discarded textiles end up disproportionately, underscoring the relevance of a waste colonialism lens when examining the export of used textiles.

### **What is Waste Colonialism?**

Waste colonialism refers to the practice of exporting waste from wealthy, high-consuming countries in the Global North to lower-income countries in the Global South. The term was first used in 1989 at a UN environmental meeting to describe how rich countries offload their unwanted materials, including hazardous waste, onto poorer regions that are often less equipped to manage them safely.

In the context of used clothing, it plays out when secondhand textiles are sent overseas under the banner of reuse or recycling, but without a guarantee that the destination has sufficient demand and infrastructure to sort, resell, rewear, or responsibly dispose of what can't be reused. This reflects deeper patterns of inequality rooted in colonial histories: land is treated as either a resource to extract from or a sink to absorb the consequences of overproduction and overconsumption.<sup>45</sup> Today, as the fashion industry shifts toward more ‘circular’ solutions, there's a risk of reinforcing these patterns, wrapped in greener language.

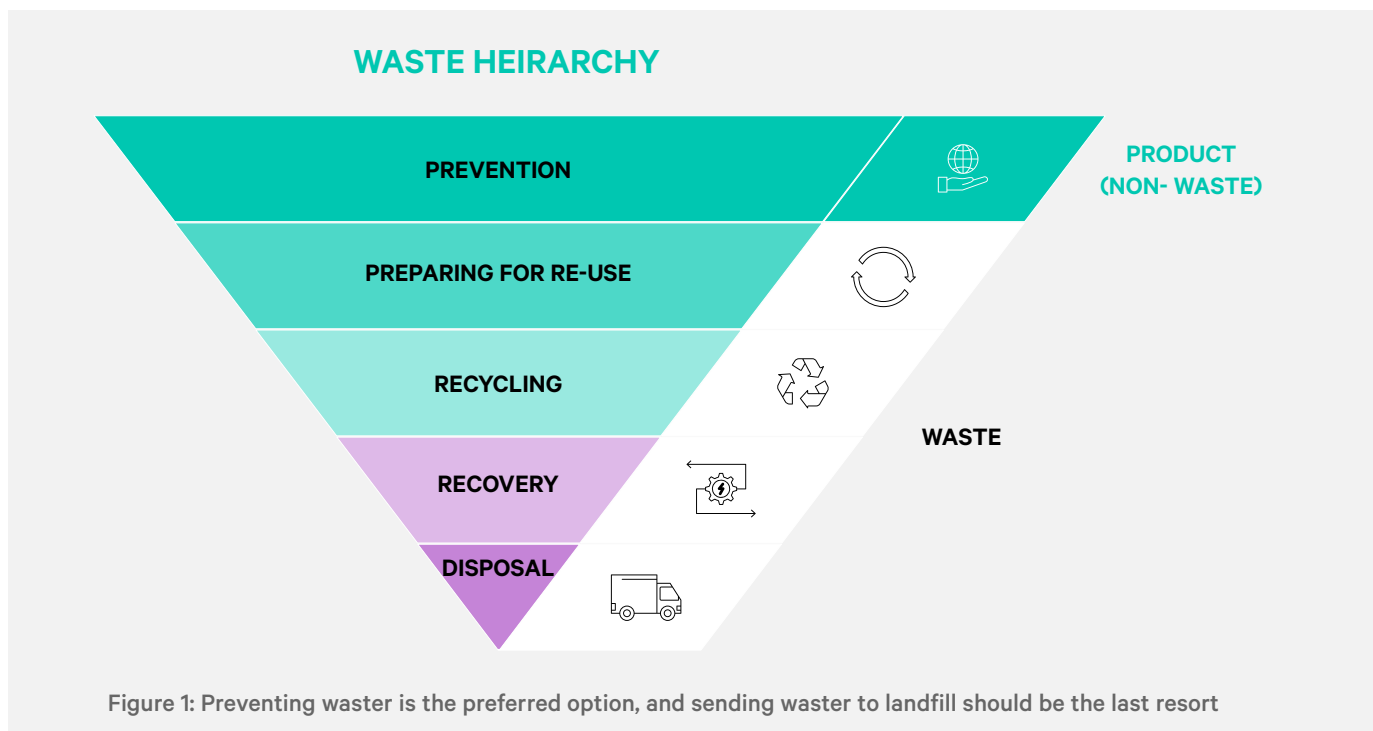
Used textile flows are often described as a one-way movement from the Global North to the Global South, while it is more of a convoluted trade route of exports, imports and re-exports. In this report, we use the terms high-income, high-consumption and low-income, low-consumption to more precisely reflect the patterns of activity and responsibility.

At the same time, significant contrasts exist within the so-called North. For instance, textiles are often collected in wealthier EU countries (such as Germany and the Netherlands) but sorted in less wealthy ones (such as Poland or Lithuania). These intra-European dynamics are highly relevant for Rewear economies and policies.

## REWEAR'S POTENTIAL — AND ITS LIMITS

Growing interest in Rewear is partially driven by its perceived business potential with one forecast suggesting that the global secondhand apparel market could reach US\$367 billion by 2029—a growth rate 2.7 times faster than the overall apparel market.<sup>46</sup> Some estimates predict that secondhand fashion could account for 10% of global sales within a few years.<sup>47</sup> Consumer surveys indicate shifting behaviours: in 2024, 58% of respondents had purchased secondhand apparel, and among younger shoppers, nearly half said it was their first choice when buying clothes (up 7% since 2022).<sup>48</sup> While these projections are striking, they warrant caution; market growth alone will not transform the industry's harmful dynamics. Issues like waste externalisation and labour exploitation can persist, even in a booming Rewear economy.

Current literature also praises Rewear's environmental potential, with some studies suggesting that reuse delivers greater environmental savings than any other circular strategy<sup>49</sup> and estimates that rewear can save up to three kilograms of CO2e per item.<sup>50</sup> Rewear also embodies the higher tiers of the waste hierarchy, which prioritises prevention—refuse and reduce—over downstream solutions like recycling. However, current research also indicates that unless these impacts are offset through reduced production, Rewear's benefits remain limited. This assumption is tested and ultimately reinforced through the data collected in this study.



A common assumption amongst researchers, policymakers, and industry actors is that more Rewear automatically leads to fewer new items purchased and therefore fewer environmental harms.<sup>51</sup> This is expressed through the replacement rate: the extent to which acquiring or repairing an item displaces the purchase of a new garment.<sup>52</sup> A 2025 UK WRAP study,<sup>53</sup> proposing a standardised displacement-rate methodology, found that 82.2% of clothing repairs replace new purchases, while peer-to-peer (P2P) online resale achieves a 64.6% displacement rate.<sup>54</sup> Research by P2P platform Depop reports even higher rates: 88% in the US, 90% in the UK, and 92% in Australia.<sup>55</sup> These figures are promising but require confirmation through larger, independent studies to fully understand the relationship between Rewear and reduced demand for new clothing.<sup>56</sup> With diverse factors influencing purchasing decisions, measuring this is difficult and lacks empirical evidence.<sup>57</sup> It remains based on customer surveys, or small samples and limited product categories.<sup>58</sup>

To understand this dynamic, it is also important to distinguish between overproduction and overconsumption. In this report, overproduction refers to the industry's systemic tendency to manufacture more clothing than the market can absorb, often deliberately, as a function of prevailing business models.<sup>59</sup> <sup>60</sup> Overconsumption refers to excessive buying and discarding by consumers, driven by chronic oversupply, artificially low prices, and aggressive marketing. In fashion, production shapes the demand rather than responding to it.<sup>61</sup> In this context, **even very high replacement rates cannot be assumed to reduce total consumption or production at the system level. Without parallel efforts to slow production, Rewear risks becoming either a greenwashing tactic or a parallel market that leaves the industry's core environmental harms untouched.**<sup>62</sup>

## AIMS OF SORTING FOR CIRCULARITY: PROJECT REWEAR

**Project Rewear investigates the material realities of used garments, the infrastructure that enables or hinders their circulation, and the practices shaping Rewear economies in Europe and in key importing countries. The research addresses knowledge gaps in garment composition and condition, tests repair and reuse infrastructure, and outlines the barriers preventing greater circularity.**<sup>63</sup> The project aims to:



**Measure the current state of Rewear in four EU countries.**



**Examine global flows:** Focus on two major recipients of Rewearable textiles—Ghana and Pakistan—presenting the results of primary research conducted by Artdiction and The Revival in Ghana and the KnowTex team at National Textile University in Pakistan.



**Examine the potential of innovation as a key enabler to scaling circular business models:** Providing lessons learned and new data retrieved from three innovation pilots dedicated to sorting, integrating repair within aftersales services and creative repairs.



**Provide actionable recommendations:** Offer guidance for stakeholders to strengthen circularity.



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## THE CURRENT STATE OF REWEAR IN EUROPE

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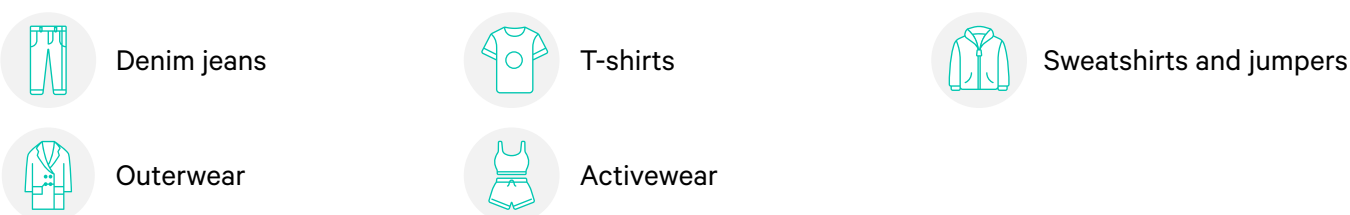
This chapter examines the state of Rewear in Europe, drawing on Project Rewear’s analysis of the material realities of secondhand clothing, the infrastructure that enables or obstructs its circulation, and the contexts that shape Rewear economies. Using a mixed-methods approach, the research combines quantitative garment analysis from sorting facilities in four EU countries with qualitative insights from ecosystem actors. The findings reveal a fragmented market characterised by wide variation in retailers, brands, materials, and garment conditions. Contrary to expectations, physical garment attributes show no statistically significant link to resale value; instead, Rewear potential is driven largely by subjective perceptions, with trends and brands exerting the strongest influence. Interviews further highlight structural barriers such as competition from cheap new fashion, a weak business case for repair, and market conditions that limit the viability of circular business models, even for garments that are materially fit for reuse. Together, these insights call for a more critical discussion on how clothing value is constructed and how the market dynamics constrain Rewear in Europe.

## 2.1 METHODOLOGICAL CONSIDERATIONS

An exploratory mixed-methods approach was used for this research. The quantitative dimension involved on-site analysis of 8,280 post-consumer garments from sorting facilities in four EU countries: the Netherlands, Spain, Lithuania, and Poland. These countries were selected given their status as already established hubs in the global secondhand clothing value chain and therefore potential leaders in advancing reuse and circularity.

Garments in the sample came from separate textile collection schemes, both municipal and charity, and were analysed directly at sorting facilities. The focus was on quality fractions with Rewear potential—items that could be reused in their original form and purpose—alongside a smaller fraction of non-Rewearable garments for comparison. Typically, post-consumer textiles are sorted into cascading quality categories for domestic and export resale, open- and closed-loop recycling, and finally, energy recovery. While participating sorters normally use 100–300 grades, this study applied a simplified A–C scale for comparability: A and B grades represent Rewearable fractions sold on global secondhand markets, while C grades are non-wearable garments destined mainly for downcycling. Participating sorters prepared all samples in accordance with this simplified scale prior to analysis, meaning that common contamination like non-textile waste had already been removed.

Five product archetypes were analysed to reflect common and diverse Rewear categories:



In parallel, 15 semi-structured interviews were conducted in 2024 with European Rewear actors, including sorters, secondhand retailers, social enterprises, commercial resellers, logistics providers, and online marketplace platforms, mapping activities, opportunities, and challenges from multiple perspectives.

## 2.2 REWEAR ECOSYSTEMS IN EUROPE: OVERVIEW OF ACTORS AND FOCUS COUNTRIES

The EU's fashion-related environmental harm is significant. In 2022, the average EU citizen consumed around 19 kilograms of new textiles (equivalent to around a hundred t-shirts)<sup>64</sup> while throwing away around 16 kilograms of textile product.<sup>65</sup> To address this from a policy context, reuse and repair are key strategies in the EU Strategy for Sustainable and Circular Textiles, aiming to operationalise the waste hierarchy and scale circular economy solutions across Europe.

Against this backdrop, there is a highly diverse Rewear ecosystem in Europe that long predates the circularity agenda, combining both profit and non-profit actors whose relative influence varies across regions. For example, in Nordic countries the model primarily centres around charity organisations with their own collection bins and stores, while the Netherlands follows a more market-driven approach where municipalities contract (primarily) commercial actors through public tenders. In terms of roles performed, some umbrella organisations operate across multiple stages of collection, sorting, exporting, and resale while others perform more specialised roles. Non-profit Rewear actors include social enterprises, charities and NGOs who continue to play a vital role in the social economy. Beyond their economic contributions, they generate employment opportunities for marginalised individuals, often offering upskilling and advocating for supportive policies at both national and EU levels.

More recently, new entities are entering the market to perform enabling roles such, streamlining secondhand retail processes and aiding with aggregation and storage. Among the emerging non-traditional actors are resale infrastructure specialists who acquire goods from individuals, aggregate and prepare them for resale, and enable brands to sell secondhand items directly through their websites or marketplaces. Examples include Reflaunt, a technology provider offering Resale-as-a-service infrastructure for brands and multi-brand retailers. C2C online marketplaces, also called peer-to-peer platforms, have gained significant traction by facilitating the direct exchange of used garments. Platforms such as Vinted, Depop, Vestiaire Collective, eBay, and Etsy are prominent players, with many brands and retailers integrating resale options into their offerings.

The repair sector is diversifying, driven by startups and social enterprises like the United Repair Centre, Save Your Wardrobe, Sojo and The Seam.<sup>66</sup> Repair actors include independent tailors, luxury repair centers, volunteer projects, community networks, and repair shops embedded in both secondhand and new retail spaces. Business models range from direct-to-consumer (B2C) services to business-to-business (B2B) collaborations with brands and reuse channels. When it comes to the scale and actual volumes of clothing kept in circulation, community-based repair activities are likely far more significant than start-up or service providers. These include home-based mending, repair cafés, and skills workshops. Access to tools, space, and expertise is critical to this activity.<sup>67</sup>

Reconditioning is another fringe activity that we found to be taking place, involving the restoration of pre-consumer textiles. These items may be damaged during transport or have manufacturing defects. Reconditioning operators engage in activities that make them fit for resale. Although reconditioning focuses on pre-consumer goods, this practice is mentioned in this Rewear study as it contributes significantly to extending the lifespan of textiles within the circular economy.

This diverse and multi-layered ecosystem shows that Rewear is far from a novel or peripheral phenomenon in Europe. Yet these practices face challenges: repair and reuse skills have declined over time, both in households, crafts and in the industry, as have cultural norms supporting Rewear.

Table one below provides additional context and highlights differences for the four EU countries where current state samples were analysed. For more details, see Annex E.

				
CATEGORY	NETHERLANDS	SPAIN	POLAND	LITHUANIA
<b>Annual volumes discarded (tonnes)</b>	~215,000 <sup>68</sup>	~890,240 <sup>69</sup>	~592,000 <sup>70</sup>	~6,500 tonnes
<b>Per capita textile waste generated in 2020<sup>71</sup> (kilograms)</b>	~17.5 kg	~20.5 kg	~16.0 kg	~22.5 kg
<b>Separate Collection Rate</b>	between 37% <sup>72</sup> and 50.5% <sup>73</sup> (one of the highest in EU)	Between 10–12% <sup>74</sup> (uneven data, mostly from Catalonia and Basque country)	18% <sup>75</sup>	~11% <sup>76</sup>
<b>Used textiles pathways</b>	~50% incinerated; 50% sent abroad for sorting <sup>77</sup>	High landfilling rates persist: Over 20,000 tonnes annually <sup>78</sup>	~55,000+ tonnes landfilled (2022) <sup>79</sup>	Much textile waste still incinerated or landfilled
<b>Sorting Capacity</b>	High: 200,000 tonnes annually <sup>80</sup> (acts as regional sorting hub, especially for used textiles from Germany)	Limited: around 108,296 tonnes <sup>81</sup>	Very high: ~300,000 tonnes/year <sup>82</sup> (acts as regional sorting hub for textiles from the UK, Germany, Netherlands and Scandinavia)	Limited (while there is no total number provided in existing studies individual facilities reach up to 50,000 tonnes/year)
<b>Circular Economy Policy Environment</b>	National Circular Economy and textiles-specific programmes in place; <sup>83</sup> active EPR for textiles with domestic reuse (10%) and recycling (25%) targets <sup>84</sup>	Spanish Circular Economy Strategy 2030 and related action plans, with targets to increase textile reuse to 5% by 2025, 10% by 2030, and 15% by 2035	2019 Roadmap towards the Transition to a Circular Economy and the National Environmental Policy 2030 <sup>85</sup>	Circular Economy Guidelines to 2035; CE research authority and EPR for textiles planned by 2027 <sup>86</sup>
<b>Export Dynamics</b>	World's sixth largest exporter of used garments; <sup>87</sup> 163,857 tonnes exported in 2024	137,322 tonnes exported in 2024	World's fifth largest exporter of used garments; <sup>88</sup> 169,317 tonnes exported in 2024	52,703 tonnes exported in 2024

Table 1: Rewear Contexts in the Netherlands, Spain, Poland, and Lithuania

## 2.3 MARKET DYNAMICS AND REWEAR OPPORTUNITIES: KEY FINDINGS FROM STAKEHOLDER INTERVIEWS AND SAMPLE ANALYSIS

Subjective perceptions of desirability—shaped by trends, style, and brand identity—were considered to play a more influential role than physical quality in determining garment value in Rewear markets. However, the highest grade of garments, so-called ‘cream’, represents only a small fraction of the total stock, typically 5–10%. Overall stock is significantly declining<sup>89</sup> with participating sorters attributing this to the overall decline in quality of new items, noticeable over the past 15 years.

Despite this, most discarded clothing is functionally sound. In the sample, 37% of garments showed no damage, and an additional 41% had only one minor damage. While some damages could be significant enough to make a garment unwearable, the majority are minor, suggesting that clothes are not discarded primarily because they are damaged or irreparable. Rather, small interventions such as cleaning or minor repairs could substantially extend their market value. These findings reflect and reinforce evidence from other studies: in the Netherlands, only 2.6% of garments reaching Repair Cafes were deemed unrepairable, with most repairs classified as easy (57.5%) or medium difficulty (11.3%) and requiring minimal skills or resources.<sup>90</sup> Similarly, a 2019 study in Estonia found that out of 486 items, only 3% were too damaged for reuse preparation. One-third required cleaning, and 39% had cosmetic flaws that affected resale value but not wearability.<sup>91</sup> These findings highlight a clear opportunity: most used textiles could be kept in circulation. Yet economic and logistical constraints often make reuse preparation unfeasible for sorters and retailers, limiting the resale value of garments.

Under current market conditions, even minor repairs often cost more than the resale price justifies, with repairs and other preparation for reuse activities therefore remaining marginal for both retailers and sorters (profit and non-profit). Sorting facilities tend to focus on efficient classification and processing rather than repair or cleaning. Sorters participating in this study sometimes do targeted repairs using specialist partners, but typically for high-end luxury items with higher resale price points. For one study facility only 50 kilograms of items were repaired in 2023 out of the ~47 million kilograms collected annually. However, some professional sorters are expanding their preparation for reuse activities, with one facility participating in this study having set up a dedicated section for washing with a capacity of around four tonnes of washing and 280 kilos of dry cleaning per day.

Market volatility further complicates operations. Macroeconomic fluctuations, including inflation, currency instability, and recessions in key export markets, directly affect demand and increase financial risk for EU-based sorters. Operational costs are high across cleaning, repair, and reverse logistics, with additional expenses for photography and authentication in online secondhand retail. While AI can improve efficiency, manual verification remains necessary, especially for luxury goods. These costs collide with consumer expectations that secondhand clothing should remain cheaper than new items.

While many headlines and market reports highlight steady growth in secondhand retail, the findings here present a more nuanced picture: expansion is evident in some areas, but persistent barriers continue to limit overall scalability. This diversification is also reflected in the customer base. Our interview findings reinforce that secondhand retail primarily serves two groups: price-sensitive shoppers, including lower-income families—the traditional core market for rewear—and a newer demographic of higher-income consumers motivated by sustainability and ethics. While affordability remains a key driver, rising demand from the latter group has influenced store formats and marketing strategies.

Despite this diversification, interviewees stressed that overall garment consumption remains largely price-driven. Rewear retailers often struggle because they compete directly with low-priced new products. Literature describes this as a ‘downward pressure’ on secondhand prices, shaped by consumer expectations anchored in new clothing market norms.<sup>92</sup>

Brands face similar challenges in making the economic case for Rewear. While some are increasing activity in this space, engagement with circular business models remains cautious, incremental, and often short-term. Initiatives typically focus on upcycled capsule collections or one-off collaborations with Rewear actors, with profitability concerns cited as the main obstacle to broader integration of Rewear options.

## 2.4 ASSESSING REWEAR VALUE: GRADES AND PHYSICAL FEATURES OF GARMENTS

This section presents the findings from the sample analysis. It interrogates how individual garment features—such as physical condition, damages, and material composition—intersect with more subjective and symbolic attributes like trends and brand names, and how value perception influences secondhand markets.



### QUALITY GRADES

The sorting facilities included in the study process substantial volumes of post-consumer textiles, ranging from 14,000 to 84,000 tonnes per year. In this study, the total sample of 8,280 garments was analysed, divided into three quality grades:

- Grade A (highest monetary value): 2,009 pieces analysed
- Grade B (mid-value): 4,641 pieces analysed
- Grade C (non-rewearable, lowest value): 1,630 pieces analysed

It is important to note that the quality grades were created only for the purpose of this study, to be able to align the sorting methods between different facilities. The definition of the grade was the financial value as perceived by the sorters.

Grade A textiles, representing the highest-value Rewearables and approximately 10% of all textiles collected, are described by sorters as visibly high-quality, fashionable, and associated with trusted brands. These items command premium prices in both domestic and export markets. When exported, they typically reach destinations in Eastern Europe (Poland, Romania, Baltic states), Central Asia (Kazakhstan, Azerbaijan, Georgia), the Middle East (Jordan, Lebanon, Egypt), and parts of South America (Brazil, Bolivia, Mexico). Grade A export prices were reported by sorters as €4.50–6 per kilogram.

Grade B characterises roughly half of all textiles collected, which are considered good or acceptable quality, slightly less fashionable, show minor signs of wear, and come from less desirable brands. Their export destinations are more diverse, with Africa identified as the most significant market. Some Grade B items are sent to the same regions as Grade A textiles but are often re-sorted by local operators before reaching domestic or global resale markets (see Chapter five for further details). Grade B textiles were reported to sell for €0.45–2.10 per kilogram, reflecting their lower market value.

The non-Rewearable fraction, Grade C, representing up to 40% of textiles processed by sorters, enters lower-value options down the waste hierarchy. These include open-loop recycling for industries such as wipers, insulation and filling materials, closed-loop recycling (such as knitted sweaters recycled into yarn in Morocco and India), and energy recovery (around 5–7%). Grade C textiles sell for €0.03–0.40 per kilogram.

### Quality grades: features, pricing & regional destinations

A, B and C quality grades were identified based on the analysis of 8,280 pieces of used clothing disposed in Europe (jeans, outerwear, activewear, sweaters and t-shirts) from 2,660 brands with 316 distinctive damage types.

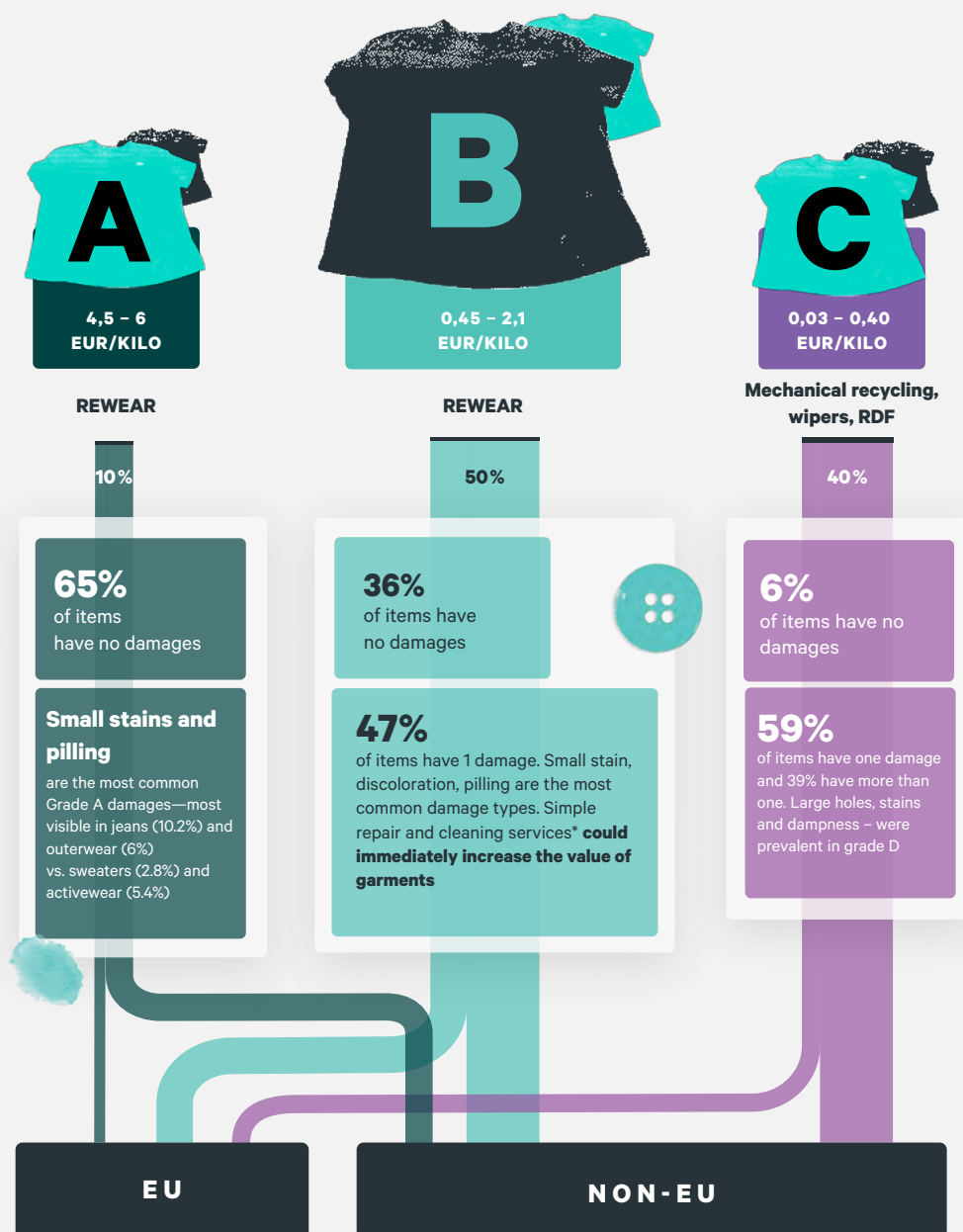


Figure 2: Illustration of used clothing quality grades, with their prices and destinations as described by project partners (EU sorters) and the characterisation of their damages as identified in a sample analysis.



### PHYSICAL DAMAGES

While 316 different damage types were identified, 37% of clothes in the total sample (3046 pieces) had no identifiable damage at all, followed by small stains 13.2% (1096 pieces) and discolouring 11.2% (935 pieces). The undamaged garments were mostly in Grades A and B. Only 2.2% of the total sample had three or more damages. Table two below presents a detailed dataset.






GRADE	 T- SHIRT	 OUTERWEAR	 SWEATERS	 JEANS	 ACTIVEWEAR
A	<b>58.9%</b> None - 333 pieces	<b>68.1%</b> None - 203 pieces	<b>76.7%</b> None - 296 pieces	<b>58.6%</b> None - 242 pieces	<b>58.8%</b> None - 227 pieces
	<b>5.1%</b> Small stain - 29 pieces	<b>6%</b> Small stain - 18 pieces	<b>4.1%</b> Pilling - 16 pieces	<b>10.2%</b> Small stain - 42 pieces	<b>5.4%</b> Small stain - 21 pieces
	<b>1.4%</b> Small hole - 8 pieces	<b>2.7%</b> Pilling - 8 pieces	<b>2.8%</b> Small stain - 11 pieces	<b>4.6%</b> Stitch failure - 19 pieces	<b>2.8%</b> Stitch failure - 11 pieces
B	<b>52.5%</b> None - 504 pieces	<b>21.7%</b> None - 184 pieces	<b>27.8%</b> Pilling - 268 pieces	<b>31%</b> None - 414 pieces	<b>33.7%</b> None - 392 pieces
	<b>9.6%</b> Discolouring - 92 pieces	<b>16.9%</b> Small stain - 143 pieces	<b>13.2%</b> Small stain - 127 pieces	<b>17.4%</b> Discolouring - 233 pieces	<b>19.4%</b> Small stain - 226 pieces
	<b>6.8%</b> Small stain - 65 pieces	<b>10%</b> Discolouring - 85 pieces	<b>12.1%</b> Discolouring - 117 pieces	<b>15.6%</b> Small stain - 208 pieces	<b>14.6%</b> Pilling - 170 pieces
C	<b>21.5%</b> Discolouring - 134 pieces	<b>16.2%</b> Discolouring - 55 pieces	<b>38.2%</b> Pilling - 105 pieces	<b>34.1%</b> Large hole - 164 pieces	<b>21%</b> Pilling - 118 pieces
	<b>10.3%</b> Wet - 64 pieces	<b>13.2%</b> Large hole - 45 pieces	<b>10.9%</b> Small stain - 30 pieces	<b>12.7%</b> Small hole - 61 pieces	<b>14.8%</b> Discolouring - 83 pieces
	<b>9.9%</b> Collar/cuffs - 62	<b>11.5%</b> Large stain - 39 pieces	<b>7.3%</b> Discolouring - 20 pieces	<b>12.7%</b> Wet - 61 pieces	<b>11.3%</b> Small stain - 63 pieces

Table 2: Most common damages in each quality grade for each archetype.

Rank	Damage	Count	Rank	Damage	Count	Rank	Damage	Count
1	None	3046	12	Dirty	111	23	Pet Hair	19
2	Small Stain	1096	13	Stretch	96	24	Missing	18
3	Discolouring	935	14	Print	94	25	Cut	11
4	Pilling	882	15	Worn	87	26	Shrunk	7
5	Unknown	832	16	Smelly	79	27	Accessory Damage	4
6	Small Hole	476	17	Surface Abrasion	71	28	Old-fashioned	3
7	Large Hole	404	18	Zip	66	29	Other	2
8	Large Stain	367	19	Button	51	30	Shiny spot from ironing	2
9	Wet	324	20	Alteration	29	31	Creasing	2
10	Stitch Failure	264	21	Faded	28	32	Bite Damage	1
11	Collar/ Cuffs	167	22	Merch Product	25			

Table 3: Damage categories by occurrence.

Small stains and pilling are the most common types of damage in Grade A garments. Outerwear and jeans have the highest rates of visible defects in Grade A, with 10.2% of jeans and 6% of outerwear showing small stains, compared to only 2.8% of sweaters and 5.4% of activewear, showing that outerwear and jeans maintain value even when visibly worn. Sweaters are the least damaged high-value category, with 76.7% showing no visible defects—indicating that pilling (4.1%) and small stains (2.8%) are the most common minor issues rather than any structural damage.

In Grade B, discolouring and small stains were the most prevalent types of damage. In terms of variation across archetypes in this value grade, 52.5% of mid-value T-shirts show no visible defects—this is higher than outerwear (21.7%), sweaters (27.8%), jeans (31%) and activewear (33.7%), indicating that T-shirts lose value extremely quickly.

As expected, more severe damages—such as large holes, prominent stains, and dampness—were most common in Grade C. For example, 39 pieces of Grade C outerwear had large stains, compared with only 18 pieces of Grade A outerwear, all of which had minor, small stains. These structural damages make the garments unsuitable for being re-worn in their original form, but a perfect candidate for open and closed loop applications.



## BRANDING

Across all of the secondhand ecosystem, brand recognition was consistently cited as a primary determinant of resale value to the extent that it may outweigh other value-degrading factors, like physical damage.

Interviewees highlighted that demand patterns mostly align with broader fashion cycles, which are changing increasingly quickly, meaning that Rewear markets are largely shaped by trends originating in the linear clothing industry. At the same time, key shopping periods for new clothing—such as Black Friday or Christmas—which tend to drive overall consumer activity could in theory be expected to increase purchases of secondhand garments, as some shoppers shift across channels depending on availability and preference. However, secondhand operators reported that this is not necessarily the case.

The study identified 2,660 unique brand names and 1,312 garments without an identifiable brand name. This means that the brand of 16% of garments remains unidentified, due to missing or illegible labels, and no single brand dominates in the sample. H&M is the most frequently represented brand (277 pieces), constituting only 3.3% of the sample, followed by Zara (225 pieces), adidas (183 pieces) and Levi Strauss & Co.'s (167 pieces). (There were 57 SHEIN pieces, ranking as the 16th most observed brand.) This distribution suggests high market fragmentation.



## MATERIAL COMPOSITION

Drawing definitive conclusions about the relationship between material composition and Rewear value is challenging, as the length of time garments were used is unknown. Without this information, it is difficult to infer durability based solely on material composition. For example, in sweaters, most woolen items were found as destined for recycling (Grade C), followed by Grade A and B, while cotton and acrylic were spread almost equally between the grades.

Actors across the Rewear space anecdotally report that synthetic-heavy garments have lower resale value and demand, but this was not confirmed by the active and outerwear archetypes, where polyester was found in almost equal amounts in each grade.

Within the sample, no overall significant correlation was found between material composition and garment grading, suggesting that other factors such as trends, usage, care and available open and closed loop applications play a more decisive role in determining re-wearability.



03

## REWEAR ECOSYSTEMS IN GHANA & PAKISTAN

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To capture the global dimensions of secondhand textile flows, Project Rewear extended its geographical scope to include Ghana and Pakistan, selected due to their consistently high import volumes of post-consumer textiles from Europe.

For each country, local partners developed parallel case studies examining the specific dynamics of Rewear in their contexts. This report presents the findings from these case studies alongside a supplementary policy analysis, with particular attention to the challenge of distinguishing between rewearable textiles and waste.

Given the distinct nature of their secondhand textile economies, each case study takes a tailored approach. In Ghana, the analysis focuses specifically on the Kantamanto market, the country's central hub for secondhand clothing repair and trade. By contrast, the Pakistan case study, grounded in a national mapping exercise, follows Rewear across the entire country and its intersections with an expanding recycling sector.

Research in Ghana and Pakistan was led by Artdiction and The Revival and the KnowTex team at National Textile University, respectively. Unless otherwise indicated, data and figures cited in this chapter are drawn from our partners' reports, with full bibliographies provided in Appendix B.

### 3.1 GHANA: THE STATE OF REWEAR IN THE KANTAMANTO MARKET

#### Rewear and Ghana's Textile Industry: A Brief History

Secondhand clothing has been imported to Ghana since at least the 1960s. The OR Foundation's archival work documents meetings between a Ghanaian trade mission and US businessmen seeking outlets for surplus secondhand clothing during this period,<sup>93</sup> coinciding with the increased availability of affordable clothing, the rise of malls, and more accessible consumer credit in the US.<sup>94</sup>

Another major turning point for Ghana's economy and textiles sector was the structural adjustment period of the 1980s.<sup>95</sup> Structural adjustment policies (SAPs), driven by the International Monetary Fund (IMF), emphasised trade liberalisation and had detrimental effects on national industries, including textiles. While the World Bank and IMF cite Ghana as a SAP success story due to GDP growth,<sup>96</sup> the country's debt-to-GDP ratio doubled between 1977 and 1987.<sup>97</sup> SAPs entrenched reliance on external finance and raw commodity exports<sup>98</sup> often reinforce economic dependency and unequal ecological exchange between the global North and South.<sup>99 100</sup>

Before SAPs, Ghana had a robust textiles and garment sector. In the early 1960s, textile production was a significant economic contributor, employing around 25,000 people by 1977 and accounting for 27% of manufacturing employment.<sup>101</sup> However, by 2000, the industry had shrunk dramatically to fewer than 3,000 workers, with major factories like Akosombo Textiles Limited (ATL) and Juapong Textiles closing or downsizing.<sup>102</sup> An estimated four-fifths of textile jobs were lost.<sup>103</sup> While the link between secondhand clothing imports and the collapse of domestic textile production is debated, imports are considered one contributing factor.<sup>104</sup>

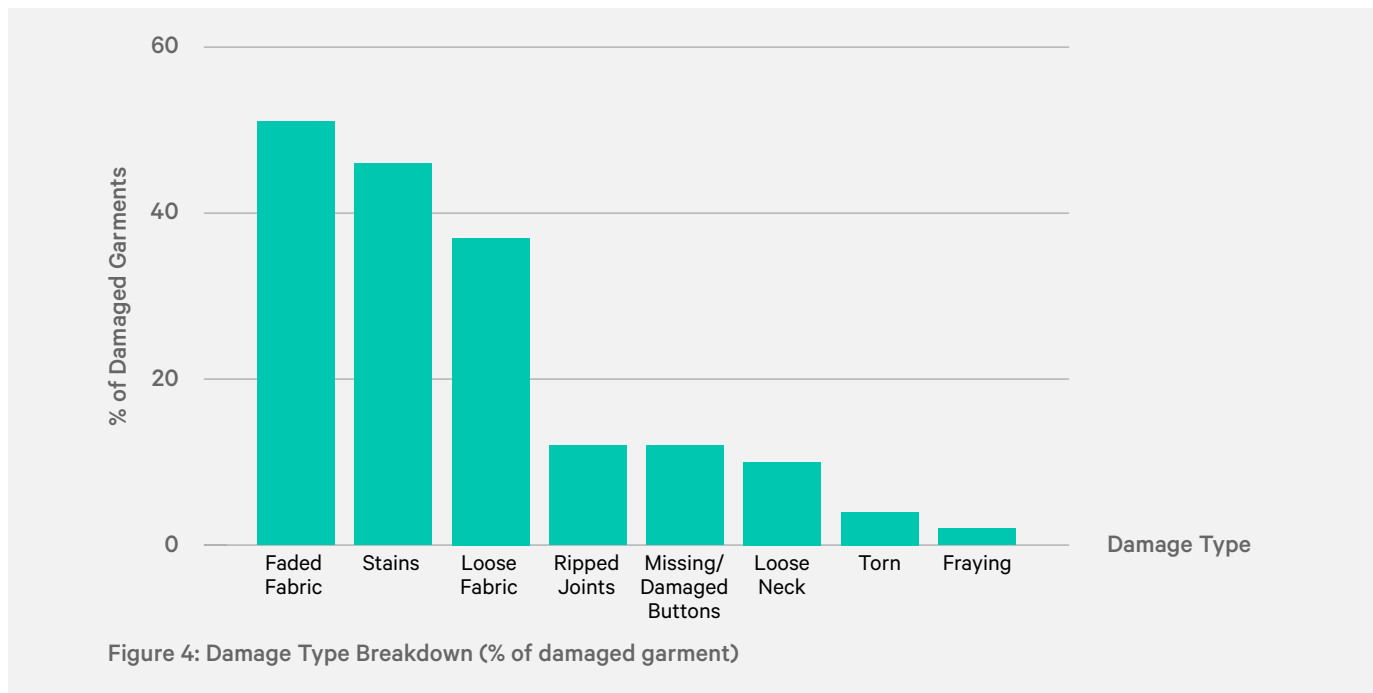
Textile-related employment in Ghana has shifted from formal manufacturing jobs to informal work in the secondhand clothing sector.<sup>105</sup> Estimating total employment is difficult due to the informal nature of much of this work, reflecting broader norms in Ghana, where informality accounts for 89% of employment.<sup>106</sup> In 2017, over 531,000 people were employed in the textile industry, including formal and informal roles, compared to 600,000 estimated to work in resale, repair, and remanufacturing of secondhand textiles.<sup>107</sup>

Artdiction and The Revival's research focuses on Kantamanto Market—the primary hub for imported secondhand clothing in Ghana. After arriving at Tema port, bales of secondhand textiles enter Kantamanto, where its infrastructure is crucial for managing the flow of goods. Kantamanto Market spans approximately 20,000 acres and is home to around 30,000 traders. Of these, an estimated 5,000 specialise in imported

secondhand clothing. For this study, 106 traders from Kantamanto were surveyed, 2,474 individual garments were analysed, and eight key informant interviews were conducted to gather qualitative insights into the impacts of Rewear, market challenges, and stakeholder priorities for the future. Finally the in-situ observation was led by the research team to validate the accuracy of the findings.

**Rewear flows at Kantamanto**

The research team issued a call for lower-quality garments to gain insights into common damage types present in bales that exporters and importers still classify as Rewearable. As a result, 2,474 garments were sampled. It was not possible to capture their specific import grade or origin, as traders are often unaware of this information.



**Damage was widespread: 2,140 garments (86.5% of the total) showed some form of damage, while all of these clothes came from bales imported as rewearable.** The most common issues were faded fabric (51%) and stains (46%), followed by loose fabric, ripped seams, tears, fraying, and burns. Additional analysis of 159 items (see Table ten in Appendix B) summarises sales prices and damage types for five garment categories—outerwear, sportswear, t-shirts, sweatshirts, and denim—across ten Kantamanto stores. Prices ranged from GHS 3 to GHS 100 per piece (approximately €0.20 to €7). The lowest value recorded was for a t-shirt with faded colour, stains, and loose fabric, while the highest was for an undamaged coat. As one shop worker at Wofa Ameyaw explained, a coat without damage can sell for GHS 100 (approximately €7), whereas a similar coat with damage may drop in price to around GHS 10 (approximately €0.79)—illustrating how receiving damaged stock significantly reduces retailers’ incomes.

As in the European analysis, no single brand or small set of brands dominated the sample. In total, 841 distinct brands were recorded. Nearly a quarter of garments (24.7%) had no identifiable brand, and a further 56.8% were categorised as ‘other’. The most frequently recognised brands—H&M (2.6%), Next (2.3%), Denim Co (2.3%), and New Look (2.2%)—each accounted for only a small share of the total.





Within the market, various forms of garment repair are carried out to restore or enhance secondhand clothing. Common interventions include tie-dyeing, stitching, and ironing, as well as relabelling garments with well-known brand tags or creating new local brands to boost resale value. However, limited access to tools and resources significantly constrains the scale of preparation-for-reuse. One repairer, for example, noted their inability to afford a cutting machine. Their reliance on scissors instead reduces both efficiency and income.

Upcycling, while offering considerable creative and economic potential, remains the least common intervention due to its high labour intensity and skill requirements. According to designer and upcycling advocate Yayra Agbofah, the proportion of textile waste currently being upcycled is negligible compared with the volume generated at the market each day.



Figure 5: Image of Ghana’s Kantamanto market

**Kantamanto market stakeholders**

ROLE	DESCRIPTION	KEY ISSUES
 <b>Local Importers</b>	These are key players who source secondhand clothing. They navigate complex logistics, customs, and taxation systems to bring goods into Ghana. Many importers are aware of regulatory restrictions regarding textile imports, but inconsistencies in enforcement often lead to varied compliance.	Increasing import duties; exchange rate volatility
 <b>Wholesale</b>	Wholesalers purchase bulk bales from importers and then resell them to retail traders within Kantamanto.	Exposure to low-quality goods and uncertainty of bale composition; managing the price pressure between the importers and retailers
 <b>Retail Traders</b>	Retailers, known as ‘bend-down boutique’ vendors, are the stakeholders who interact directly with customers and set prices based on condition, brand, and demand.	Low visibility and recognition; high financial risk and economic precarity given stock quality variability; facing funding and infrastructure gaps
 <b>Repair, Reuse, &amp; Upcycle Traders</b>	These stakeholders, instrumental in the circular economy, provide mending, tailoring, and refurbishing services within Kantamanto. They add value to worn items and extend their life cycle through upcycling and repair.	Low visibility and recognition; facing funding and infrastructure gaps; difficult to access foreign markets with upcycled goods






ROLE	DESCRIPTION	KEY ISSUES
 <p><b>Legal &amp; Environmental Stakeholders</b></p>	<p>These are private, governmental and non-governmental, environmental organisations and agents that address the textile waste generated by the secondhand industry in the form of infrastructure, policies and regulations. These stakeholders play an essential role in the solution-making process in partnership with global players. This includes local authorities and regulators such as the Accra Metropolitan Assembly.</p>	<p>Facing funding gaps; contested responsibility for waste management; limited capacity to act</p>
 <p><b>Porters</b></p>	<p>Transport goods to and from the market. Including the kayayei, female head porters, who most often migrate to the city for work and are vulnerable across multiple axes of socio-economic exclusion (income, gender, migrant status)</p>	<p>This occupation involves physically intensive tasks performed under conditions that present substantial risks to worker health and safety, no access to social protection and exposure to environmental hazards; socio-economic marginalisation; low remuneration;</p>
 <p><b>Waste Collectors</b></p>	<p>Collect, transport and dispose of unsold textiles leaving the market as waste.</p>	<p>Infrastructure and funding gaps; reliance on methods that are socio-environmentally hazardous; socio-economic marginalisation</p>
 <p><b>Media, NGOs &amp; Researchers</b></p>	<p>Media, NGOs and 'tourist researchers' are more and more common, but a relatively nascent phenomenon illustrating the scale of the waste crisis and interest in the circular economy. These local and international organisations, media and individuals come to view Kantamanto as the 'end of the line' for the fashion system and visit Accra to conduct research, document the situation and raise awareness in the Global North.</p>	<p>Widespread positionality gap between researchers, journalists and stakeholders; limited availability of contextually-grounded and longitudinal data</p>
 <p><b>Security</b></p>	<p>Local protection for stores and traders.</p>	<p>Health and safety risks</p>

Table 4: Overview of Kantamanto market stakeholders identified in the case study (non-exhaustive)

## Challenges and impacts

Workers at Kantamanto face challenges with multiple, intersecting sociopolitical drivers. This section illustrates those dynamics—the structural, economic, and environmental pressures that shape daily working conditions. Points of intervention and possible solutions are taken up in the final chapter.

When goods of unpredictable quality fail to sell, traders are left with the financial burden of unsold stock and the cost of storage. This structural precarity—exacerbated by shocks such as the devastating Kantamanto fire—highlights how the economic viability of circular practices in the secondhand clothing sector often rests on the shoulders of under-recognised and under-protected informal actors. **They also bear the impact of macroeconomic factors beyond their control, including exchange rate volatility, rising freight costs, and Ghana's mounting import duties on secondhand clothing.** For example, the depreciation of the Ghanaian Cedi meant that the price of a €450 bale increased from GHS 5,922 in January 2024 to GHS 6,871.50 within a few months, an unmanageable jump for many small-scale retailers. Adding to this pressure, cumulative import taxes—including VAT (15%), NHIL (2.5%), GETFund levy (2.5%), and the ECOWAS levy (0.5%)—bring the total tax burden to around 40% of the declared value, sharply reducing profit margins.<sup>108</sup>

Waste management capacity presents another critical challenge. While some facilities receive and process waste, Accra's infrastructure is insufficient to handle the vast volumes of secondhand clothing that pass

through the market, and the Accra Metropolitan Assembly remains chronically underfunded. As a result, waste collection and repurposing are left to a patchwork of independent collectors and individuals, who often resort to informal disposal methods when formal channels are inaccessible. This frequently results in discarded clothing ending up along roadsides, in gutters, or washed onto beaches.

**Even with significant expansion of waste management infrastructure, the sheer volume of imported used clothing—and ongoing debates over who should bear financial and infrastructural responsibility—will remain a pressing challenge.** Two interrelated issues stand out: the declining quality and the high volume of incoming textiles. Survey data from this case study shows that 53% of respondents believe import quality has worsened in recent years, echoing a finding from a 2024 study<sup>109</sup>, which reported that 40% of incoming textiles are low quality or outright waste. Even when technically rewearable, low-quality garments are less desirable, sell more slowly, and often end up as waste.



**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. The supply exceeds the demand’.**

Interviewee quote: Kekeli Ahiabile et al. 2021

Finally, the dominance of secondhand clothing has reduced demand for locally manufactured garments, undermining the viability of both artisanal and industrial textile production. This decline has also eroded cultural identity linked to traditional fabrics and tailoring practices. One key informant interview drew a direct connection between the preference for Western clothing and colonial history—specifically, how that period cemented the perception that Western styles signified higher social status and provided greater access to better-paid and formal, ‘white collar’ work.

## RECOVERY AFTER THE 2025 KANTAMANTO FIRE

On January 2, 2025, a fire swept through Kantamanto Market, disrupting long-standing efforts to improve its infrastructure and working conditions. The event prompted swift responses from individuals, organisations, philanthropists, and government actors—both within Ghana and abroad—demonstrating the deep community ties and collective commitment that define the market.

Relief and rebuilding efforts have been driven largely by formally and informally organised groups, each mobilising resources to support their own constituencies. In the absence of a coordinated, market-wide rebuilding strategy, concerns have grown over the exclusion of marginalised groups, including elderly traders, head porters (Kayayei), and traders with disabilities. Organisations including the OR Foundation and the Revival Earth have raised and distributed critical funds to fire relief and accelerate renewal.<sup>110</sup>



Figure 6: Image of Kantamanto market after the fire disaster on 2 January 2025.

## 3.2 PAKISTAN: A PILLAR IN THE GLOBAL SECONDHAND CLOTHING TRADE

### Rewear and Pakistan's Textile Industry: A Brief History

Pakistan has become one of the world's leading hubs for secondhand clothing, importing more than 800,000 tonnes each year.<sup>111</sup> <sup>112</sup> Around 30–35% of these imports are re-exported to other markets, particularly Kenya, Mozambique, and Tanzania.<sup>113</sup> The remainder is channelled into domestic secondhand markets or directed towards recycling, with an estimated 8–10% ending up in downgraded applications, incinerated or landfilled within Pakistan. Most imports arrive through the port of Karachi, where further sorting and processing occur within the Karachi Export Processing Zone (KEPZ), home to around 70 companies involved in used textile activities.

Beyond the secondhand market, Pakistan's textile sector is a global powerhouse and a cornerstone of its economy, contributing 8.5% to GDP and over half of the country's export earnings.<sup>114</sup> As the world's fifth-largest cotton producer, Pakistan boasts a vertically integrated supply chain encompassing ginning, spinning, weaving, dyeing, and garment manufacturing. Nearly half of the industrial workforce is employed within this sector, spread across large mills and numerous small and medium-sized enterprises. Next to this, a textile recycling industry is growing, especially in Faisalabad, with an estimated 175 to 225 recycling units, and additional clusters in Karachi, Lahore, Sheikhpura, and Multan.<sup>115</sup> This expanding infrastructure reflects increasing demand for fibre-to-fibre recycling and material recovery.

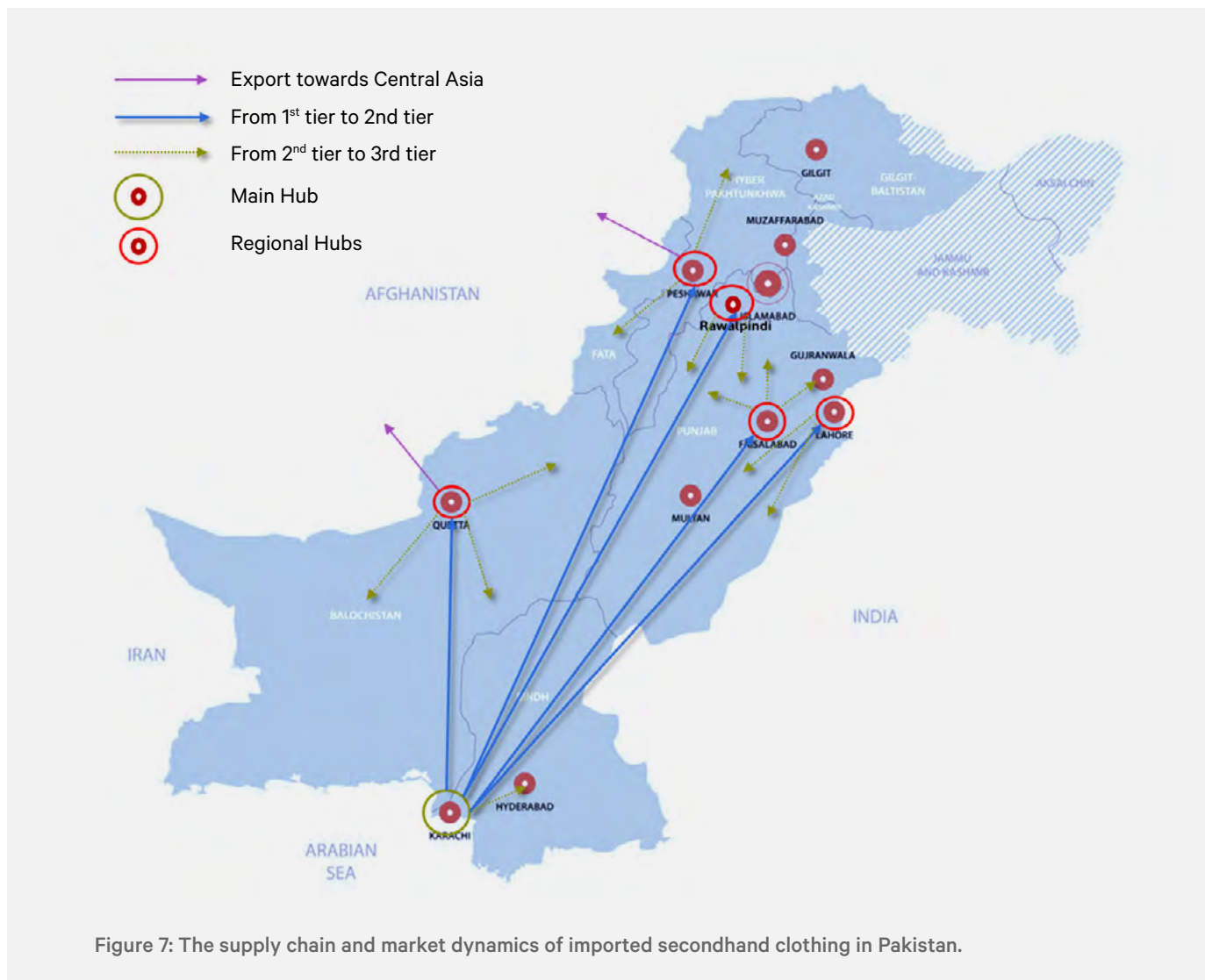
Together, Pakistan's dual roles as a major importer of secondhand clothing and a leading producer of new textiles support millions of livelihoods but also reveal underlying inequalities. The country's competitive advantage in low labour costs and comparatively weaker labour regulations shapes these dynamics. Like Ghana, Pakistan's position in the global textile economy is tied to a longer history of structural economic dependency, influenced by colonial-era extraction and later reinforced by reliance on International Monetary Fund conditional loans.

### Rewear flows in Karachi

Pakistan has maintained an established Rewear economy for roughly 35 years, with imported secondhand clothes commonly sold by informal street vendors and market sellers. Imports under HS 6309 code (the customs code for secondhand textiles intended for rewear on international markets) arrive at Karachi's seaport before being consolidated and processed in the Karachi Export Processing Zone (KEPZ) or sorted and distributed via the Sher-Shah market, a sprawling wholesale hub. Smaller-scale importers operate in fragmented clusters outside Karachi in cities such as Faisalabad, Lahore, and Peshawar, but these regional nodes handle only a fraction of the volumes processed in Karachi.

Over the past six years, import volumes have fluctuated but trended upward.<sup>116</sup> In 2019, Pakistan imported 558,466 tonnes of secondhand clothing, falling to 483,183 tonnes in 2020. A sharp rebound followed in 2021, with imports surging to 933,992 tonnes. Volumes then stabilised, remaining just above 800,000 tonnes in subsequent years.

From Karachi, much of the imported clothing enters multi-stage sorting and resale networks across the country. Second-tier domestic markets operate in other major cities, including Lahore, Faisalabad, Quetta, Peshawar, and Rawalpindi. These markets sell directly to consumers and supply third-tier markets in smaller cities and districts such as Sahiwal, Sheikhpura, and Gujranwala, where textiles undergo further sorting and pricing. In some cases, a fourth tier of distribution brings secondhand clothing to small towns and rural areas. Across the supply chain, garments often pass through multiple grading stages, leading to price variation. Demand also shifts by region. For example, winter wear is more sought after in the north, denim is popular in Karachi, and hoodies and t-shirts sell well in Punjab. Figure four provides an overview of these movements.



Garments destined for re-export are primarily processed through the KEPZ, where used clothing accounted for 38% of total exports in 2018.<sup>117</sup> Pakistan is currently the world’s seventh-largest exporter of secondhand clothing, with export values rising steadily from around US\$200 million in 2019 to nearly US\$300 million in 2023.

East Africa is the primary destination for re-exported secondhand clothing with the primary destinations and respective market values detailed in Table five.

Country	Five year average price value per tonne (USD)
<b>KENYA</b>	931
<b>MOZAMBIQUE</b>	878
<b>TANZANIA</b>	924
<b>THAILAND</b>	762
<b>UAE</b>	651

Table 5: Pakistan’s top five export destinations and value breakdown.

A smaller portion of imported secondhand clothing is re-exported to Afghanistan. Unlike exports routed through the KEPZ, these shipments move across land borders at Chaman and Khyber Pakhtunkhwa, with winter wear making up the bulk of items traded.

## Sorting, value creation, and retail of secondhand clothing

Sorting capacity is a core activity underpinning Pakistan's role in the global secondhand clothing market. The sorting process significantly increases the value of incoming textiles, as reflected in the price differential for HS 6309: Pakistan's imports average US\$411–527 per tonne (€362–464), while its exports average US\$878–931 (€751–796) per tonne.

Sorting is both skilled, labour-intensive and cost-efficient, typically ranging from PKR 15–18 per kilogram (approximately US\$0.054–0.064 or €0.050–0.060). Pakistan's lower labour costs, combined with established expertise and infrastructure, make it an attractive destination for European collection and sorting actors seeking further processing.<sup>118</sup> For instance, single shoes are frequently shipped to Pakistan to be paired for resale, sometimes as waste to evade customs tax. Once paired they may be sold and re-exported as non-waste. According to previous research, 75–80% of shoe pairs would be matched within three months.<sup>119</sup>

Local secondhand clothing retailers in Pakistan source their stock primarily from the Karachi hub, typically receiving pre-sorted bundles organised by garment type. Domestic selling prices vary by quality, brand, and local preferences: denim averages PKR 250–400 (US\$0.90–1.44), outerwear PKR 300–600 (US\$1.08–2.16), and t-shirts PKR 300–450 (US\$1.08–1.62).

Profitability in local markets is constrained by factors such as demand shifts, the trickle-down pricing impact of volatile shipping rates, and broader contextual factors that cause rising operational costs, such as electricity. As in Ghana, bales received as rewearable in reality contain mixed-quality textiles, and there is a high degree of unreliability in stock: retailers interviewed in the case study suspect quality limiting may be intentional.

Like fashion retail cycles, the local market prices new arrivals at a premium, then reduces prices within days. In many cases, prices drop after just three to four days, and by the end of the week, unsold items move to clearance to ensure turnover and maintain cash flow. Garments typically remain in stores for one week to one month before being recycled or discarded. Bestsellers are usually those in superior condition, branded, or aligned with popular trends. Visible damages—such as tears, stains, broken components, or excessive wear—make items likely impossible to sell for Rewear, just like items considered culturally unsuitable for resale.

Given tight profit margins, extensive preparation-for-rewear activities are rarely viable. Retailers avoid washing garments, as it costs PKR 100–120 per item (US\$0.36–0.43), and instead rely on low-cost measures such as pressing (PKR 10–15, US\$0.04–0.05) and minor in-house repairs, often carried out by women in households for PKR 5–10 per fault (US\$0.02–0.04). Outsourced repairs are far more expensive, ranging from PKR 25–100 PKR per fault (US\$0.09–0.36).

Some preparation takes place in specialised workshops, which process 1,500–2,000 pieces daily. Tasks include additional sorting, pressing, cutting, stitching, repairing, tagging, and bundling, at a cost of PKR 5–8 per task (US\$0.02–0.03). Re-manufacturing sometimes also takes place in these workshops, at higher costs of PKR 70–80 per garment (US\$0.25–0.29). More time and resource intensive activities like resizing, re-dyeing, and restoring are reserved for premium products where the potential market price justifies the intervention.

## Recycling

While Rewear from both domestic sales and exports offers the highest economic returns for imported post-consumer textiles in Pakistan, recycling is less profitable. Still, both textile-to-textile mechanical recycling and downcycling are present in the country.

Textile-to-textile recycling produces high-quality recycled fibres, typically for export. These require premium feedstock, such as 100% cotton or wool. Recycled cotton is generally used within domestic manufacturing, while recycled wool fibres are primarily exported to Europe. The process involves multiple labour-intensive stages, including waste segregation by material and colour, quality inspection, removal of trims and accessories, fibre extraction, and spinning.

Utility-based downcycling represents the lowest-value and converts textiles into mops, coarse yarns, insulation, and filling materials.

### Challenges and impacts

Pakistan's Rewear sector supports a diverse range of jobs spanning importers, exporters, retailers, remanufacturers, sorters, repair technicians, and transport and logistics workers. The KEPZ alone employs over 10,000 people, around half of whom are women. Broader estimates suggest that nearly half of Pakistan's entire industrial workforce is engaged in textile-related activities.<sup>120</sup> However, it is difficult to isolate the share of jobs linked specifically to imported secondhand textiles and Rewear, as many workers are at the same time involved in handling textiles destined for recycling.

A key distinction in Pakistan's Rewear economy lies between the predominantly formal structure of the KEPZ and the more informal dynamics of other regions. Within the KEPZ, wages, benefits and working hours are regulated, while outside, the work is often informal, unregulated and compensation frequently falls below the national minimum wage.

Gender dynamics also shape the division of labour. Both men and women participate across the Rewear ecosystem, but roles are clearly segregated. Men tend to dominate retail operations, while women are more often involved in garment repair, which is frequently carried out in domestic settings. In recycling, men typically handle machine-based processes, whereas women perform lower-paid, labour-intensive tasks such as manual sorting.

This case study does not include qualitative employment data on workers' perceptions or experiences of working conditions, which remains a significant research gap in understanding circular textile economies in Pakistan.

Both case studies highlight how livelihoods are entwined with secondhand clothing flows, while also revealing the persistent deficits in decent work within these sectors. The existence of jobs alone cannot shield the global secondhand trade from critique.

### 3.3 EU POLICIES SHAPING USED TEXTILE FLOWS

Tracing and regulating used textile flows is notoriously difficult. Garments exported as secondhand goods are assumed to be destined for reuse, but their actual trajectories are far more complex. Researchers rely on trade databases such as UN Comtrade and EU Comext to map these flows, but these track only the first export destination.

Textiles intended for Rewear are exported under product code HS 6309 ('worn clothing and other worn articles') in the Combined Nomenclature system,<sup>121 122</sup> while waste is classified under HS 6310 ('used rags, sorted or unsorted textile waste'). In practice, as pictured in the case studies, items exported under HS 6309 are often market surplus, poor quality or culturally misaligned. Exporters may avoid using the HS 6310 code because of stricter regulations on waste shipments, classifying both reusable and non-reusable textiles under HS 6309.<sup>123</sup>

A single garment can shift repeatedly between being considered a 'product' and 'waste' while crossing regional and national borders, as its value is created and lost. They may end up being reworn, recycled, downcycled, incinerated, or discarded. This ambiguity undermines accountability for the negative impacts of secondhand clothing trade.

The EU has brought in several policies which attempt to regulate the used clothing exports, however, designating materials as clothing or waste is socially conditioned and context-dependent<sup>124 125</sup> and has proven not easy to fix and enforce by legal definitions or trade codes.

POLICY	TYPE	DESCRIPTION	IMPLICATIONS
<b>Waste Framework Directive (WFD) Directive 2008/98/EC</b>	EU Directive	<p>The WFD is the cornerstone of EU waste management law. It establishes the basic principles of the waste hierarchy and introduces obligations for separate collection of textiles.</p> <p>2018 revisions to the WFD introduced mandatory separate collection for textiles, which came into effect on the 1<sup>st</sup> January 2025.</p> <p>Later revisions (proposed in July 2023, passed in September 2025) call for a harmonised Extended Producer Responsibility framework for all Member States, and the alignment of eco-modulation criteria with Eco-design for Sustainable Product Regulation (ESPR) requirements.</p>	<p>The WFD lacks concrete targets for collection, reuse, and recycling of textiles, so it does not effectively drive specific outcomes for Rewear.</p> <p>The revisions passed in September 2025 state that all collected textiles are to be considered waste unless professionally assessed at point of collection. This requires a waste permit for any actor performing collection, including challenges. Depending on existing waste law and infrastructure, this involves complexities for some Member States.</p> <p>The proposed EPR framework currently includes no mechanism to allow collected fees to travel across borders; end-of-life management costs for exported textiles are not alleviated by current EPR.</p>
<b>The Basel Convention</b>	International Treaty	<p>The Basel Convention is an international treaty (in force since 1992) regulating the transboundary movement of hazardous waste, specifically in response to concerns of high-GDP countries transferring this waste to low-GDP countries.</p>	<p>Under the Basel Convention, textile waste is classified under B3030 and generally regarded as non-hazardous waste that is outside the Convention’s controls and trade bans for hazardous waste.</p>
<b>Waste Shipment Regulation (WSR) (Regulation (EU) 2024/1157) (repealing regulation (EC) No 1013/2006)</b>	EU Regulation	<p>The WSR implements the Basel Convention obligations at the EU level. This piece of legislation aims to ensure environmentally responsible waste management and avoid the transfer of waste challenges to third countries.</p> <p>Textile items collected and sorted in the EU are shipped to third countries under CN code HS 6309, which classifies them as ‘worn textiles and clothing’, so they can be shipped without the requirements linked to waste shipments.</p> <p>These exported items are not always reused and end up as waste, causing environmental, health, economic, and social impacts.<sup>126</sup></p>	<p>The WSR does not prevent social and environmental harm caused by textiles in export destinations.</p>

Table 6: Three key EU policies impacting regional and global secondhand textile flows.

### Implications for the supply chain

Exporters and importers express mixed concerns about this shifting policy landscape. Some fear that tighter export rules will increase compliance costs and threaten livelihoods.<sup>127</sup> Others worry that the measures are too

lax: if textiles are designated as ‘reusable’ rather than ‘waste’, they bypass WSR controls, allowing low-quality exports to continue unchecked.<sup>128</sup>

The 2025 EU-wide requirement for separate textiles collection, introduced under the 2018 WFD revisions, could exacerbate this issue.<sup>129</sup> While intended to divert textiles from landfill to reuse and recycling, it is likely to flood sorting facilities with low-quality materials. European Commission Impact Assessment figures suggest that achieving a 40% separate collection rate could add 2.5 million tonnes of textiles annually. Even with major capacity increases—1.5 times more reuse and 2.5 times more recycling than in 2019—the EU could only process 1.3 million tonnes domestically, leaving 1.2 million tonnes likely destined for export.<sup>130</sup>

### **Defining ‘waste’**

The Waste Framework Directive (WFD) uses two key principles: point-of-discard (when the original owner disposes of an item) and end-of-waste (when a discarded product becomes usable again). The 2023 revisions introduce a default assumption that all textiles become waste at collection,<sup>131</sup> aiming to curb exports of unsorted, low-quality items. End-of-waste criteria for textiles have yet to be set, but under Article 6, qualifying items must: a) have a clear use-case, b) have a market, c) meet technical requirements, and/or d) not cause adverse environmental or health impacts.

While criterion (b) aligns with industry assumptions that demand in receiving countries signals genuine need, this is not always true. Criterion (d) is particularly problematic: there is no certainty that garments deemed Rewearable in Europe have value or will not cause harm in their destinations. This underscores that ‘waste’ is not just a legal category but also an economic and cultural one.

### **EPR and structural gaps**

EPR shifts the financial responsibility for products’ end-of-life to producers. Among the countries in this study, only the Netherlands has implemented a textile EPR scheme. EPR aims to support better textile end-of-life management and direct investment toward reuse and recycling infrastructure. However, current schemes provide insufficient funds for processing textile waste further than collection and sorting, and they lack cross-border financing, meaning that those undertaking the labour-intensive sorting and reuse outside the EU do not benefit, while sorters in the EU need to export to maintain profitable operations.<sup>132</sup>

### **Governance limits**

This analysis shows that EU policies could either strengthen or undermine Rewear systems. Gaps in EPR funding and the risk of sorting overload highlight the need for greater transparency and more accurate technical classifications to make regulations enforceable in practice.

The cases of Ghana and Pakistan reveal that attempts to standardise what counts as ‘waste’ or ‘reuse’ often overlook the lived, context-specific realities. Policies like EPR and the WSR must therefore be assessed not only by their stated goals, but also by how they interact with the infrastructures, economies, and labour conditions in a global context.

Crucially, the power to define textile waste and control its movement remains concentrated within the EU, despite most of the labour, expertise, and environmental and social impacts being located in countries such as Ghana and Pakistan. Achieving fairer governance requires mechanisms for procedural justice that give those most affected a meaningful role in shaping the definitions and rules of accountability systems governing global used textile flows.



04

# REWEAR PILOTS: CIRCULAR BUSINESS MODELS IN PRACTICE

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The Sorting for Circularity: Project Rewear launched a series of three pilots with forward-looking innovators to test the practical viability of circular strategies that could shape tomorrow's Rewear ecosystem. These pilots focused on assessing how **repair, digital tools, automation, and new business models** can help overcome structural barriers such as limited repair uptake, high labour dependency, and uncertain profitability. By experimenting with solutions including automated sorting for second-hand, the development of an aftersales diagnostic tool, repairs, and the evaluation of economic performance across circular business models, the pilots provide tangible evidence of what scalable and economically viable Rewear strategies could look like in practice, as further elaborated in the case studies below.

## CASE STUDY: [reverse.fashion](#)

### **reverse.fashion**

Founded in 2024, [reverse.fashion](#) provides high-tech sorting solutions to drive the textile industry's circular transformation. Building on research from the Technical University of Berlin and circular fashion, the company offers a suite of tools powered by computer vision and DPP integration. These solutions are already operational in the market through [co.sort](#), which empowers operators to find valuable garments for reuse, while their [line.sort](#) system provides fully automated classification across reuse and recycling channels.

### **AI sorting technology as a lever for accuracy, productivity and value retention.**

The [reverse.fashion](#) pilot tested how AI-enabled, demand-driven sorting could structurally improve value capture sorting for the second-hand retail sector. [reverse.fashion](#)'s product [reverse.engine](#) is a software and AI layer functioning as critical infrastructure for next-generation second-hand garment sorting. [reverse.engine](#) provides:

- AI analysis of product images based on criteria such as condition, style, product type, gender category, brand, size categories, season, colour, fabric construction
- Modifiable sorting through configurable customized sorting rules that allow buyers to define precise feedstock specifications by combining multiple product attributes (for example, a buyer sourcing premium basics might configure a rule targeting T-shirts from premium or higher-tier brands in good or better condition; while a seasonal buyer might define a rule capturing Christmas-style knitwear — sweaters, t-shirts and trousers in very good or better condition with a knit fabric construction. These rules can be updated at any time to reflect changing demand or market conditions.)
- Demand-driven output through a buyer interface to communicate curated feedstock specifications, including trends, rules and moodboards
- DPP connectivity through technology that reads Digital Product Passports and connects the given product data where possible
- An auditable process through fully documented decisions to prove feedstock quality, including export compliance

Two key products were piloted: **line.sort**, which helps capture the highest value products already at the first conveyor-based sorting and **co.sort**, which supports fine sorting operators on hard to classify items.

## Key Lessons Learned

### 1. Sorting business case: AI enabled automation can significantly increase productivity and margin

The line.sort system captures near-360° ultra-high-resolution garment images and classifies items in real time at speeds of up to 2 metres per second or more. At scale, one configuration of three lines can process approximately 4,650 tonnes annually.

Compared to manual multi-step sorting, line.sort demonstrated: **40% higher productivity per unit; up to €90,000 annual personnel cost savings** (an approximately 2.3 FTE reduction) per unit; **a ~€200,000 annual revenue uplift per unit; and an overall ~20% revenue gain**, driven by more accurate identification of higher-value fractions.

### 2. Small shifts create disproportionate value

In the current post-consumer textiles sorting and resale ecosystem, value distribution per kilogram typically resembles: 2% vintage (~€13/kg); 8% cream (~€5/kg); 45% export (~€0.60/kg); 35% recycling (~€0.15/kg) and 10% waste (~€0.20/kg) according to estimations provided by reverse.fashion. These values closely align with the empirical data collected during Project Rewear, with a margin of ±5%

Within the pilot modelling, Reversed.fashion showed that AI-driven precision can shift fractions modestly but meaningfully with the vintage fraction increasing by 1.5%, and the cream fraction by 0.5%, export decreases from 45% to 43% retaining more material and value on local second-hand markets.

While these shifts appear marginal, at €13 per kilogram for curated high-end vintage assortments, they are economically significant applied to an annual throughput of 30,000 tonnes facilities.

### 3. Demand-driven sorting unlocks more potential with high-margin sales channels

Through reverse.engine, buyers can communicate curated feedstock specifications via configurable rules and even moodboards. This moves sorting from supply-driven bulk categorisation to demand-driven, buyer-aligned output. This type of specific, buyer-driven category sorting which has previously been too labour-intensive to justify, becomes economically feasible at scale. reverse.engine technology also enables the monetisation of curated supply streams for re-commerce platforms, including digitisation replacing around 5 minutes of manual photography and data entry per item.

One potential application of this capability could be the potential to support brands in sourcing feedstock for their own resale programmes. Collaborative models between brands and sorting facilities have been explored before, including pilots as early as the 2010s in which Scandinavian mass-market fashion brands partnered with large sorting centres to identify and extract their own products from post-consumer streams. While the sorting quality in these early trials was promising, the manual labour required to identify and isolate specific brand products at scale made the business case difficult to sustain. AI-enabled, demand-driven sorting could change this calculus. Whether this represents a realistic pathway for brands to partner with sorting facilities recovering their own products from post-consumer streams for branded resale or refurbishment programmes remains to be tested. Brand-specific recovery was not within scope of the current pilot, but it represents a compelling direction for future research. Dedicated trials would need to evaluate sorting accuracy for brand-specific identification, viable commercial partnership structures between brands and sorters, and the quality and volume thresholds required for operational viability at scale.

### 4. Digitisation of products for re-commerce

The reverse.engine in combination with line.sort technology enables the monetisation of curated supply streams for re-commerce by industrialising the digitisation process. It replaces several minutes of manual mannequin photography and data entry with a system that generates AI model images and product attributes such as condition, color, brand, measurements and others in seconds. By drastically reducing

per-item processing costs, reverse.engine makes the business case for high-volume re-commerce economically feasible.

##### 5. AI reduces dependency on tacit expertise

Manual fine sorting often relies on a honed skill built up by sorters with 1 to 5 years of experience. Trend research on resale platforms such as Vinted is time-intensive and inconsistent. With co.sort, operators receive real-time AI fraction suggestions based on product type, brand, style and gender category. Sorting rules can be set using text prompts and reference images. The system includes feedback loops for continuous learning and staff training. This shortens onboarding time and makes sorting decisions more objective and repeatable.

##### 6. AI optimisation to precision vs recall

An additional key finding concerns the optimisation trade-off between precision and recall in AI processing. For example, when detecting garment defects, a precision focus ensures that items flagged as “damaged” are truly defective (minimising false alarms). Conversely, a recall focus ensures every single damaged item is caught (minimising missed defects). reverse.fashion’s technology allows customers to tune this balance based on their specific quality standards and volume goals.



Figure 8: reverse.fashion line.sort technology

## Impact Analysis

The reverse.fashion pilot highlights that the implications of AI-enabled sorting extend beyond operational efficiency. The potential benefits and risks span economic viability, environmental outcomes and social impact within the European sorting ecosystem.

Economic benefits are the most immediately quantifiable. The pilot clearly demonstrated increased revenue per kilogram through unlocking a higher proportion of vintage and cream feedstock. At the same, lower personnel costs and higher throughput translate to higher profit margins.

In modelling for a mid-sized sorter (30,000 tonnes/year capacity), replacing solely manual sorting with 25 line-sort units resulted in:

- Revenue increase from €20 million to €25 million
- Personnel cost reduction from €14 million to €12.5 million
- Profit shift from €0 to €6.5 million

Environmental benefits are modest but strategically significant. Improved sorting precision supports the retention of a greater share of second-hand clothing within EU reuse markets, even if percentage shifts remain modest. This could partially reduce dependency on export channels where environmental impacts are most significantly felt.

Social benefits include technological upskilling within the sorting workforce, improving the quality of sorting jobs and increased long-term resilience of EU-based sorting infrastructure. By strengthening the economic performance of facilities, AI integration may help sustain employment within the sector over time.

However, automation can also reduce short-term personnel needs and sorting roles are frequently held by individuals who are already distanced from the labour market (people and groups who face barriers to employment and are not engaged in regular paid work), meaning workforce reductions carry social implications. A responsible transition, including retraining and redeployment strategies, is therefore critical to ensure that productivity gains do not put the most vulnerable members of the workforce at risk. Sorting facilities can mitigate this by collaborating with local government and employment centers to facilitate workforce transitions, as well as investing in upskilling the existing workforce to utilise new technologies.

Overall, the AI-enabled sorting tested in the reverse.fashion pilot has the potential to address a core economic weakness of the current reuse system: the misallocation of value. This pilot demonstrates how relatively modest improvements in classification accuracy, when applied at industrial scale, can materially reshape the financial performance and strategic resilience of European textile sorting operations.

## Case Study: United Repair Centre

### Targeted repairs as a lever for value retention and domestic reuse market development

#### The United Repair Centre

The United Repair Centre (URC) is a social enterprise with the goal of leading a ‘revolution of repairs by putting people first’. They are a leading actor in facilitating B2B clothing life extension services, with a comprehensive suite of solutions fostering repair as central to brand circularity. Their mission is to create direct jobs on a large scale, predominantly for those distant from the labor market, while processing thousands of pieces of clothing annually, blending social and environmental objectives. Their innovation demonstrates the profitability of extending clothing lifetimes and fostering job creation, supported by our worldwide presence, cooperative ecosystem, and role as social pioneers.

URC’s Rewear pilot sought to quantify the incremental value created through repair by comparing independently assessed resale prices of garments before and after intervention, while accounting for repair and associated logistical costs. The small-scale pilot repaired 164 items (provided by project partner sorters), which were sold via a second-hand retail partner in Antwerp. The valuation of pilot garments was done using third party “Trosort” AI technology.

The pilot tested two types of repair intervention. The main intervention tested was on ‘clean repairs’, which address straightforward damage such as broken zips, missing buttons, minor tears or loose seams, restoring garments to a wearable condition with minimal labour input. Creative repairs (introduced on a much smaller sample) involved more complex or visible interventions, such as visible mending, patchwork, or upcycling techniques.

A key contextual factor shaping the pilot’s outcomes was the quality of incoming feedstock. The garments received were predominantly low-quality fast fashion items, rather than the denim and outerwear mix originally anticipated. This had a direct effect on results: it limited the scope for creative repair interventions, and reduced the number of items the resale partner was able to place on the shop floor. Readers should bear this in mind when interpreting the findings as the pilot’s outcomes reflect, in part, the constraints of the available feedstock rather than the ceiling of what repair can achieve.

While the damage categories encountered broadly correspond to the defect typologies identified in Chapter 2, the methodologies were not fully harmonised; Chapter 2’s sorting analysis nonetheless confirmed that a significant share of discarded rewearables present fixable defects of varying complexity, providing relevant contextual grounding for the repair interventions tested here.

## Key Findings

### 1. Repair margins are structurally constrained, but category targeting changes the equation

The pilot reaffirmed the persistent challenge highlighted in chapter 2: repair operators typically operate on low margins, which limits incentive for large-scale integration. For many lower-value and ultra-fast fashion garments (which represented the predominant fraction for this pilot) repair costs approach or exceed potential resale uplift, weakening the business case.

The story in numbers:

- **Items with positive valuation:** 96 (items assigned resale value by Trosort)
- **Items with positive margin:** 18 (items where resale price exceeded repair costs)
- **Resale prices:** Most items, including trousers, T-shirts and skirts, were valued below €10
- **Median resale value:** €6
- **Median total operational cost (repair + handling fee + shipping):** ~€14

Most notably, the pilot data indicates that **targeted item selection** is strongly economically motivated. Certain product categories show significantly greater potential for value recovery through repair. In particular, **outerwear and denim** demonstrate stronger economic prospects compared to lower-value garment categories such as T-shirts, skirts, and lightweight trousers. For these segments, resale values following repair can meaningfully exceed expected resale prices without intervention, generating a clearer economic rationale for repair.

While the overall median resale value across the sample was €6, outerwear achieved substantially higher outcomes. One repaired jacket sold for €125, far exceeding the overall sample median. Even when accounting for this outlier, the median resale value for outerwear remained €14, still considerably higher than most other product categories in the sample. **The mean resale value for outerwear reached €32**, reflecting the influence of higher-value items within the category.

### 2. Creative repairs: feedstock quality dependent

A smaller follow-up sample of 12 items introduced the distinction of clean versus creative repairs. Clean repairs averaged €26.54 in cost against a resale price of €62.70, producing an average margin of +€36 (although a Harley Davidson jacket selling for €250 is a significant outlier lifting this average). Creative repairs averaged €44.99 in cost but achieved only €13.83 in resale value, producing consistent negative margins. The sample is small, but the directional signal confirms the assumption that more time-intensive

interventions (i.e. creative repairs involving more complex mending and aesthetic intervention) require substantially higher product quality to remain viable (a particular challenge in the context of consistently declining feedstock.)

Data from one of URC's brand partners (anonymised) provides the most compelling evidence of this dynamic. Comprising 1,131 items processed under URC's repair and renewal service, the dataset shows what becomes possible when high-quality garments enter the repair pipeline. With approximately 75% processed using creative repair approaches (estimate - distinction not implemented by client), the results are notably different from the post-consumer pilot:

- Average total cost (repair + inspection + wash): **€22.73**
- Average resale value: **€73.93**
- Average margin per item: **+€51.20**
- Items achieving positive margin: **97.7%** (1,105 of 1,131)

The contrast is instructive. Creative repair on post-consumer mixed-quality garments routinely fails to generate a positive return. **The same approach, applied to high-quality branded products with established resale value, generates strong and consistent margins. The repair type is not the determining factor: the quality of the incoming product is.**

### 3. Repair not a feasible intervention for all post-consumer rewearables

URC's Project Rewear pilot confirmed that while more precise targeting materially improves the viability of repair services, it is not feasible to treat repair as a blanket intervention across all post-consumer flows. In the mixed-quality main sample, only 96 of 164 items were assigned any resale value by Trosort. This figure warrants qualification: some items received a zero valuation not because they were beyond repair, but because they fell outside the product categories the resale partner carries on the shop floor. Both outcomes are symptomatic of the feedstock skewing heavily towards low-quality and ultra-fast-fashion (this was outside of the mix anticipated, but does reflect the broader challenge of declining quality post-consumer feedstocks.) Of the 96 items assigned a resale value, only 18 achieved a positive margin where resale price exceeded repair costs. Taken together, these figures reinforce the case for selective deployment of repair, which will be most effective at scale when applied to higher-value garments with strong resale potential, and when feedstock composition is aligned from the outset with the categories where repair economics and resale demand converge.

## Impact Analysis

The pilot data underscores a fundamental tension at the heart of post-consumer textile flows: many garments that are technically most suitable for lifetime extension are not usually viable for repair from an economic perspective. This reinforces the finding from Chapter 2 that most discarded clothing is functionally sound (with 37% of garments showing no damage at all and 41% having only 1 minor defect), but repair and preparation for reuse remain marginal due to the cost of intervention in relation to resale market prices.

The URC data also illustrates the significance of low feedstock quality in undermining the business case for repair. Where resale values are low (as they are for the majority of items in this pilot) the economics will actively favour disposal over intervention, even when the garment is materially rewearable. **This misalignment between circularity potential and market incentives represents one of the most significant structural barriers to scaling repair at the post-consumer level.** This tension is made more acute by the broader trajectory of post-consumer flows, where average garment quality is declining.

The anonymised client dataset offers a counterpoint: where product quality and resale value are sufficient, repair not only becomes economically viable but can generate consistent and meaningful margins. The implication is that the business case for repair is not inherently weak, but is highly sensitive to the quality of

the incoming product stream. This finding motivates a targeted approach to repair intervention and scaling of repair services, with product category serving as a primary filter. Outerwear and denim emerge from the pilot data as the categories with the strongest economic return.

When repair economics break down and rewearable items are discarded, positive potential environmental value is lost. While more targeted and scaled repair systems will play a part, upstream interventions that directly tackle the overall declining quality of post-consumer textile products is the key way through which environmental value can be realised.

Viable repair and resale markets may contribute to diverting garments in high-consumption and high-discard regions from export flows, retaining materials within regional economies rather than displacing responsibility to secondary markets where end-of-life outcomes are frequently uncertain (although it remains far too early to quantify with confidence how repair specifically impacts post-consumer flows.)

Social benefits are intrinsic to URC's model as a social enterprise. Textile repair is by nature a labour-intensive activity, and when organised with a strong social mission at its core, it can generate meaningful employment for people who face barriers to the conventional labour market. Scaling repair selectively and prioritising categories where the economics work makes this social impact sustainable.

Beyond the post-consumer textiles focus of this pilot, URC's broader experience working with brand partners demonstrates that repair programmes deliver value across the full business case. Financial returns and resale margin are just one part of the picture: repair initiatives also strengthen customer loyalty, generate actionable product insights, support compliance readiness in an evolving regulatory landscape, and signal a credible commitment to responsible impact. For brands, repair is therefore not simply a post-consumer intervention, but a strategic decision with returns that span commercial, operational, and reputational dimensions.

## Case Study: Save Your Wardrobe

### Providing digital aftersales direction to create visibility on brand-level ROI, repair uptake and customer retention

#### Save Your Wardrobe

Save Your Wardrobe is the infrastructure powering streamlined aftersales experiences for the world's leading brands. Their end-to-end platform acts as a central hub for omnichannel post-purchase solutions, from repair and maintenance to extended-life care, across industries. By connecting every aftersales touchpoint into one scalable, tech-powered system, they help brands deliver fast, consistent, and connected service experiences that drive loyalty and protect brand value. At the core of their platform is a no-code Business Process Builder, enabling brands to design and automate custom workflows across all stakeholders, from ateliers and customer care teams to stores and service partners. Save Your Wardrobe replaces manual operations with real-time service management, integrated logistics, and data-rich reporting to streamline complexity and scale operational excellence globally.

The Save Your Wardrobe (SYW) pilot included building a **digital aftersales diagnostic tool** and testing how this could address one of the most persistent barriers to scaling Rewear: uncertainty around the business case for integrating repair and care services at brand level. While consumer surveys often indicate limited uptake of

repair services, SYW's work suggests that this apparent lack of demand frequently reflects invisibility and poor integration rather than genuine disinterest.

The pilot developed a publicly accessible diagnostic framework designed to assess a brand's incentive as well as its readiness to implement and scale repair and care services. By inputting up to ten operational and strategic data points, brands receive two tailored optimisation scenarios out of seven possible warranty and repair configurations. These scenarios identify potential efficiency gains, cost savings and performance improvements linked to aftersales strategy. The tool effectively translates circular ambition into commercially legible options, reframing repair from a sustainability add-on to a structured business decision.

The pilot surfaced multiple care & repair brand business case scenarios. The particular selection, emphasis, or combination of the business proposition adopted will depend on multiple factors including brand's market positioning and customer base, and their existing circular and repair infrastructure. Analysis from pilot data demonstrates that repair can generate profit in multiple ways:

- Generating revenue from care and repair services: most obviously, services represent an additional stream of revenue, enhancing the overarching value proposition. It is also expected that a streamlined integration of these services will attract and retain a specific type of customer (specifically younger consumers.)
- Generating revenue from an increased re-purchase rate: as care & repair helps foster long-term customer relationships and loyalty, it is likely that re-purchasing will occur alongside use of care & repair services
- Savings from returns: returns are costly and operationally complex – providing repairs and alterations as an alternative helps retain sales that would otherwise be refunded. Similarly, repairing items under warranty instead of replacing them lowers exchange related costs, reduces inventory pressure and improves margin retention.
- Savings from repairing in-store defects: repair services can also reduce the high-volumes of defective items and address quality consistency issues, reducing final losses and maintaining maximum product value.

## Key Lessons Learned

### 1. Value must be reframed beyond price

The pilot underscored the importance of redefining value in strategic terms. An item's worth does not sit solely in its resale price, but also in emotional attachment, longevity and the potential for personalisation. Positioning repair in this broader value framework is critical to securing internal support and designing a model that resonates with an existing customer base. When repair is framed meaningfully, it becomes a strategic lever rather than a marginal service offer. In this way it also contributes to the broader cultural shifts around value that are needed for a circular transition.

### 2. Latent demand is frequently underestimated

Low recorded aftersales requests do not necessarily indicate a lack of consumer interest in care and repair. The pilot highlighted that demand often remains hidden until services are clearly launched, harmonised across touchpoints and effectively communicated. Brands frequently overlook this opportunity due to limited data and weak internal visibility. Once repair services are integrated and made accessible, uptake can exceed initial expectations, suggesting that perceived demand constraints are often structural rather than behavioural.

### 3. Customer-centric design determines success

Care and repair strategies must reflect the motivations, demographics and values of a brand's target audience. Different consumer segments perceive and engage with aftersales services in distinct ways. An authentic positioning is essential to avoid customer churn while potentially attracting new, younger or sustainability-oriented demographics. Increasingly, care and repair can function as a strategic differentiator, strengthening loyalty and acting as an entry point to broader circular engagement.

#### 4. Organisational alignment and KPI structures shape scalability

Implementation complexity remains a primary barrier. Repair initiatives often require interdependent approvals across sustainability, operations, finance, customer experience and executive leadership. Pilots are comparatively easy to initiate, particularly when driven by sustainability teams, but scaling into core business functions demands cross-team endorsement and executive sponsorship. At the same time, circularity initiatives must compete with climate targets, sales goals and compliance requirements. Where KPIs are narrowly focused on carbon, revenue or regulatory metrics, repair can be deprioritised. Clear business cases, supportive policy drivers and integrated performance indicators are therefore essential to embed care and repair within long-term brand strategy.

#### 5. Operational ROI

Broader pilot data indicates that integrating the Save Your Wardrobe platform correlates with an increase in operational efficiency. Specifically, aftersales lead times were reduced from a 21-day baseline to a mean of 3 days. Qualitative feedback from participating brands suggests the platform functions as a decision-support system, optimizing the selection of care and repair services based on brand alignment and consumer requirements.

Collectively, these lessons reinforce that there is no universal business case for repair. Each brand must tailor its approach to its specific commercial context, customer base and organisational structure, balancing sustainability ambition with economic realities.

### Impact Analysis

The SYW pilot illustrates that impacts depend heavily on implementation quality and brand commitment over time. Economic benefits centre on improved clarity and optimisation. By identifying warranty and repair configurations tailored to a particular brands' customer base and internal structure, brands can unlock cost savings across multiple potential routes.

By embedding repair services more organically into the customer journey and brands' core business models, the SYW tool can contribute to increased product lifetime extension and the mainstreaming of circular practices, strengthening both the environmental contribution of repair and the long-term economics of circular models. The strongest environmental benefit of brand integration of this kind of solution derives from extending product lifetimes and in theory reducing premature replacement (clearly establishing and quantifying this environmental benefit would require measuring uptake rates and service accessibility over time.) Hypothetically in the medium to long term, this kind of tool and the scaling of circular business models it enables could also have upstream environmental impact by reducing brand reliance on linear production revenue.

Social benefits include the potential strengthening of local repair ecosystems and service employment, as increased brand participation in repair can stimulate demand for skilled repair operators. Integrating care into mainstream brand operations also contributes to cultural normalisation of maintenance over replacement (a key social component of circular economy).

Overall, by translating repair and care into tailored optimisation scenarios, the SYW pilot addresses a fundamental bottleneck in circular business model adoption: the perceived lack of a credible return on investment. When ROI is articulated in operational terms, repair shifts from aspirational sustainability rhetoric to strategic business infrastructure.

## Chapter Conclusions

All pilot findings highlight that positive business cases can emerge across repair, logistics, and sorting when interventions are strategically targeted and operational models are carefully designed. The reverse.fashion pilot demonstrates this most quantifiably: relatively modest improvements in AI-enabled sorting accuracy translate into materially significant revenue gains when applied at industrial scale, with modelling for a mid-sized sorter showing a profit shift from zero to €6.5 million. The SYW pilot makes a parallel case at the brand level; by translating repair and care into commercially legible optimisation scenarios it addresses one of the most persistent barriers to brand adoption which is the perceived absence of a credible return on investment.

The environmental benefits of Rewear interventions are positive from the perspective of lifetime extension and post-consumer waste reduction. In the longer term, more targeted innovation is needed to develop Rewear solutions that contribute directly to upstream circularity. From a social perspective, the pilots suggest particularly strong potential in models involving social enterprises, where circular activities can be combined with inclusive employment and community value creation, while also noting that automation-driven productivity gains require responsible workforce transition planning to avoid displacing the most vulnerable workers. Overall, these interventions represent pioneering experimentation in the Rewear space and provide early indications of where scaling may be feasible.

It should also be noted that the pilots all operate within the EU context and were not designed to analyse effects on global markets. Given the inherently global nature of Rewear, innovations of this kind will inevitably have some knock-on effects on export markets but at the scale of these pilots, such effects are likely minimal and beyond the scope of detailed analysis. The connection between EU rewear market innovation and global rewear market impacts remains an important area for future research.

The feedstock challenge encountered in the URC pilot reinforces the structural barrier that has come up throughout this project: the overall quality of post-consumer flows does not reliably deliver a garment quality that makes Rewear economically viable in a consistent way. This quality and demand gap is not a problem that targeting and operational design alone can solve. It ultimately originates upstream.

This brings the pilot findings into alignment with a broader conclusion: Rewear alone cannot address the systemic challenges facing the textile sector. Circular innovation of the kind explored in these pilots is necessary, but not sufficient. Lasting progress will require a parallel transition toward systems that produce and consume fewer garments in the first place, reducing the volume of low-quality material entering post-consumer flows at source. Navigating that shift will require collaboration and continued experimentation across every level of the fashion system. These challenges are complex but urgent: the next chapter outlines how stakeholders can begin to address them more directly.



05

# CONNECTING THE THREADS: **A CALL TO ACTION**

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## AUTHOR'S NOTE

Since Project Rewear's inception, the landscape has continued to shift considerably. Sorting businesses, particularly smaller operators, are under intensifying financial pressure, and the regulatory environment around producer responsibility and waste management continues to evolve. Data in Rewear is not fixed in the way that, for instance, materials science data might be. The findings and recommendations presented here reflect the evidence available at the time of writing and should be read as directional rather than definitive. The regulatory context shaping Rewear interventions has also evolved meaningfully since this project began. Mandatory Extended Producer Responsibility frameworks are coming into play. These are creating new financial obligations for producers, although implementation remains uneven and the mechanisms through which EPR revenues flow to reuse actors remain underdeveloped and inequitable. In parallel, the 2025 obligation for separate collection of textile waste introduced a significant shift. Although direct impacts have not yet been quantified, it is expected to increase collection volumes over time – in the absence of aligned investment in sorting, preparation-for-reuse, and end markets, this expansion risks placing additional strain on already constrained systems. Smaller sorting operators in particular are already feeling a notably increased strain. A number have closed or are under serious financial pressure as collection volumes increase without a corresponding expansion in viable reuse markets. Most concerningly, preparation for reuse, one of the highest-value outcomes in the waste hierarchy, is being systematically undermined in current practice. Policy ambitions under circular and sustainable textiles and on-the-ground realities remain significantly misaligned, and this gap must be addressed urgently if regulatory frameworks are to deliver on their circularity objectives.

This report brings together three distinct but interrelated lenses on Rewear: the material realities of post-consumer textiles in Europe (Chapter 2); the global dynamics of secondhand clothing markets (Chapter 3); and forward-looking scenarios for scaling Rewear innovations (Chapter 4). Findings from Chapter 2 demonstrate that the majority of garments entering European sorting systems remain technically rewearable, with most items either undamaged or only minimally damaged. However, this technical rewearability mostly does not translate into realised value due to factors including limited investment in preparation for reuse and competition with low-priced new garments. Chapter 3 extends the current state analysis to two major Rewear export destinations, Ghana and Pakistan, illustrating how Rewear dynamics play out in a global value chain. The findings highlight both the scale and variety of circular practices in these contexts, which are more effective at diverting low-quality clothes from waste streams than in Europe, but are often underrecognised in policy and industry circular business discourse. They also highlight the disproportionate burdens placed on receiving markets, underscoring the uneven distribution of value and risk within the global Rewear system. The pilots presented in Chapter 4 demonstrate that targeted interventions such as AI-enabled sorting, selective repair strategies, and digital aftersales infrastructure can materially improve the operational and economic viability of Rewear systems (at this stage with a focus on the European context).

Across all chapters, a common pattern emerges: the limiting factor is not the absence of rewearable material, but the absence of systems that can effectively capture its value. Current market conditions shaped by linear business models and adverse economic incentives continue to favour volume and low-cost disposal pathways over Rewear. The environmental effectiveness and overall impact of Rewear interventions ultimately depends on whether they can be meaningfully integrated into business models and value chains at scale to begin to actually displace this linear status quo. Moreover, in light of overarching industry impact, without simultaneously working towards a reduction in overall production, the environmental benefits brought by Rewear will remain marginal.

## RECOMMENDATIONS

The outlined recommendations are meant to invite reflection from industry, policymakers, funders, and researchers on the systems they operate within and how they might act to reshape them. The shifts described here are not incremental adjustments. From pilots to permanent models, from peripheral to core revenue, from linear to circular logic, they require changes to business models, incentive structures, investment horizons, and organisational cultures that run against the grain of the industry currently operates. **Market realities, competitive pressures, and short-term financial imperatives create genuine barriers to the adoption of even well-evidenced circular practices. Acknowledging this complexity and the uneven starting point is a precondition for designing interventions that are realistic as well as ambitious.**

Equally, it's important to be transparent about what these recommendations do not resolve. Project Rewear was designed to examine what can be done within and at the edges of existing Rewear ecosystems. The questions of how to regulate for less within a growth-oriented economy, as well as the deeper question of resolving economic needs with sustainable production volumes remain genuinely open challenges for research and policy, and ones that no single study is positioned to resolve. As Maldini and Klepp (2025) demonstrate, prevention — the highest tier of the waste hierarchy — has been systematically sidelined in EU textile and circular economy policy, and the tools to operationalise it remain underdeveloped.<sup>133</sup> The recommendations that follow acknowledge this gap and, where possible, point towards where overproduction can begin to enter the frame, while also giving concrete suggestions about steps that can be taken within the current landscape.

In line with this understanding, we draw on Donella Meadows' "Places to Intervene in a System" framework<sup>134</sup> to ground our recommendations across leverage points from 'shallow' interventions to 'deep' interventions that contribute to broader paradigm shifts. While shallow interventions yield incremental gains, only high-leverage actions, such as challenging the logics of growth and disposability, are able to address root causes. Impact levels were qualitatively assessed based on: the scale of potential value (economic, environmental, and social) retention; the extent to which each intervention can influence or reshape current market and policy dynamics; and the expected time horizon for implementation. **Systemic change requires action at all levels, recognising their interactions and compounding effects. The following recommendations aim to link immediate opportunities and actionable goals for different Rewear stakeholders with the deeper shifts required for a just and sustainable transformation of the fashion industry.** They should be read as directional and suggestive, with future research needed on mechanisms and political feasibility pathways, particularly for higher-level interventions.

Stakeholders across may note a gap between recommendations and their operational translation. Where the pilots have generated sufficiently concrete evidence, the recommendations below attempt to signal realistic entry points and sequencing, rather than presenting circular integration as a single step. Bridging this translation gap more fully, however, remains an important agenda for future applied research and industry collaboration. Understanding what any given intervention would actually require in terms of capacity, data infrastructure, resource commitments, and other feasibility factors will be critical.



**For brands and retailers**

Overall, brand Rewear activities should shift from being peripheral to being part of business-as-usual for brands. Brand integration of Rewear related circular business models should recognise the context that their environmental potential comes from an eventual displacement of new clothing production. Brands can also contribute by creating more ownership of the end-of-use of their products and the ‘reverse supply chain’ they flow through by investing in better Rewear infrastructures at the global level. These recommendations should be reflected on by industry actors with nuance; there are no universal panaceas. Findings from the URC repair pilot, for example, are category-specific and cannot be generalised to a repair business case across all product archetypes. The SYW pilot further highlights the individuality of each brand’s repair offering options. Brands engaging should reflect on how to carry forward selected strategies, adapting them to their own context – not all circular levers are equally viable for all actors.

RECOMMENDATION	INTERVENTION IMPACT LEVEL
<p><b>Prioritise targeted repair strategies</b> informed by the findings of the United Repair Centre (URC) pilot, using product category as a key selection criterion (starting with outerwear and denim); deploying repair gradually and selectively can ensure that revenue from resale will exceed operational costs.</p> <ul style="list-style-type: none"> <li>To maximise viability, brands doing repair can systematically collect and analyse repair and resale data by product category, enabling incremental improvements in item selection and allowing small gains in value recovery to compound into profitability at scale.</li> </ul>	<p>Medium</p>
<p><b>Move from pilot projects to permanent, operational Rewear models with dedicated teams and KPIs</b>, treating secondhand and repair as core offerings rather than peripheral initiatives.</p> <ul style="list-style-type: none"> <li>Save Your Wardrobe’s digital aftersales diagnostic tool illustrates how this integration can be approached incrementally and adapted to different brand contexts.</li> <li>In the short to medium term, set measurable targets for the share of total revenue generated from Rewear and other circular business models.<sup>135</sup></li> <li>Over a longer horizon, these can develop into commitments that include steady or reduced production targets (made feasible by the increased contribution of rewear CBMs to overall revenue).</li> <li>Integrate improved planning and forecasting as an explicit lever for reducing overproduction and excess inventory. Better demand forecasting, more disciplined production planning, and shorter, more responsive production runs can reduce the volume of garments that enter post-use streams prematurely or at low value – a problem that downstream Rewear interventions alone cannot solve. Brands should treat planning and forecasting improvements as a complement to, not a substitute for, circular business model development, and should set internal targets for reducing excess and unsold stock volumes alongside Rewear targets.</li> </ul>	<p>Medium</p>
<p>Co-found or support the development of existing Rewear ecosystems infrastructures in countries receiving large volumes of exported used clothes.</p>	<p>Medium</p>
<p><b>Pursue collective industry action to operationalize product lifecycle transparency and mitigate systemic overproduction.</b></p> <p>Brands should move beyond individual pilots to establish shared reporting frameworks that track key performance indicators (KPIs) aligned with upcoming EU ecomodulation criteria and the revised Waste Framework Directive (WFD). This includes standardized reporting on product lifespan extension, repairability indices, and total material throughput. By focusing on these defined metrics, brands create the legal certainty required for effective circular control while addressing the volume of waste generated by the current system.</p> <ul style="list-style-type: none"> <li>To support this collaboration, transparency, and comparability, companies should integrate circularity metrics into sustainability reporting frameworks, including requirements under the Corporate Sustainability Reporting Directive (CSRD) and the ISO 59000 series.</li> </ul>	<p>Medium - High</p>



### For government and policymakers

Policy frameworks determine whether circularity remains incremental or becomes transformative. Through bold approaches to Rewear, local and national governments can help shift incentives and close loopholes.

RECOMMENDATION	INTERVENTION IMPACT LEVEL
Support the <b>technological upgrading of textile sorting infrastructure</b> through targeted funding for digitalisation and automation. Simultaneously, <b>public support should prioritise retraining and upskilling to safeguard most vulnerable workers</b> currently employed in sorting roles.	Medium-Low
<b>Reward product lifetime extension by aligning tax policies with reuse and repair activities.</b> <ul style="list-style-type: none"> <li>• Governments could reduce or eliminate consumption taxes on repair services and second-hand products, including reduced VAT across and the removal of sales taxes on resale and repair.</li> <li>• In parallel, labour tax reductions and targeted incentive packages, such as tax credits for jobs in repair, refurbishment, resale, and sorting operations, can help address the labour-intensive nature of these activities and improve their economic viability relative to the production and sale of new garments.<sup>136</sup></li> </ul>	Medium-Low
<b>Remove perverse incentives</b> that create uneven competition for Rewear actors and secondhand products <ul style="list-style-type: none"> <li>• Start to consider measures that disincentivise overproduction and overconsumption                         <ul style="list-style-type: none"> <li>• For example, continue to advocate for advancing and strengthening the Green Claims Directive at the EU level (even though negotiations are currently paused due to industry pushback) as creating a harmonised and credible framework for environmental claims remains a critical enabler for consumer transparency</li> <li>• National-level initiatives, such as France’s fast fashion levy, signals precedent for the development of more progressive and eventually harmonised EU-wide measures, bringing overproduction into the policy frame</li> </ul> </li> <li>• Minimum durability standards can also start to target ultra-fast-fashion segments of the market, beginning to address the poor quality that flows back through post-use streams and actively devalues secondhand markets.</li> </ul>	Medium - High
Develop citizen and consumer-targeted policies such as: <ul style="list-style-type: none"> <li>• Public education campaigns (such as on garment care, repair and sufficiency culture)</li> <li>• Integrate Rewear-enabling education into school curricula (including repair skills and awareness of clothing supply chains and afterlives to counteract disposability culture at a young age)</li> <li>• Support community-based repair hubs and swaps by subsidising or providing spaces</li> </ul>	Medium
Establish participatory policy dialogue with governments and Rewear actors in major export destinations: <ul style="list-style-type: none"> <li>• Support knowledge exchange to close the gap between decision makers, importers, exporters and communities</li> <li>• Join discussions around revision of import and export HS codes on secondhand and upcycled goods; explore how revised classifications can better support distinction between Rewearable and non-Rewearable textiles</li> <li>• Support reinforcement of appropriate import customs duties being paid in export destinations</li> </ul>	Medium-High

RECOMMENDATION	INTERVENTION IMPACT LEVEL
<p>Design more effective extended producer responsibility schemes with eco-modulation and strong financial obligations:</p> <ul style="list-style-type: none"> <li>• <b>Increase the EPR fees</b> excessively and proportionally to the volume of products placed on the market to target overproduction of disposable and cheap products, which create an unfair competition for secondhand products</li> <li>• Introduce <b>eco-modulated fees</b> based on the actual lifecycle impact of products (for example, a 100% wool sweater with high rewear value, and recyclability would incur a lower fee than a five-fiber-blend sweater with little or no rewear value that cannot be recycled)             <ul style="list-style-type: none"> <li>• Data from this study can provide useful directional insights for ongoing discussions around EPR eco-modulation fees, particularly in highlighting that current fee levels in the limited number of countries with implemented schemes remain low and do not reflect the actual costs of preparation-for-reuse or the investments required for circular infrastructure<sup>137</sup></li> </ul> </li> <li>• <b>Design EPR to target preparation for reuse:</b> <ul style="list-style-type: none"> <li>• Many of the EPR discussions focus primarily on collection, sorting, and recycling. Preparation for reuse receives less attention, despite its relevance for value retention as highlighted through this study. Aligning EPR frameworks to better support domestic repair and Rewear outcomes, including clearer targets and funding mechanisms for actors benefiting from EPR schemes could help address this imbalance.</li> </ul> </li> <li>• Work towards introducing <b>cross-border funding mechanisms</b> for both inter-EU and outside the EU.             <ul style="list-style-type: none"> <li>• For example, currently textiles may be disposed of in Sweden, where the EPR fee is paid, but then exported to Lithuania for sorting and reuse, and then re-exported for further sorting and reuse outside the EU, meaning that they reach end-of-life outside of Sweden, and often outside of the EU.</li> <li>• Mechanisms should be developed which mean that EPR funds can ultimately support the actors working to divert the largest volumes from waste streams (in Pakistan, in Kantamanto and in other end-markets.)</li> </ul> </li> <li>• Develop a phased approach towards introducing <b>cross-border EPR funding mechanisms</b>, prioritizing EU-wide harmonization in the short term. While the ultimate goal is to introduce mechanisms for both inter-EU and extra-EU funding, immediate efforts must focus on the effective implementation of Extended Producer Responsibility (EPR) at the EU level.             <ul style="list-style-type: none"> <li>• In the short term, the priority is to build a robust European system by scaling up separate collection, enhancing sorting efficiency, and developing an effective infrastructure.</li> <li>• In the medium-term objective of extending funding to global actors. This ensures that EPR funds can eventually support those diverting the largest volumes from waste streams. For example, currently textiles may be disposed of in Sweden, where the EPR fee is paid, but then exported to Lithuania for sorting and reuse, and then re-exported for further sorting and reuse outside the EU, meaning that they reach end-of-life outside of Sweden, and often outside of the EU.</li> <li>• Mechanisms should be developed which mean that EPR funds can ultimately support the actors working to divert the largest volumes from waste streams (in Pakistan, in Kantamanto and in other end-markets.)</li> </ul> </li> </ul>	<p>Medium-High</p>



### For investors and financial institutions

Capital allocation determines if and how circular models can sustain and scale. Investors can influence whether environmental and social externalities are meaningfully reflected and priced into financial risks. When it comes to multilateral development banks and other development finance institutions, there needs to be a focus on developing mechanisms that allow funding to transfer to semi-formal and informal economy actors and entities.

RECOMMENDATION	INTERVENTION IMPACT LEVEL
Update risk models to integrate resource risk and circular value, supporting patient capital approaches. Investors and financial institutions should update risk assessment frameworks to account for resource scarcity, regulatory change, and the long-term viability of linear production models. This includes recognising the economic value created through durability, repair, reuse, and material retention, and adopting longer investment horizons that allow circular business models time to mature.	Medium - High
Prioritise funding for business models that deliver value through longevity, repair, and reuse rather than continued production growth. Investors should expand financing mechanisms that support enterprises built around sufficiency-oriented models, including resale channels, repair networks, refurbishment services, supporting services and other circular infrastructure that extends product lifetimes.	High
Address funding gaps: in particular, redirect circularity investments to include semi formal or informal Rewear actors and communities as eligible recipients of funds. Multilateral development banks, development finance institutions, and impact investors should adapt funding mechanisms so that repairers, traders, sorters, and reuse networks can access capital and technical support. These actors already divert significant volumes of clothing from landfill but remain largely excluded from formal funding streams despite their environmental and social contributions.	High



### For collectors and sorters

RECOMMENDATION	INTERVENTION IMPACT LEVEL
Invest in preparation for reuse technologies, including AI-enabled and demand driven sorting technologies such as those showcased by the reverse.fashion pilot.  Technology upgrades can increase productivity and capture higher-value fractions within secondhand streams: as demonstrated even small improvements in identifying vintage and premium garments can generate significant economic gains at scale and strengthen the financial viability of domestic Rewear infrastructure.  This should happen alongside worker upskilling programmes and in strategic collaborations with organisations with expertise in supporting those at a distance from the labour market (this will mitigate the risk that automation and increased efficiency negatively affect marginalised workers through unemployment.)	Medium - Low
Develop repair assessment protocols to enable maximum lifetime extension of Rewearable textiles: <ul style="list-style-type: none"> <li>• If in-house repairs are not appropriate, explore a network-based approach.</li> <li>• Prioritise domestic reuse at the highest possible value, through repairing and refreshing Rewearable textiles.</li> </ul>	Medium - Low
Introduce transparency and knowledge sharing around sorting criteria to inform more equitable export practices and policies <ul style="list-style-type: none"> <li>• Provide input to policy dialogues on HS code revision and others.</li> <li>• Foster feedback loops between exporters, importers and secondhand retailers in export countries to validate if textiles exported for reuse are effectively reused.</li> </ul>	Medium



**For secondhand retailers**

RECOMMENDATION	INTERVENTION IMPACT LEVEL
Develop repair assessment protocols in line with highest value product categories to enable maximum lifetime extension of Rewearable textiles as well as maximum profitability. : <ul style="list-style-type: none"> <li>• If in-house repairs are not appropriate, explore a network-based approach</li> </ul>	Medium-Low
Enable community-driven Rewear through repair cafes, upcycling workshops and swaps and all activities that can drive education and domestic Rewear to provide a viable alternative to fast fashion: <ul style="list-style-type: none"> <li>• Introduce customised repairs, cleaning, restoring, restyling and alterations to render Rewearable clothes even more attractive and valuable</li> <li>• Work with local artisans, influencers and designers to promote new thinking around Rewear and design</li> </ul>	Medium-Low
Innovate and optimise to minimise costs of the labour-intensive processes in second hand retail like: assessing product value, product description, stock management, photographing and displaying items in online stores by testing the use of technologies including AI.	Medium-Low



**For researchers**

Academia and think tanks play a critical role in shaping narratives, informing policy, and legitimising knowledge. They can either reinforce technocratic hierarchies in thinking about circularity and Rewear or support plural, practice-based approaches.

RECOMMENDATION	INTERVENTION IMPACT LEVEL
Prioritise research that identifies, supports and seeks to learn from Rewear actors who already prioritise frugality, sufficiency, and resource-conscious practices. <sup>138 139 140</sup>	Medium-Low
Make visible and publicise existing Rewear knowledge that is currently excluded from dominant Eurocentric circularity and sustainability frameworks	Medium-Low
Utilise and normalise more contextually grounded, reciprocal and participatory research approaches when learning from communities (especially marginalised informal actors)	Medium-Low

## THE WAY TOWARDS JUST CIRCULAR FUTURES

Project Rewear has explored both the opportunities and limitations of Rewear ecosystems in their current and future states, reinforcing the urgent need for a systemic, justice-led approach to scaling circularity in fashion.

**Rewear actors are limited by the uneven competition from the dominant fast fashion business model, and the undervaluation of their social and environmental contributions.** While Rewear creates value beyond conventional economic metrics, market conditions leave little room for ecosystems that prioritise longer use of garments, equity, and ecological care.

**At the same time, informal economies where much of the world's Rewear takes place are under-recognised as legitimate centres of expertise and knowledge.** Informal repairers, upcyclers, traders, sorters, and waste workers—in the Global North and South alike—are excluded to varying degrees from the policies, narratives, and funding streams that shape the future of circular fashion.

**Rewear potential lies in scaling in ways that do not conceive value and growth in purely economic terms.** This means supporting modes of exchange and enterprise that decouple value from volume, and that place environmental and social sustainability at the heart of the business proposition. It also means enabling new business structures to emerge by developing new investment criteria which build different types of value in and work on longer timelines that allow for the slower pace of sociocultural change. Making the business case for Rewear means looking beyond secondhand resale growth to consider how Rewear could address the root causes of fashion's harms rather than coexist with them.

**Rewear ecosystems have the potential to redefine value creation: grounding it in longevity, care, and sufficiency rather than perpetual growth.** Realising this potential means approaching Rewear through recognition and agency: affirming informal and marginalised actors not only as labourers but as knowledge holders and decision-makers, and redistributing resources towards their expertise and infrastructures.

# APPENDICES

## APPENDIX A: DETAILED DATA ON PRODUCT DAMAGES

The following tables present the data from the sample analysis in more detail.





Country	Number of garments analysed
 <b>NETHERLANDS</b>	2,189
 <b>SPAIN</b>	2,554
 <b>POLAND</b>	1,569
 <b>LITHUANIA</b>	1,968

Table 7: Breakdown of the total sample of 8,280 pieces was divided across the four sorters.

Original	Added during the study
Button	Accessory damage (such as damaged belt or velcro)
Discolouring	Alteration (signs of alterations)
Large hole	Collar/Cuffs (visibly used collar or cuffs)
Large stain	Cut (part of the garment is cut off, like sleeves)
Pilling	Dirty (a multitude of stains, including armpit stains, mold, paint stains or considered non-hygienic to reuse)
Small hole	Faded (clearly faded in the sun or from washing)
Small stain	Merchandising Product (product has event name, date or company names printed, which makes it non-rewearable)
Stitch failure	Missing (part of the product is missing such as a belt, hood, or other decoration)
Wet	Old-fashioned
Zip	Pet hair
None	Print (damaged print surface, print flaking off, broken)
Other	Fabric damaged by ironing
	Shrunk
	Stretched
	Surface abrasion
	Worn (visibly used, torn, ripped, and including stains altogether)

Table 8: Full list and description of damage types present in the sample.

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**National Textile University: Pakistan**

The National Textile University (NTU), located in Faisalabad, is Pakistan's leading institution for textile education, research, and innovation. Established in 1959, NTU plays a pivotal role in supporting the country's textile and apparel sector through specialised academic programmes, industry partnerships, and a strong focus on technological advancement. The university also serves as a hub for capacity building and sustainable development within the industry.

Store Name	Product Archetype	Unit Price	Qty. Sold	Damages	Additional Comments
<b>AUNTIE ROSIE</b>	T-shirt	5.00	10	Faded, Torn armpits, Loose Fabric, Stains, Loose neck	
		3.00	3	Faded, Loose neck, Stains, Loose fabric	
<b>ERNEST</b>	Sweatshirts	50.00	2	Faded, Stains	
		40.00	2	Stains	
		30.00	2	Stains	
<b>GENESIS</b>	Sweatshirt	60.00	16	Faded, Loose fabric, Loose neck, Stains	
		55.00	3	Faded, Loose fabric, Loose neck, Stains	
<b>MAMA LYDIA</b>	Denim Jacket	60.00	1	Ripped joints	
		50.00	2	Stains, Loose fabric	
		40.00	5	Stains	
		30.00	3	Loose fabric, Stains, Faded, Missing/ damaged buttons	
		20.00	1	Loose fabric, Stains, Faded	
<b>MAYBACH</b>	Denim Shorts	30.00	2	None	
		25.00	1	None	
		20.00	1	None	
		15.00	3	Ripped Joints	
		10.00	3	Faded, Missing/ damaged buttons	
		5.00	3	Faded	
	Denim Pants	10.00	2	Faded, Missing/ damaged buttons	Prices were lowered due to damages
	Sportswear	15.00	1	Faded	
		10.00	5	Loose fabric, faded	
5.00		2	Loose fabric, stains		
<b>OBOY BADU</b>	Denim Shorts	80.00	1	Loose fabric	
		70.00	1	Missing/ damaged buttons	
		60.00	2	Missing/ damaged buttons, Ripped joints	
		50.00	3	Stains	
	Denim Pants	50.00	5	Faded, Stains, Loose fabric	
		80.00	1	Missing/ damaged buttons	
<b>SAMUEL</b>	Sportswear	15	12	Stains, Loose fabric, Ripped joints	Reduced to clear/ Low purchase

Store Name	Product Archetype	Unit Price	Qty. Sold	Damages	Additional Comments
SPANKY	Sportswear	5.00	6	Loose fabric, Loose neck, Ripped joints	Low purchase/ patronage
	T-shirt	5.00	30	Faded, Loose fabric, Fabric fray, Stains	
WOFA AMEYAW	Coat	100.00	1	None	Reduced to clear/ Low purchase
	Coat	10.00	20	Missing/ damaged buttons, Stains, Faded	
YOUNG VERNA	T-shirt	30.00	3	Faded, Stains, Loose fabric	
	Denim Pants	50.00	1	Faded, Stains	

Table 9: Sales and damages observation per archetype.

## APPENDIX C: FRAMEWORK FOR RECOMMENDATIONS

### PLACES TO INTERVENE IN A SYSTEM (FROM LEAST TO MOST POWERFUL)

Adapted from Donella Meadows, 1999; simplified for practical use.

#### 12. Tweak the numbers

Adjust parameters like taxes, subsidies, and standards. These are easy to change but don't shift the system much on their own.

#### 11. Adjust buffers and stabilisers

Change system buffers that absorb shocks—the right kind of buffer balances flexibility and stability in a system, but won't transform the system alone.

#### 10. Change physical structures and flows

Rethink infrastructure, supply chains, and how materials or people move—fixing a system that's laid out wrong involves rebuilding it. Changing physical structures is slow and complex, the leverage point is in better design in the first place.

#### 9. Manage delays relative to rate of system changes

If Rewear systems react too slowly to fast shifts—like trends, production volumes, or waste generation—they risk being overwhelmed, causing overshoot or collapse.

#### 8. Strengthen feedback systems

Enable systems to self-correct— through pollution taxes, truth-in-advertising laws, or removing perverse subsidies. When market signals are distorted, feedback breaks down. The bigger the impact, the stronger the feedback needs to be to keep markets and policies on course.

#### 7. Support reinforcing loops

Amplify positive feedback loops, such as market demand for high-quality secondhand clothing or consumer repair habits.

#### 6. Improve information flows

Ensure that the right people have the right data. Better information enables accountability and strengthens feedback loops.

#### 5. Change the rules

Update incentives, penalties, and constraints.

**4. Enable system evolution**

Give the system the power to add, change, evolve, or re-organise.

**3. Redefine system goals**

Shift the system's purpose from growth or profit for the benefit of a few toward equity, product durability, and environmental sustainability.

**2. Shift the paradigm**

Challenge dominant ways of thinking. Change the mindset that underpins the system.

**1. Transcend paradigms**

Hold multiple perspectives, stay flexible, and embrace hybrid solutions—combining technical, social, and ecological approaches.

**APPENDIX D: ELABORATED EU COUNTRY CONTEXTS**
 **Netherlands**

In 2022, Dutch households threw away 215 million kilos of textiles – a 30% reduction from 2018, though the reasons for this are not well understood. Almost half of the textiles discarded in 2022 (106.5 million kilos) ended up in residual waste and were incinerated. 108.5 million kilos (50.5 percent) was collected separately.<sup>141</sup> The Netherlands has the 3rd highest separate collection rate in Europe, standing at 37%.<sup>142</sup> Textile collection is coordinated by municipalities and executed through a tender-based system involving private companies. Many of these companies handle both collection and sorting, as well as exporting sorted textiles.<sup>143</sup> The Netherlands has substantial sorting capacity – estimated at around 200,000 tonnes per year<sup>144</sup> – positioning it as a regional hub for post-consumer textiles. For instance, almost the entire sorting capacity of the Netherlands is used to sort textiles from Germany, while 55 % of the collected textiles in the Netherlands are sorted abroad (due to market price dynamics and labour costs.)<sup>145</sup>

The Netherlands has a strong enabling policy environment for textiles circularity in general, supported by well-established national and local commitments. The government's programme A Circular Economy in the Netherlands by 2050 was first presented in 2017, setting out two main objectives: a 50% reduction in primary raw material use by 2030 and a fully circular economy by 2050. There is also a dedicated policy programme for circular textiles overseen by the Ministry of Infrastructure and Water Management.<sup>146</sup> The Netherlands was also among the first in the EU to introduce a textiles EPR, which came into force in July 2023. The EPR holds producers and importers of textile products responsible for organising and financing a collection system, as well as obligating them to ensure the recycling and reuse of textiles. The targets stipulate that 50% of products released to market must be reused/recycled in 2025, increasing to 75% by 2030 (this is highly ambitious, with the current rate standing at 35%).<sup>147</sup>

The Netherlands has a high volume of clothing consumption in general: almost 1 billion garments and 70 to 100 million pairs of shoes come to market in the Netherlands, with the average person purchasing about 50 items of clothing and 4 to 6 pairs of shoes a year.<sup>148</sup> The Rewear market is also quite well-established. There are several e-commerce platforms available to Dutch consumers for purchasing second-hand clothes and other goods, including Marktplaats, Vinted, e-bay, Facebook Marketplace, Etsy and Zalando Pre-Owned (in order of customer recognition<sup>149</sup>). Consumer interest in reuse is strong, with more than 75 percent of the respondents to a survey in the Netherlands indicating that they were open to purchasing used products in general (which plausibly includes clothing).<sup>150</sup> However, over one thousand physical second-hand stores and market stands have disappeared in the Netherlands over the last decade and a half: in 2022, there were fewer than 3,800 second-hand goods stores, as opposed to more than five thousand in 2009.<sup>151</sup>


**Spain**

In Spain, only 10–12% of post-consumer textile waste is collected separately for reuse and recycling, with the majority managed through a network of approximately 19,548 street containers.<sup>152</sup> These containers account for virtually all documented textile waste collection, totaling around 101,700 tonnes annually. The dominant actors in this system include Caritas/Moda re (our project partner) (41%), followed by Humana and Aeres (16% each).<sup>153</sup> However, data coverage is uneven, with most available figures coming from Catalonia and the Basque Country, leading to significant discrepancies in national reporting. Despite collection efforts, landfilling remains high, with 20,517 tonnes of textiles sent to landfill according to Eurostat.<sup>154</sup>

Spain has adopted a generic CE policy framework with dedicated provisions for the textile sector, outlined in the Spanish Circular Economy Strategy 2030 and its accompanying Action Plans. The First Circular Economy Action Plan (2021–2023) concluded in December 2023, with a mid-term review showing that approximately 75% of its 116 measures were either implemented or underway. A Second Action Plan (2024–2026) is now in place, continuing this momentum. Key legislative instruments in place include Law 7/2022 on Waste and Contaminated Soils for a Circular Economy, which promotes waste reduction, reuse, and recycling. Notably, it sets reuse targets for discarded textiles (among other waste streams) at 5% by 2025, 10% by 2030 and 15% by 2035. The destruction and landfilling of textiles is also prohibited under Article 18.2 of the Waste Law. In addition, programs run through the Ministries of Industry and Economy support innovation and circularity through dedicated funding streams. The Ministry of Consumer Affairs and CECU (Confederation of Consumers and Users) conducted a survey exploring overconsumption in fashion and issued recommendations for promoting more responsible textile use.

Clothing consumption in Spain remains heavily influenced by fast fashion, with major global brands like Inditex, Mango, and Tendam headquartered in the country, reinforcing its market dominance. Despite growing environmental awareness—28% of consumers say it's important that clothing is produced sustainably, and 40% report repairing damaged clothing—secondhand shopping remains limited, with only 8% of consumers having tried buying second-hand rather than new.<sup>155</sup> Still, there are signs of shifting attitudes: 53% wear clothes until they fall apart, and 59% pass unwanted garments to others, indicating potential for deeper engagement with reuse practices.<sup>156</sup> The popularity of Sustainable Fashion Week, held annually in Madrid since 2020, also potentially reflects rising public interest in alternative consumption models. However, low price points remain a key factor shaping consumer choices; Spanish clothing prices are among the lowest in the EU, at 8.6% below the EU27 average.<sup>157</sup>


**Poland**

Poland has a growing but complex system for managing post-consumer textiles (PCT). In line with the EU requirement for separate textile collection by 2025, municipalities are required to provide collection points at local civic amenity sites (PSZOK<sup>158</sup>), and may also implement additional systems such as curbside collection or textile-specific drop-off points. Fines for non-compliance with sorting regulations are steep, ranging from 200% to 400% of the base waste collection fee.<sup>159</sup>

Collection is supported through take-back schemes operated by brands and widespread donation containers maintained by charities such as Caritas and Polish Red Cross. Poland is also a major destination for used textiles from across the EU due to its high sorting capacity, estimated at 300,000 tonnes per year.<sup>160</sup> Two key companies—Wtorpol and VIVE Textile Recycling—dominate this landscape. However, landfill is still common, with around 55,298 tonnes of textiles being landfilled in Poland in 2022.<sup>161</sup>

Poland's circular economy efforts are guided by several interlinked strategies. The Roadmap towards the Transition to a Circular Economy was adopted in 2019, spearheaded by the Ministry of Environment and Ministry of Development and Technology. Earlier, in 2017, a "Circular Economy in Municipalities"

pilot programme was launched, supported by the National Fund for Environmental Protection and Water Management. CE principles are also embedded in the National Environmental Policy 2030 (NEP 2030), particularly in chapters on waste management. The Waste Act of 2012, along with further regulations such as the Minister of Climate's 2021 regulation, provide the legal basis for waste hierarchy and sorting rules. According to the 2022 Circularity Gap Report for Poland, the country's circularity level stands at 10.2%.<sup>162</sup>

Implementation across public and private sectors is widespread, though fragmented. Many actions have been carried out under older labels such as “green economy” or “low emissions,” but still contribute to CE goals through resource efficiency and improved waste handling. As noted in the report: “Both the public administration and scientific institutions and entrepreneurs have been implementing various elements of the circular economy for many years, although they often refer to them differently.”<sup>163</sup>

Poland's second-hand clothing culture has evolved over time. During the communist era, SHC was one of the only ways to access international brands, and informal imports were common. These practices became formalised in the 1990s and 2000s, with secondhand stores becoming widespread and popular as affordable retail options. Today, secondhand consumption is increasingly associated with sustainability. A recent survey found that 44% of Polish consumers check secondhand options before buying new clothes, while 20% cite environmental reasons for doing so.<sup>164</sup> However, rising incomes and shifting consumer preferences have contributed to a decline in the number of SHC stores—from 23,500 in 2009 to just 14,400 in 2021.<sup>165</sup> Despite this decline in physical outlets, the market remains substantial: Poland's SHC market was estimated at €1.5 billion in 2019. The sector includes a mix of commercial operators, charities, and newer brands focused on ethical fashion and local reuse initiatives.



## Lithuania

Lithuania's infrastructure for collecting used textiles is still developing. Textile waste makes up approximately 8% of the total municipal waste stream, much of which is incinerated or landfilled, indicating limited diversion from disposal.<sup>166</sup> Currently, residents can deliver used textiles to municipal bulky waste reception sites or dedicated containers.<sup>167</sup> In line with the 2025 separate collection requirement, the Minister for the Environment approved new regulations that stipulate that municipalities must ensure access to one container per 2,000 residents in densely populated areas (population density >1,500 residents/km<sup>2</sup>), while in less densely populated areas, the requirement is one container per 1,000 residents.<sup>168</sup> However, many municipalities have not yet met the coverage criteria, particularly in lower-density areas. Moreover, the ongoing collection of textile waste does not necessarily ensure its reuse or recycling, and only about 11% of used textiles are collected separately.<sup>169</sup>

Lithuania has made strong national commitments to the circular economy in recent years. At the end of 2021, the Ministry of Economy and Innovation introduced a “compass” for industrial circular transition, followed by the government's approval of Circular Economy Transition Guidelines by 2035.<sup>170</sup> These guidelines are coordinated with national strategies such as the National Climate Change Agenda and the National Environmental Protection Strategy, and aim to support the shift toward a climate-neutral, resource-efficient, and waste-reducing economy.<sup>171</sup>

Implementation efforts are underway, with the first public review of progress due in 2024. Plans include establishing a dedicated authority for circular economy research and policy refinement, and launching a digital monitoring and control system by 2027. Additionally, a textiles Extended Producer Responsibility (EPR) scheme is planned for 2027, which will mark a significant step forward in the governance of PCT.

Attitudes toward secondhand clothing in Lithuania are shifting. While economic motivations have historically driven reuse behaviors, there is a growing awareness of environmental concerns. According to secondhand shopkeepers interviewed for the EEA’s 2023 Waste Prevention Country Profile, more cusers are now motivated by sustainability when purchasing used clothing.

Lithuania is also home to Vinted, one of Europe’s largest and most influential secondhand e-commerce platforms. Vinted’s success and visibility have likely contributed to increased acceptance and normalization of Rewear practices, particularly among younger and digitally engaged consumers.

However, Lithuania—like Poland and the Netherlands—has seen a rise in textile landfilling up to 2020, underscoring the continued need for policy enforcement, infrastructure expansion, and consumer engagement to strengthen its domestic circular textile ecosystem.





FOCUS COUNTRY	TOTAL EXPORT VOLUME (KG)	TOTAL EXPORT VALUE (USD)	TOP 3 EXPORT DESTINATIONS
 <b>NETHERLANDS</b>	164,857,115	\$204,662,228	Pakistan, Poland, Cameroon
 <b>SPAIN</b>	137,322,041	\$74,541,366	UAE, Morocco, Pakistan
 <b>POLAND</b>	169,316,875	\$183,318,232	Pakistan, Togo, India
 <b>LITHUANIA</b>	52,703,897	\$79,641,314	Pakistan, Togo, Ukraine

Table 10: Key export insights focus countries (all data retrieved from UN COMTRADE for year 2024, product code HS6309)

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