



# THE CIRCULAR FASHION ECOSYSTEM

## A BLUEPRINT FOR THE FUTURE

Findings from Phase 1 of the  
Institute of Positive Fashion's  
Circular Fashion Ecosystem Project

FOUNDING PARTNERS



IMAGE COURTESY OF BETHANY WILLIAMS

BRITISH FASHION COUNCIL





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**Others**

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- Franz von Bismarck-Osten, Senior Director of Sector Development for the eRetail & Fashion Industry, DHL; and
- Alan Wheeler, CEO, Textile Recycling Association.

# Executive summary

“Driven by industry, recognising the role of government and the consumer, we challenged ourselves to imagine the future circular fashion ecosystem in the UK. By providing an actions-oriented blueprint for the future of fashion, we looked to accelerate the transition towards a circular fashion economy that thrives in its own right and to which other nations can look for inspiration and guidance.”

**CAROLINE RUSH CBE, CHIEF EXECUTIVE, BRITISH FASHION COUNCIL**

In 2020, the British Fashion Council launched the Institute of Positive Fashion (IPF) to create a new industry standard for accountability by acting as a catalyst for change in this, the Decade to Deliver<sup>a</sup>. The Circular Fashion Ecosystem Project (CFE) is the inaugural project from the IPF.

### The need for change

The Sixth Assessment Report of the IPCC sends a stark message – time is running out to prevent catastrophic climate change, with some experts stating that society has four years to deliver urgent and radical action<sup>b</sup>.

The fashion and textiles industry is the joint third highest emitter of greenhouse gases globally, accounting for around 5% of global emissions<sup>c</sup>. In addition, it consumes 98 million tonnes of non-renewable resources every year, and uses 93 billion cubic metres of water annually<sup>d</sup>. Fashion is a complex industry with extensive, often opaque, global supply chains whose environmental and social impacts reverberate across the globe. These impacts have been exacerbated by the global pandemic as a dramatic reduction in the demand for fashion items resulted in mountains of unsold inventory<sup>e</sup>. This has exposed just how dependent the fashion industry is on its status quo of overconsumption and has shed light on the critical need for change.

By its very nature, fashion encourages expression, offering the potential to connect citizens to global

issues. However, the industry is facing unprecedented challenges to inspire and clothe consumers around the world while dramatically decarbonising and reducing the waste arising from its activities. Fashion has a considerable impact on the UK economy. The industry employs 890,000 people and contributes £35 billion to the UK gross domestic product (GDP)<sup>f</sup>. If acted upon globally and across sectors, the circular economy can deliver the reductions in greenhouse gases needed to reach the goals of the Paris Climate Agreement<sup>g</sup>. For the fashion sector, this chance to transform the economy to be more regenerative also presents an opportunity to address the systemic environmental and social challenges that exist within its global supply chains, while realising commercial opportunities in its consumer markets.

This report presents the findings from Phase 1 of the CFE Project based on research conducted from January to August 2021. The findings provide a framework for how identified actors can work together to lead and enable change in multiple, interconnected areas of the fashion ecosystem and achieve greater circularity.

### What we need to do

Presented here are three target outcomes for a future circular fashion ecosystem in the UK. Combined, they make up the target state for the circular fashion ecosystem and allow for its long-term viability, resilience, and prosperity.



### TARGET OUTCOME 1: Reduced volume of new physical clothing

*There is a clear environmental case for reducing the flow of new materials and new physical clothing through the system.*

Garments purchased in the UK have a significant environmental footprint, with the production of new fibres and manufacture of clothes having the largest contribution to this<sup>h</sup>. The most effective way for UK stakeholders to reduce their individual and collective detrimental impact on the environment is through reducing consumer demand for new, physical clothing.



### TARGET OUTCOME 2: Maximised utilisation through product circularity

*There is a clear environmental and economic case for reversing the trend of declining clothing utilisation.*

The UK population purchases more clothing per person than many other European countries and throws away over a million tonnes of clothing every year<sup>i,j</sup>. It has been estimated that more than \$500 billion is lost globally every year due to underutilisation of clothing and a lack of recycling<sup>d</sup>. By improving clothing utilisation, the number of times clothing is worn, we can ensure that more value is captured from all garments produced. Circular business models can help deliver this increase in utilisation while adding greater profitability and stability to the supply chain.



### TARGET OUTCOME 3: Optimised sorting methods and materials recovery

*Emerging technologies show potential for scaling closed-loop and regenerative recycling of used clothing but planning and investment need to start now.*

The net impact of any recycling technology depends on its energy and material inputs, efficiency, emissions, and potential to replace the use of environmentally detrimental materials. Emerging technologies for fibre-to-fibre recycling demonstrate potential for replacing virgin inputs for clothing with recycled inputs, thereby eliminating the environmental impacts of many virgin clothing fibres.

Urgent, bold, and ambitious action is required from all stakeholders to realise the target state. This report identifies ten priority action areas, each of which involves efforts across many different parts of the fashion ecosystem. Each action area is equally important and has the potential to amplify the effects of the others. They jointly contribute to the target outcomes, as shown under '10 priority action areas for realising the target state' at the end of this summary and on [pages 50-51](#) of the report.

### Who needs to act

Achieving the changes set out in the action areas will

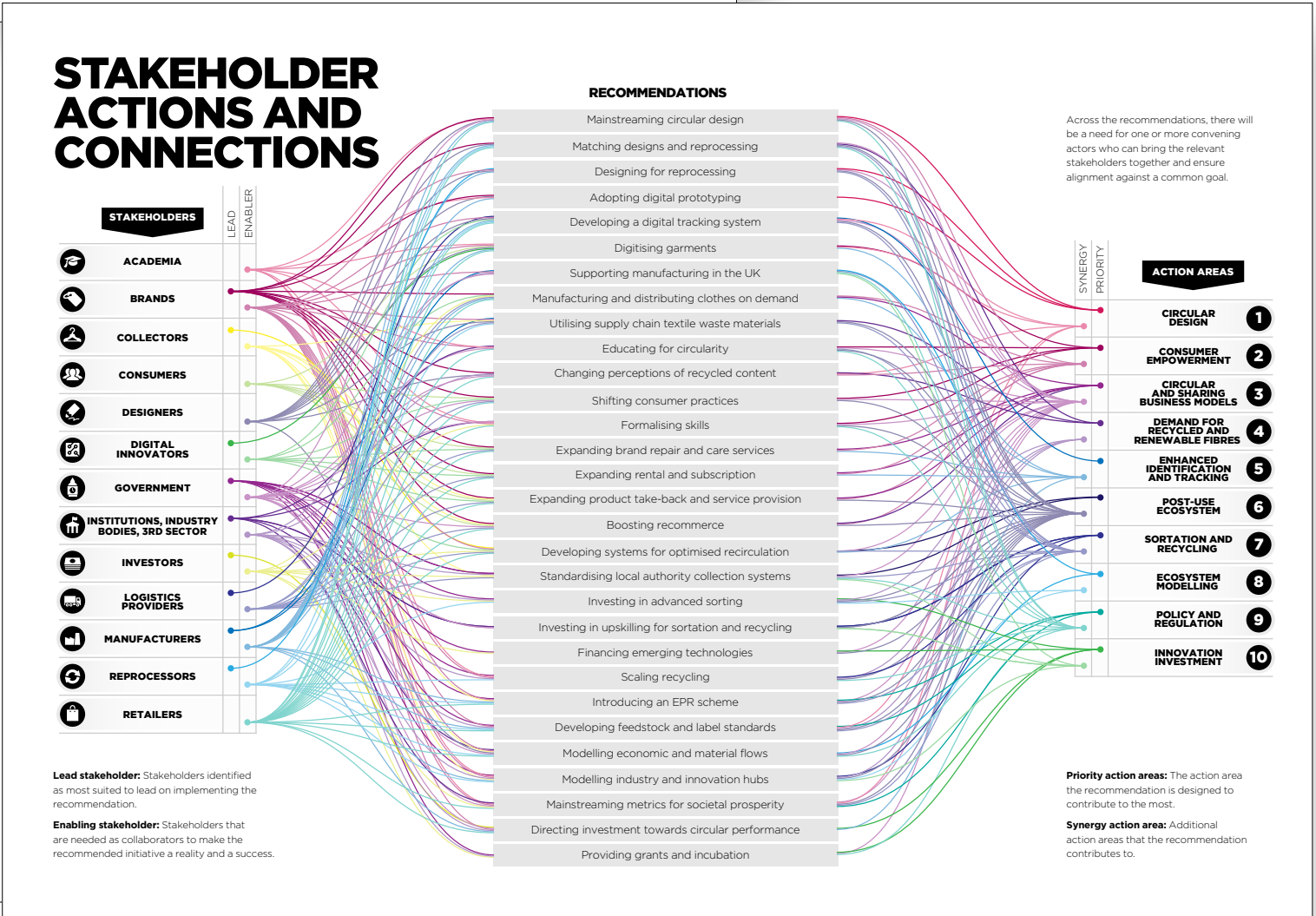
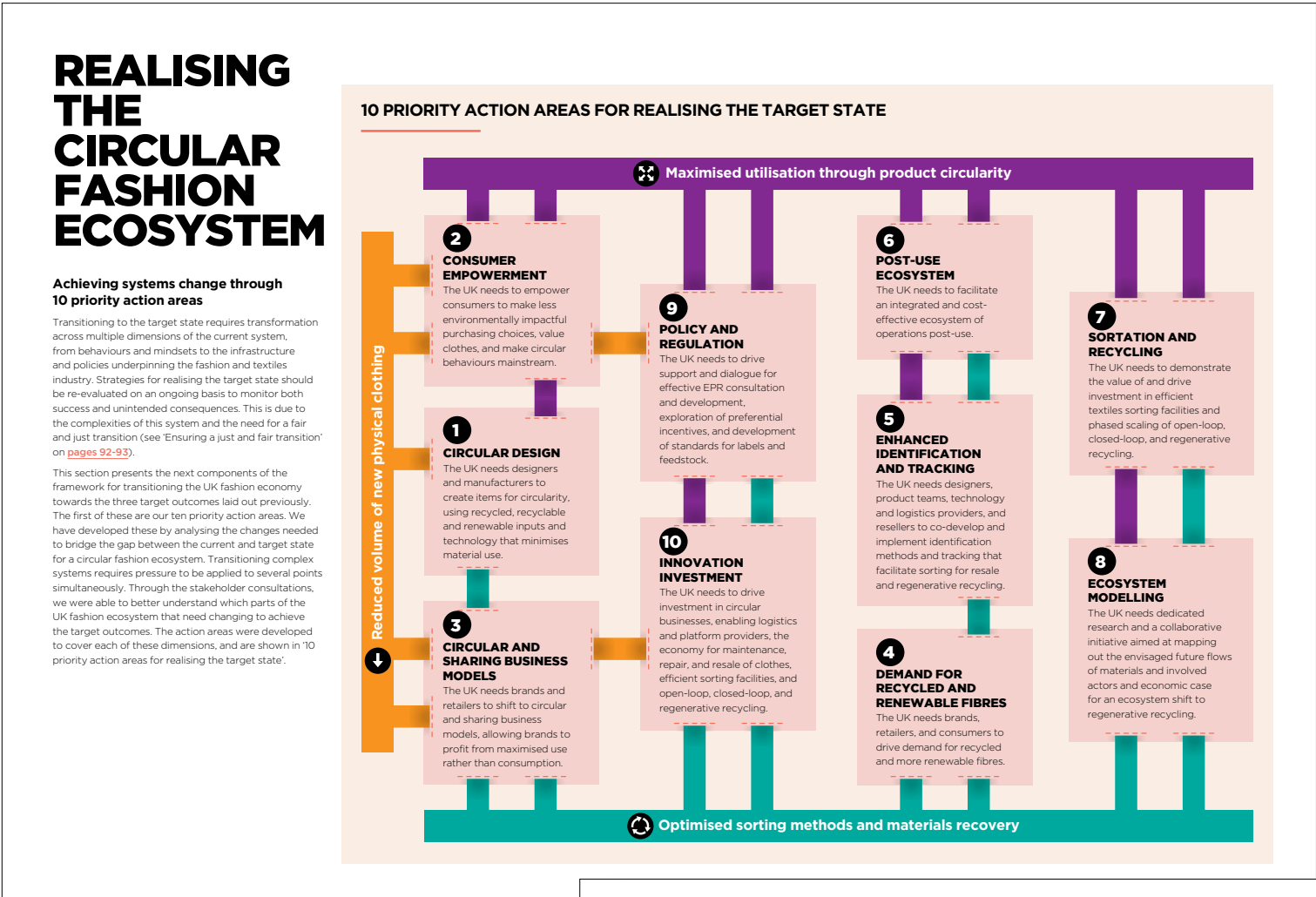
require collective action by all stakeholders across the UK fashion ecosystem. The 'Stakeholder actions and connections' diagram presents 30 recommendations for leading and enabling stakeholders to kick-start efforts across the action areas. The diagram is available on [pages 54-55](#) of the report and at the end of the executive summary. An interactive version can be found on the IPF's website, which enables the user to illuminate elements by Stakeholder – Recommendations – Action areas. Further information regarding the specific recommendations for each stakeholder can be found in [Appendix 2.1](#).

- Taken together, the recommendations suggest the following:
- The UK government should lead on policy creation, incentive-setting, and investment for developing the required innovations and enabling infrastructure.
  - Brands and retailers should embrace circular and sharing business models, and empower consumers to adopt circular practices.
  - Significant research and coordination are needed to maximise collaborative actions. Information accessibility and transparency throughout the ecosystem must be improved.
  - There is more work to be done to educate the consumer on garment care, end of garment life, and recycling.
  - A shift in attitudes towards circular products and services is required to motivate the transition. Positive messaging and an increased understanding of the value of circular business models will increase demand for a more circular fashion ecosystem.
  - Digital technologies can facilitate and unlock multiple elements of the target state.

The transition towards the target state, as laid out in this report, represents a huge opportunity for climate and circular economy action by the UK fashion industry to create change and impact at scale. Achieving the transition in a just and fair manner will be paramount in ensuring that no one is left behind and that existing inequalities are not exacerbated.

“There’s a unique opportunity for organisations like the IPF to establish a framework, in partnership with the industry and the government, that facilitates dialogue, collects information, and then influences investment, policy and regulation with the government to pull it all together.”

**JALAJ HORA, VICE-PRESIDENT OF PRODUCT INNOVATION AND CONSUMER CREATION, NIKE**





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### The role of the British Fashion Council and the Institute of Positive Fashion

The BFC has a critical role in accelerating a transition to a circular fashion economy in the UK and beyond, acting as the convenor for change across actors in the ecosystem. It is uniquely placed to shape policy and industry regulations, particularly through dialogue with government and industry, as well as all other stakeholders in fashion's ecosystem.

The Institute of Positive Fashion (IPF) sits at the heart of the British Fashion Council. The IPF is helping the British Fashion Industry meet its goal to be more resilient and circular through global collaboration and local action.

The IPF will use the BFC's convening power to bring together actors across the ecosystem to address the largest climate-related issues facing the industry. Global experts are brought together to share their knowledge and resources to fast-track collective positive change.

The three pillars of the IPF are Environment, People, and Craftmanship & Community. The CFE Project's goal is to enable a target state which generates positive change across all pillars, offering a holistic blueprint for change for UK fashion.

The British fashion industry is a flagship for creativity, design, innovation, and craftsmanship. The IPF and BFC have a significant influencing power on the global stage and will use their unique position to foster research between industry and academia and become a centre of excellence for innovation, commercialisation, education and cutting-edge research. Furthermore, the IPF will promote knowledge-sharing, the early embedding of circular design amongst the BFC network, and upskilling emerging talent with skills and strategies for their businesses to be future-proofed, responsible and resilient.



IMAGE COURTESY OF BRITISH FASHION COUNCIL

# **1. INTRODUCTION**



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# A letter from the BFC

At the 10 year mark in my role as CEO of the British Fashion Council, I took a moment to reflect on all that had been achieved in helping build a successful fashion industry in the UK. We have built a global reputation for creativity, innovation, and excellence in design, and I set out to think about the next ten years. I have been inspired by the designers coming through the BFC Foundation Talent Support Schemes who are constantly innovating and leading the charge with new ways of doing things, including local and community-based production, upcycling, and transparency in the storytelling around the garments. There is a fantastic amount of innovation in new disruptive start-ups that are enabling clean growth and new skills across the UK. With the backdrop of the global pandemic, which highlighted social inequalities, the impact of climate change and with the goals set out in the Paris Agreement to limit global warming to well-below 2°C above pre-industrial levels, it was important to me that we refocused our strategy to create a sustainable industry that was able to play its part in change and set the blueprint for the next generation.

In 2020, the British Fashion Council launched the Institute of Positive Fashion (IPF) to create a new industry standard for accountability, acting as the catalyst for change. The IPF is focused on three key pillars: Environment, People, and Craftmanship & Community.

Through the IPF Steering Committee we decided on a roadmap for change which needed research, education, development, innovation, and funding. Starting with the Environment Pillar, we launched the Circular Fashion Ecosystem Project in 2020 with the aim to focus on the creation of a circular fashion economy in the UK.

Driven by industry, recognising the role of government and the consumer, we challenged ourselves to imagine the future circular fashion ecosystem in the UK. By providing an actions-oriented blueprint for the future of fashion, we looked to accelerate the transition towards a circular fashion economy that thrives in its own right and which can be shared with other nations to collaborate on best practice.

The BFC is uniquely positioned to unite the industry and believes that collaboration is key to success. We hope to

avoid duplication, and through convening businesses of different sizes and with different expertise we hope to be able to share knowledge and innovations to create a fashion industry for the future. The target is to convene a fashion ecosystem that reduces waste, uses new techniques to disrupt and improve supply chains, and invests in the people and communities that make this possible.

Globally, the transition to a more circular economy will play a vital role in delivering reductions in greenhouse gases. For the fashion sector, this chance to transform the economy to be more sustainable and regenerative also presents an opportunity to address the systemic environmental and social challenges that exist within its global supply chains, while realising commercial opportunities in its consumer markets.

This report presents three target outcomes for a future circular fashion ecosystem in the UK. If realised, these target outcomes offer long-term viability, sustainability, resilience, and prosperity in the fashion ecosystem. This is the first phase of a programme that has collaboration at its core and will enable the UK Fashion industry to make a positive change. It is insightful reading and is unique in how it sets out the roles and responsibilities that all parts of our ecosystem need to play.

This is a good start but there is much more to do. I want to thank Vanish and DHL as well as the Arts Humanities Research Council (AHRC) and our IPF Committee and CFE Project Advisory Board, without whom this important work would not be possible. I ask government to help us incentivise and scale the findings of this report, and I look forward to implementing the next phases.

Thank you for playing your part in change.

*Caroline Rush*

**CAROLINE RUSH CBE  
CHIEF EXECUTIVE  
BRITISH FASHION COUNCIL**







PHOTO BY ALEXI LUBOMIRSKI

“Only with collaboration will we see substantial and radical change, and a sustainable revolution...We must be able to demonstrate wholesale change in attitudes, actions and processes; and allow the UK to become an exemplar for forward-thinking practice in the global fashion community.”

**HRH THE PRINCE OF WALES  
INSTITUTE OF POSITIVE FASHION FORUM 2021**



An aerial photograph showing a dense green forest on the left, with a clear turquoise lake or river flowing through it. The water is exceptionally clear, revealing the rocky and sandy bottom. The forest consists of many tall, thin trees, likely conifers.

# Importance of the report

This report uniquely reflects the diverse ecosystem of stakeholders required to achieve a circular fashion ecosystem in the UK. Led by the British Fashion Council's Institute of Positive Fashion, it comprises an extensive and multi-disciplinary team of contributors; 3Keel LLP, QSA Partners LLP, Flourish CSR, Adam Smith Business School at the University of Glasgow, and Icaro Consulting. Combined with findings from an extensive review of existing literature, included in this report are rich insights gained from consultations and research into the perspectives of academia, brands, collectors, consumers, designers, institutions, industry bodies and third sector, logistics providers, manufacturers, reprocessors, and retailers.

The report presents a blueprint for the future of fashion, which includes recommendations for these actors as well as for government, digital innovators, and investors as additional stakeholders.

It contributes to wider knowledge on the interconnected nature of circular fashion by proposing meaningful and applied steps to transformation as part of a call for collective action. The Circular Fashion Ecosystem Project is a story about the role the UK fashion industry can play to help build a world-leading approach to circular economy transition.

IMAGE COURTESY OF BRITISH FASHION COUNCIL



# Key concepts

The definitions of key concepts as they are defined in this report are detailed below. These are listed in order of relevance to one another (i.e. linked concepts are grouped together) as opposed to alphabetically. An alphabetical list of these key concepts and other relevant report terminology is included in the Glossary.

<b>Circularity</b>	The concept of goods, services and systems adhering to circular economy principles and therefore being suitable for consistent circulation within the economy <sup>1</sup> .
<b>Product circularity</b>	The concept of a product adhering to circular economy principles and therefore being suitable for consistent circulation and reuse by consumers and/or businesses <sup>2</sup> .
<b>Raw material circularity</b>	The concept of raw materials adhering to circular economy principles and therefore being suitable for consistent circulation and reuse by industry <sup>3</sup> .
<b>Circular design</b>	The concept of designing products and services in line with the principles of a circular economy. Using sustainable materials and designing out waste and pollution represent fundamental first steps. The overarching focus is to preserve the value of a safe-to-use product or service for as long as possible by designing for upgradeability/modularity, repair/refurbishment, and reuse. Recognising that end-of-life can be inevitable for some products, the focus shifts to maximising the sustainability of the end-of-life process by designing for redesign, disassembly, and recycling. Within this, circular clothing design refers to designs that use recycled and renewable materials (and/or post-production offcuts), and designs for emotional and physical durability, reuse, repair, redesign, modularity, disassembly, and recyclability <sup>4</sup> .
<b>Linear economy</b>	An economic system in which raw materials are extracted, transformed into goods and services, consumed, and ultimately disposed of as waste. This is currently the dominant system in the global economy <sup>5</sup> . This report uses the related terms linearity and linear to describe activities, processes and flows that are characteristic of a linear economy.
<b>Circular economy</b>	An economic system that eschews traditional linearity and is built on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems <sup>6</sup> .
<b>Circular and sharing business models (CSBMs)</b>	Business models, such as clothing rental or subscription schemes, that minimise the material used and waste produced while maximising the value of materials and products by keeping them in use for as long as possible, if not permanently. These models promote a focus on the triple bottom line – people, planet and profit <sup>7</sup> .
<b>Ecosystem</b>	A dynamic network of interconnected actors operating within a bounded geographical space <sup>8</sup> .
<b>Just and fair transition</b>	A transition that ensures that the unprecedented opportunities and benefits on offer are shared equitably across society so that all have access to a viable, prosperous, and secure future <sup>9</sup> .

<b>Stakeholders</b>	An individual, group, or party who has an interest in, or who is affected by, the operation and outcomes of the UK’s fashion ecosystem. In this report, we make reference to 13 stakeholder groups that span the fashion ecosystem: Academia; Brands; Collectors; Consumers; Designers; Digital Innovators; Government; Institutions, industry bodies and third sector; Investors; Logistics Providers; Manufacturers; Reprocessors; and Retailers. Definitions for each stakeholder are included in the Glossary.
<b>Sustainable development</b>	As defined by the Brundtland Report (1987): “[...] development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” <sup>10</sup>
<b>Sustainability</b>	The state in which we are able to meet all of our needs within the ecological boundaries of the planet. These needs range from minimum standards for education, housing, social equality, income, and health to the basic provision of food, water, and energy. Meeting them within the ecological boundaries of the planet means that we must stop damaging and demanding too much of our planetary environment <sup>11</sup> .
<b>Recycled inputs</b>	Synthetic or natural raw material that is derived from the recycling of used textiles and other fashion related materials and either suited to replacing virgin inputs for new clothing manufacturing or suited to use in alternative applications and industries.
<b>Regenerative</b>	Enabling the preservation or enhancement of the planet’s resources and environment <sup>12</sup> .
<b>Regenerative recycling</b>	A recycling process which restores fibres to their original raw material state, with no degradation in quality. This allows for the fibres to be continually reused in the same application, creating a closed loop of constant circulation <sup>13</sup> .
<b>Renewable inputs</b>	Raw materials that are naturally replenished at a faster rate than they are consumed.
<b>Utilisation</b>	The number of times that a product is used by a consumer.





"It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred."

**INTERGOVERNMENTAL PANEL ON CLIMATE  
CHANGE (IPCC), 2021<sup>14</sup>**

# Introducing the Circular Fashion Ecosystem Project

Climate change, resource depletion and the destruction of the natural environment are existential crises for humankind. The fashion and textiles industry has a significant adverse environmental and social impact and is cited as the joint third highest emitter of greenhouse gases (GHGs) globally<sup>15</sup>. Urgency to mitigate climate change has never been more important<sup>16</sup>, with the industry facing unprecedented challenges to serve citizens' needs whilst reducing environmental impact. The future of fashion will have to radically transform as the entire value chain shifts towards sustainable and responsible practices in a resource-constrained world.

In response to this need for transformation, in this decade for climate action, the British Fashion Council established the Institute of Positive Fashion (IPF). The IPF aims to create a new blueprint for the industry, calling for collective action, investment in innovation, and incentives to achieve the goal of increased resilience and circularity. This report outlines the findings of Phase 1 of the Circular Fashion Ecosystem Project (CFE), the inaugural project of the IPF. Conducted between February and August 2021, desk-based research was combined with extensive cross-industry stakeholder consultations, and new consumer research. A mixed-methods approach was used to map the current state of the UK fashion ecosystem, develop a vision for a more circular target state, and integrate cross-industry input to develop recommended actions for realising this vision.

“ We need to evolve our global economy from its linear growth orthodoxy, decouple business continuity from resource and energy extraction and push for innovating a new societal paradigm. The world is at a tipping point; collectively we must act and find solutions for unnecessary production, waste of resources and loss of social value.

Fashion sits across innovation, creativity, culture, and self-expression, and is unique in the way it influences society. If transformed to be regenerative and equitable through circularity, it can serve to be the industry blueprint for others. That is why the Circular Fashion Ecosystem Project is so important. Its bold and ambitious vision sets out to drive the systems-level change needed, through cross-sector and multi-disciplined collaboration for our collective future.”

**SHAILJA DUBÉ, INSTITUTE OF POSITIVE FASHION LEAD AND THE  
CIRCULAR FASHION ECOSYSTEM PROJECT LEAD,  
BRITISH FASHION COUNCIL**

IMAGE COURTESY OF BRITISH FASHION COUNCIL



# PROJECT SCOPE

Transforming the UK fashion ecosystem along circular economy principles presents significant challenges and requires all actors in the fashion value chain to work together on interconnected issues. In response to these challenges, there are many ongoing initiatives seeking to set the course for change and accelerate the shift to circularity.

The scope for Phase 1 of the CFE Project focuses on what can be achieved within the UK environment, avoiding duplication of existing initiatives and promoting synergies between them. To that end, the research took a systems perspective on the practical solutions, stakeholder collaborations, and initiatives that could accelerate the transition. At the heart of this perspective are the inputs gained from academia, brands, collectors, consumers, designers, institutions, industry bodies and third sector, logistics providers, manufacturers, reprocessors, and retailers obtained through the project research. The report presents a blueprint for the future for these diverse stakeholders, including recommendations for digital innovators, government, and investors as well.

As shown in ‘Phase 1: Foundational research’ below,

the project involved four main strands of research and analysis. Each strand provides the inputs for the core project output: a strategic framework for accelerating the transition to a circular fashion ecosystem in the UK. This strategic framework consists of three target outcomes, ten priority action areas, and 30 recommendations for stakeholder action. This framework will guide Phase 2 of the CFE Project, which will be dedicated to developing a roadmap for change.

While further detail on the methodology of each strand of research can be found in [Appendix A1](#), the main elements can be summarised as follows:

- 1. Literature review:** Desk-based review of literature conducted at the beginning of the project to establish the current state of the UK fashion ecosystem and generate an initial vision for the target state. The findings of the literature review were used to shape the approach and focus of the stakeholder voice consultations, consumer research, and financial modelling (see below). The findings also provided input for the best practice case studies featured on [pages 56-80](#) of this report, and for the section ‘Ensuring a just and fair transition’ on [pages 92-93](#).

**2. Stakeholder voice:** Qualitative consultations with stakeholders from across the ecosystem conducted in four formats: interviews, designer focus group, an industry and government roundtable, and IPF CFE Advisory Board meetings. These were designed to test the vision for the target state developed through the literature review, yield greater understanding of the barriers and opportunities for transitioning to the target state, and explore the collaboration and partnerships needed to enable the transition. The findings from these consultations were fundamental to defining the target outcomes, identifying the ten priority action areas, and generating the recommendations for stakeholders (see ‘Stakeholder actions and connections’ on [pages 54-55](#)).

**3. Consumer research:** A quantitative survey carried out to yield insights into the behaviours and preferences of a targeted section of the UK population – ‘high intensity shoppers’. The insights from the consumer research (see ‘Consumer behaviour in the UK fashion ecosystem’, [pages 28-33](#)) were used to refine the action areas and recommendations for stakeholders.

**4. Financial modelling:** High-level economic modelling of potential recovery values for customers and other relevant stakeholders (e.g. resellers, charities, recyclers, etc.) in moving towards a circular fashion ecosystem. The insights from this modelling were linked to the action areas and recommendations for stakeholders.

In terms of scope of products covered, although elements of the research have touched upon fashion items such as shoes and accessories, the primary focus has been on clothing. A breakdown of the included items in this category can be found in [Appendix A1.1](#).

Given the complexity of transitioning the ecosystem towards circularity, there are certain intricacies and angles that this report does not capture. Issues that were **outside the scope of this report**, but will require attention and further research include:

- Assessing the environmental impacts of emerging chemical recycling technologies;
- Analysing the pros and cons of synthetic and natural fibres in various contexts and applications;
- Addressing ethical and privacy concerns around increasing digitisation within the sector, from product labels to consumer data;
- How to decarbonise the upstream activities of the global fashion value chain through direct interventions such as improving energy and machine efficiency, and what such interventions would mean in terms of cost and viability;
- Assessing the need to detoxify the upstream supply chain, for example textile production processes;
- Analysing the fashion industry’s contribution to microplastics pollution of marine and terrestrial environments;
- Assessing the need for a shift to regenerative agriculture in fibre production and what this would mean in terms of impacts on people and environments across the world; and
- Considerations around the future location of manufacturing, including moves to re-shore manufacturing capacity to enable local production and supply chains.

Brexit and the pandemic have had a devastating impact on the industry. With the bottom falling out of demand, estimates show that the COVID-19 recession could be twice as hard on the fashion sector compared to the UK overall, with 240,000 direct job losses predicted; this rises to 350,000 when including all jobs supported by the fashion industry, equivalent to 1% of all UK jobs<sup>17</sup>.

Additionally, fashion is a complex global industry with multi-component products. It is reliant on the EU for 76% of exports and 30% of imports<sup>18</sup>; hence the industry has had to cope with the unintended consequences of Brexit more than most. Inevitably, these impacts were encountered through the course of this research and, whilst not in direct scope of this report, they remain a key driver of this project.





## **2. THE CURRENT STATE OF THE UK FASHION ECOSYSTEM**

# THE NEED FOR SYSTEMIC CHANGE

**The UK fashion market represents one of the largest globally**, with revenues of £118 billion, 890,000 workers and a contribution of £35 billion to the UK's pre-pandemic GDP<sup>19</sup>. Serving a global fashion market, which generated £1.8 trillion in 2019, the UK's fashion ecosystem is a complex network with an extensive set of stakeholders<sup>20</sup>. The UK fashion industry is also critically reliant on, and closely interlinked with, the global fashion and apparel market. Approximately 90% of the fashion and textiles purchased on UK high streets are imported, and 60% of all used textiles collected domestically are exported<sup>21, 22, 23</sup>.

**Owing to its high material intensity, the UK fashion ecosystem has a significant environmental and social footprint.** Across the cradle-to-grave life cycle of all fibres in the UK, the fibre production stage is the most carbon intensive, closely followed by manufacturing<sup>24</sup>. Despite the growing attention being paid to the importance of the reuse and recycling of garments, 97% of fibres used in clothing production are virgin fibres, with 25-35% of these materials lost during manufacturing as supply chain waste<sup>25, 26</sup>. More than half of these losses occur during the preparation of fibres to make yarn and during garment production, for example in the form of offcuts<sup>27</sup>, further increasing demand for virgin fibres.

**UK consumers' high demand for new clothing, combined with a global trend of ever-decreasing garment lifespans, is increasing the UK fashion industry's environmental and social impact**<sup>28</sup>. 'Fast fashion' has typified this trend as a business model focused on the high throughput of garments, with short lead times and low prices. The garments produced are frequently made from multi-fibre blends and consequently, cannot be recycled<sup>29</sup>. The annual UK demand per capita for new items of clothing is higher than that of other high-income countries, such as France, Sweden, The Netherlands and Italy<sup>30</sup>. Research indicating that UK consumers were expected to spend £2.7 billion on 50.3 million 'throwaway outfits' over the summer of 2019 further outlines the worrying trend towards ever shorter garment lifespans<sup>31</sup>.

**Downstream in the fashion supply chain, the UK has one of the highest recycling collection rates of used clothes per capita globally.** However, the outcome for the UK's collected textiles is often suboptimal because of constrained capacity within domestic recycling infrastructure. This is caused by inconsistent supply of quality feedstock, which prevents textile recycling from being profitable, and the poor commercial viability of recycling technology capable of producing high value outputs. Of the used textile volume collected in 2017, 60% was exported, 33% resold in the UK, and 3% recycled domestically<sup>32</sup>. The UK is the second largest exporter of used textiles globally, worth £381 million in 2018, but countries such as the US, Korea, and China have gained market share in the past decade<sup>33</sup>. This may limit the viability of large-scale UK export in the long-term.

**In summary, the current UK fashion sector represents an ecosystem that needs to evolve and address its environmental and social impact.** The UK's ecosystem suffers from falling clothing utilisation rates and suboptimal reuse and recovery following disposal, resulting in a significant environmental and social impact. There is therefore a critical need to move past the status quo and towards a new model for the fashion ecosystem in the UK that is fit for the 21st century.

## THE ENVIRONMENTAL AND SOCIAL FOOTPRINT OF THE UK AND GLOBAL FASHION SECTOR

**50%** of workers in countries such as India and Bangladesh are not paid minimum wage<sup>34</sup>



**20%** of industrial water pollution world-wide is from the global dyeing and treatment of textiles<sup>35</sup>

**26 MILLION** tonnes estimated carbon footprint of UK fashion sector in 2016<sup>36</sup>

## THE UK DEMAND FOR NEW CLOTHING

**17%** of young people wouldn't wear an outfit again if it has appeared on their Instagram<sup>37</sup>



**16KG** of new clothing is bought annually per person in the UK, higher than that of other high-income countries like France, Sweden, and Italy<sup>38</sup>

**4 BILLION** pieces of apparel purchased in the UK in 2019<sup>39</sup>

**60%** of the total waste associated with the clothing lifecycle arises from final disposal<sup>40</sup>

## THE END-OF-LIFE OUTCOMES OF CLOTHING PURCHASED IN THE UK

**60%** of clothing collected for reuse and recycling was exported in 2017<sup>41</sup>

**3%** of clothing collected in the UK was recycled in 2017<sup>42</sup>

**20%** of clothing discarded in household waste in the UK went to landfill<sup>43</sup>



**80%** of clothing discarded in household waste in the UK was incinerated in 2017<sup>44</sup>

**600,000** tonnes of used textiles collected for reuse and recycling in the UK in 2017<sup>45</sup>



# CONSUMER BEHAVIOUR IN THE UK FASHION ECOSYSTEM

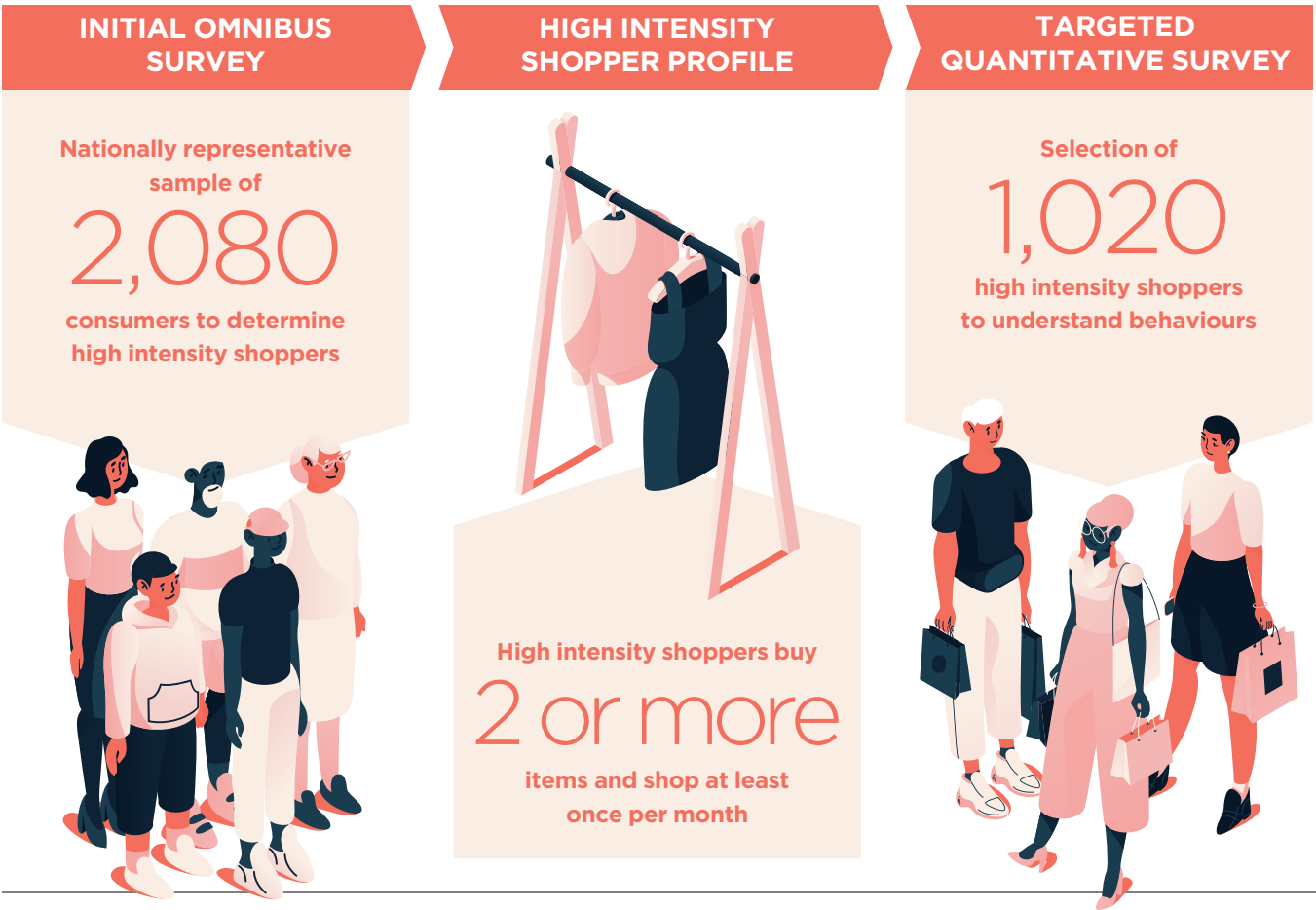
The development of a circular fashion ecosystem must be compatible with consumer preferences and behaviours to be successful and create lasting change. This is particularly true in light of consumers' increased demands for positive social change among brands and ever-growing access to information about brand sustainability. While consumer preferences are a fundamental consideration for any systems transformation, understanding such preferences is a complex task, and research into consumer behaviour is often omitted from reports on the circular economy.

For these reasons, Phase 1 of the CFE Project incorporated primary research into consumer behaviour, with a particular focus on understanding those British consumers who buy the most fashion products. By influencing the behaviours and preferences of this group, it is possible to achieve a significant proportional change in the environmental impact of all fashion purchases in the UK.

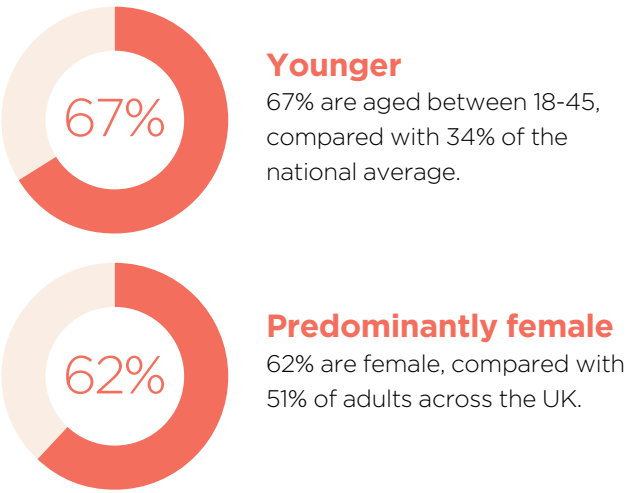
## Defining a high intensity shopper profile - initial omnibus survey.

The first requirement of this consumer research was to determine the profile of 'high intensity shoppers'. To do this, an initial omnibus survey\* was prepared to identify the characteristics of people who purchase above-average amounts of clothing. This survey was conducted online with a sample of 2,080 adults who were representative of the UK's geographical and socio-demographic mix (in terms of age, gender, region, social class, and ethnicity).

These initial survey results were triangulated with earlier desk research to define the criteria for high intensity shoppers as individuals who shop often for fashion items\*\* (i.e. "at least once a month") and who purchase relatively high quantities on average (i.e. those who "purchase two or more items in a typical month").



Of the 2,080 respondents for this initial omnibus survey, 562 respondents (27%) met our high intensity criteria, and those shoppers could be characterised as typically:



These findings were used to target respondents for the more substantial, quantitative research.

## Understanding the high intensity shopper - targeted quantitative survey

The second survey conducted was a targeted and in-depth online quantitative survey\*\*\* designed to better understand high intensity shoppers. To do so, respondents were first pre-screened to ensure they met the high intensity shopper criteria defined above before the survey was issued. A total of 1,020 UK consumers who qualified under these criteria completed the survey.

The survey sought responses on their fashion shopping, use and disposal behaviours, and their preferences for shifting to more circular practices. This included questions about:

- Non-standard retail models that diverge from purchasing new garments. Examples included buying and selling used items and swapping, renting, and returning purchased items after use for a full refund;
- Curation and care for products - how respondents manage their wardrobe contents, whether they repair or pay for repair of garments and their use of stain removal products to extend useful life of clothing;
- Attitudes to purchasing items with perceived lower environmental impact (organic or recycled materials); and
- Use of digital platforms that could reduce the need for buying physical garments. Examples included using an app to manage wardrobe contents and buying downloadable content and "digital skins" for use in online environments.



IMAGE COURTESY OF BRITISH FASHION COUNCIL

\* An omnibus survey is a quantitative market research method where information on a variety of different subjects is collected using the same questionnaire.

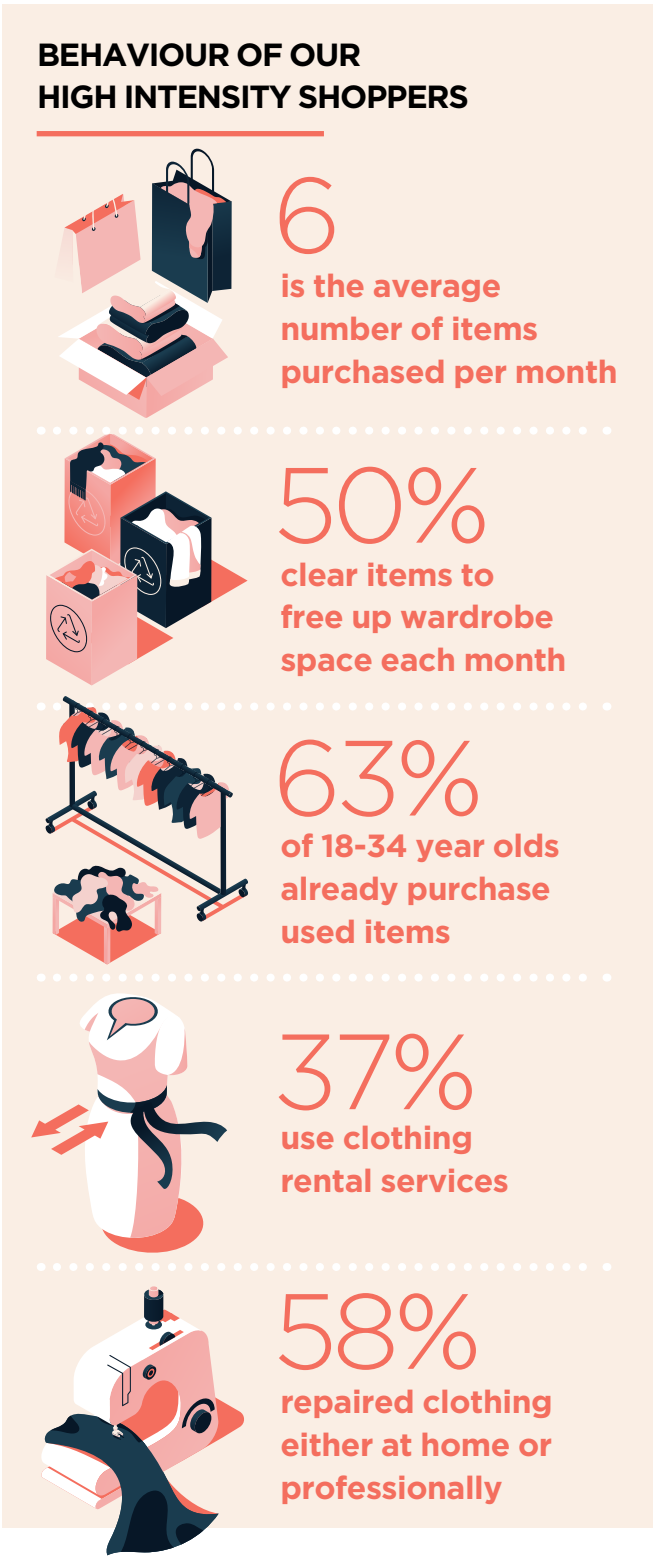
\*\* Fashion items include clothing, shoes, and accessories. Purchases could be made either in-store or online.

\*\*\* Quantitative surveys are used to gather responses on a set of predefined issues posed in a questionnaire. By design, they do not provide contextual commentary nor the richer feedback of qualitative methods such as focus groups, but they can be useful for reaching a large audience and enabling analysis of results across multiple parameters such as age, gender, and social circumstances. The results of quantitative surveys are often used to drive focus areas for further analysis.

Targeted survey headline findings

The survey responses were used to generate insights into behaviour on buying, garment use and care, disposal, including selling and passing on garments, and their values related to fashion and circularity.

The high-level findings across these themes indicate a mixed picture, with evidence of practices and values that both align with and go against circular economy principles.



1) High volume, frequent purchasing

As eligibility for the targeted survey required respondents to meet our high intensity shopper definition, it was expected that all qualified survey respondents shopped at least once a month and purchased two or more items in a typical month. In fact, respondents reported an average rate of six fashion items purchased every month, with more than one third purchasing every week and another one third shopping fortnightly.

2) Active wardrobe management

One third of respondents reported disposing of, selling, or passing on garments at least every fortnight, with almost half of respondents doing so every month. However, 45% of this high intensity shopper group still said their wardrobe was at capacity or even over capacity, and it would be hard to fit new purchases in.

3) High prevalence of purchasing pre-owned garments

Over half of respondents had purchased used garments in 2021, which is higher than the national average - around 31% of UK adults reported buying used garments in a 2019 national survey<sup>46</sup>. This behaviour is more prevalent among younger respondents and by the most frequent shoppers. 63% of high intensity shoppers aged 18-34 and 66% of those who shop for fashion weekly reported they had purchased used items in 2021.

4) Creative rental arrangements

37% rented clothing from recognised schemes in 2021. A similar proportion also reported another behaviour: wearing newly purchased clothes and then returning them for a full refund - effectively using retailers as a free clothing ‘library service’.

5) Willingness to repair

58% of the group had repaired (or had a repair done on) clothing in 2021. This behaviour was most common among younger women, more frequent (weekly) shoppers and those who pass on or dispose of clothing more often.

6) Money as a driver for choices

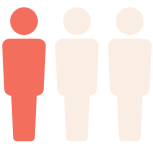
63% of respondents agreed that money was a big factor in how many and what type of clothes they buy. Although this group invests heavily in fashion, not all have large amounts of disposable income, with 19% of survey respondents reporting an annual income below £20,000. The responses showed that there is a significant proportion who invest in fashion carefully and aim to stretch their budgets as far as possible: 46% buy used items because they are better priced, and 55% of those who sold used items did so to generate income.

Deeper dive on findings

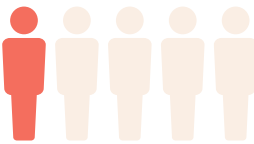
To better understand respondents’ underlying behaviours, they were asked a range of ‘deeper dive’ questions, depending on whether they had or had not engaged in circular fashion activities\* in 2021, and their receptiveness to circular options.

Testing attitudes on circular approaches

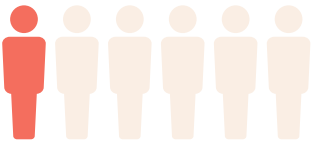
To test values and outlooks, respondents were asked to indicate their alignment with a set of statements. The statements were designed to test ‘upper limits’ of consumer preferences. The results can be used to identify consumer behaviours that indicate natural limits to circular business model market penetration today, without a fundamental change in these preferences.



**More than one in three** agreed with the statement that they buy clothes with the intention of using them for a short time. Almost half of this group said they are very likely to engage in this behaviour. This preference indicates that they could potentially become an audience for short-term rental and subscription services based on their appetite for short-term use.



**One in five** said environmental impact does not influence their purchases. A further 34% have a low inclination to consider such impacts. Any attempts to convert this group must appeal to other drivers, such as style, price, quality, or convenience.



**One in six** strongly indicated they “deserve better than vintage/secondhand clothing”. A further 29% moderately agreed that they deserved better than second hand clothing.

Selling of used clothing

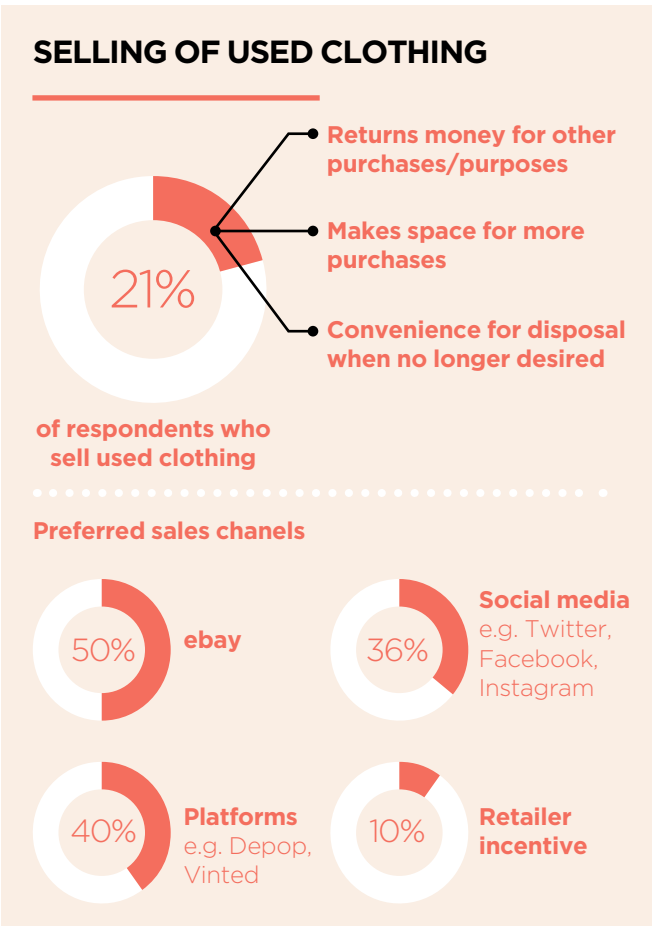
Among the respondents who sell used clothing (21%), there was a significant preference for online channels. The most used were eBay (50% of sellers used this service), dedicated platforms such as Depop and Vinted (40%) and social media channels (36%). Only 10% had sold or traded in clothing directly for an incentive with a retailer. The primary drivers for selling clothing reported

by the respondents were to raise money, to make space for more purchases, and for the convenience as a disposal route.

One notable finding was that the perceived barriers to selling used items differed between existing sellers, and those who do not currently sell used items:

- Existing sellers are most concerned about how much money they will get for their items and whether the items are of a satisfactory quality to sell on.
- For respondents who haven’t sold clothing before, access to sales systems and a perceived lack of convenience were the biggest issue, although doubts over the quality of their used items was also a significant concern.

These responses show the important role of online channels for selling used fashion items, though perceptions differ over ease of use - there may be an opportunity here for such channels to recruit a wider user base. Also, across sellers and non-sellers, uncertainty over quality was a consistent theme, either in assessing the suitability of an item for resale or in accurate valuation for selling an item.



\* Buying or selling used clothing; renting or hiring clothing; repairing clothing or otherwise extending its useful life through garment care; and temporary use of clothing by returning used garments for a full refund





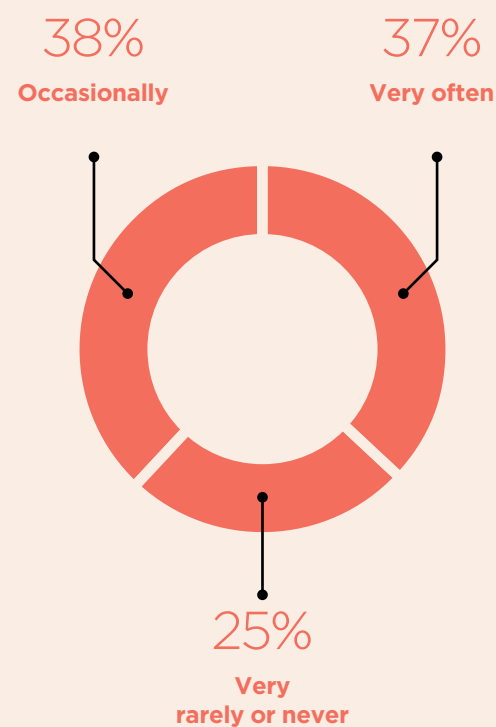
### Repairing garments

More than a third (37%) of respondents either repair garments themselves or get them professionally repaired often. The main motivators reported by respondents were the desire to avoid wasting good clothes, saving money (by not having to replace items) and those garments having more than just financial value (“they mean a lot to me”).

For the remaining respondents who do not repair frequently, the barriers vary depending on whether the repair is undertaken personally or by a professional service:

- For do-it-yourself (DIY) repair, the primary barrier is the hassle factor - replacement is considered easier. Lack of knowledge on how to repair, and confidence in repairing were also concerns.
- For professional repair, barriers are cost (making it only worthwhile for items of high personal or financial value); the time to get a repair done; and the lack of repair services nearby.

**How often do you repair and alter clothes or accessories yourself? And how often do you take items of clothing or accessories to be repaired or altered professionally?**



### Encouraging more circular practices among high intensity shoppers

Given the disproportionate role of high intensity shoppers on the linear flow of fashion items, it is important to understand how this cohort can be engaged and inspired to adopt more circular practices.

The results from this research show a mixed picture. Many of the results confirm expectations, in terms of a high desire for new items and short-term use, with limited interest in environmental factors. But there are positive signs as well, with a range of circular practices already penetrating this community more extensively than might have been expected.

There is a wide range of behaviours in the high intensity shopper group, with some results indicating a strong core of those that value clothing far more than others, either financially, emotionally, or both. Further research is required to understand these factors in more detail to influence them. The relationship between initial purchasing behaviours and subsequent circular behaviours is an important link to be understood and to be disrupted.

Based on the research, potential opportunities for shifting behaviour of high intensity shoppers include:

- **Accelerating the emerging rental market.** This community has started to rent, and if their stated desire for new looks and different items can be satisfied through rental, then the flow of lower quality new items (with associated challenges reported for resale and repair) can be reduced.
- **Remedying repair services that are too few, too expensive and too slow.** Greater convenience presents an opportunity and could be served by digital solutions.
- **Expanding access to and uptake of online resale platforms.** Adopters use them effectively, but non-adopters remain cautious. Both groups would benefit from clear advice on how to assess the quality of items to inform their decisions on potential resale value and buying repair services.
- **Recognising that environmental issues are a low priority for many.** While this may change with communications about the accelerating climate crisis, in the short term other hooks are needed to shift behaviours.
- **Changing perceptions of value around ‘new versus used’.** While resale behaviours are increasing, there is still a proportion of shoppers who assign greater value to newness. This perception may impact opportunities for buying used as well as for rental.

In conclusion, the buying behaviours of this group can be seen to support a linear economy at present since they are driven by a high desire for many and new items and short-term use. These linear options also appear more freely available than circular ones in the current market. However, certain customer behaviours and emerging market signals show that there is potential for interventions to shift towards circularity. In fact, our high intensity shoppers in this research show a far greater acceptance of reuse and temporary use than past research has found for the average UK shopper. There are substantial opportunities to harness this acceptance to drive rapid change towards a circular fashion ecosystem.

# STAKEHOLDER VOICE

## Perspectives from across the value chain

To drive system-wide change, stakeholders from across the fashion supply chain were consulted about the vision for the future fashion ecosystem. Over 30 participants engaged in a focus group and stakeholder interviews. Regular consultations with the CFE Project's Advisory Board were held, and wider industry and government perspectives were sought through the IPF Forum Roundtable (see 'The stakeholder consultation process' below). These consultations were designed to:

- 1) Test an initial vision for change;
- 2) Provide a better understanding of the barriers and opportunities for realising the desired change; and
- 3) Explore the collaboration and partnerships needed to enable the transition.

## Recurring themes

As part of the consultations, participants were asked to comment on their understanding of a proposed 'vision for change', which was developed at the beginning of the project, and to offer, if desired, additional points for inclusion. The findings of the consultations revealed several recurring themes, which helped shape the future vision of the circular fashion ecosystem.

## Reducing production and consumption as a priority

Most of the participants voiced a need to reduce consumption of new clothing, which would require a significant shift in the industry. The importance of increasing durability and longevity of clothing was raised as a core requirement for reducing the volumes of new clothing produced by the industry since having clothing that lasts longer could help lessen the need for purchasing new and more clothing items. For similar reasons, the need to shift to circular and sharing business models (CSBMs) was emphasised across the board.

Teaching circular, digitised, and sustainable design and training future designers to create and use less was noted as a fundamental first step to improve clothing longevity and sustainability. This means that garments from the outset should be designed to have a long life through multiple cycles of reuse.

Through circular design, brands and retailers could also drive demand for recycled and sustainable fibres.

"Consumption is probably our biggest problem as it affects every element of sustainability. Simply put, we're producing and using too much."

**KARLA MAGRUDER, FOUNDER, ACCELERATING CIRCULARITY**

"We need to use less. There needs to be less extraction and cultivation, and a slowing down of the growth rate. Circularity is how we do this. Durability, increased recycling and new business models that do not require 'new, new, new'. All of this is something we need and want to support because it has the knock-on effects we require."

**CLAIRE BERGKAMP, CHIEF OPERATING OFFICER, TEXTILE EXCHANGE**

"Industry has to provide convenient solutions to enable customers to extend product lifecycles, whilst simultaneously designing products with physical and emotional durability in mind from the outset. The collective industry narrative needs to shift from 'more of what you want for less' to 'buy better.'"

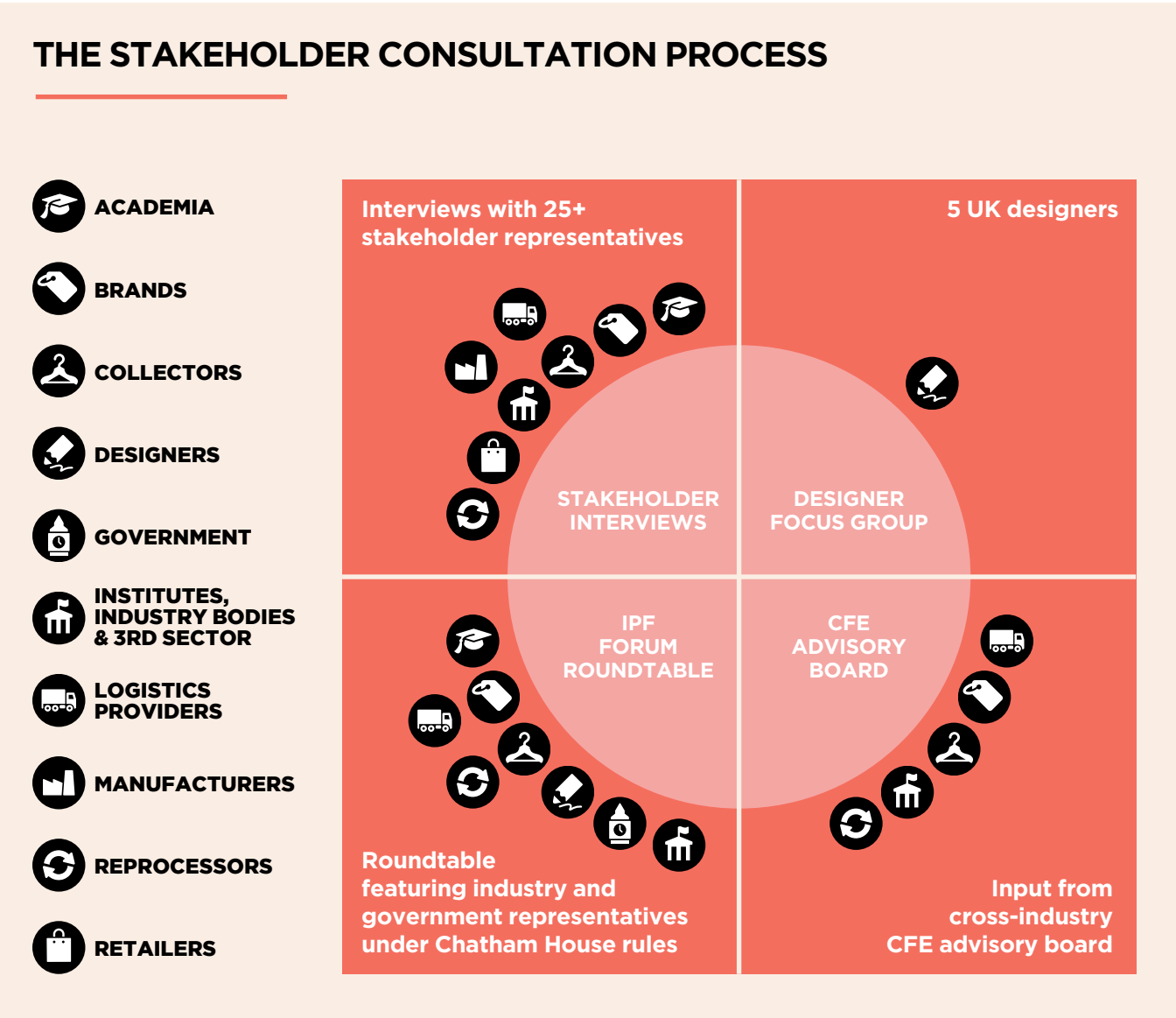
**GEORGE BARRETT, SUSTAINABILITY MANAGER (CIRCULAR ECONOMY) & PARTNER, JOHN LEWIS & PARTNERS**

"I've been thinking a lot recently about the lack of inclusion of home economics in education. If this was to be re-introduced at primary level up and through until college, individuals would have a greater understanding of how to fix, treasure, re-use, and extend the life of the clothes they already have."

**JOSHUA JAMES SMALL, DESIGNER, JOSHUA JAMES SMALL**

"One facet of my business is all about knowledge and education so whether that's through consultancy with brands to help them understand the issues or whether it is working with private consumers through social media, I'm trying to make sure that I build awareness of longevity and how to look after products."

**HELEN KIRKUM, FOUNDER, HELEN KIRKUM STUDIO**





**Consumer behaviour  
and stakeholder responsibility**

The view that the UK needs to move away from the concept of disposable clothing was expressed. Empowering citizens to embrace less environmentally impactful purchasing habits was viewed as important to this shift.

While most participants recognised that changing consumer behaviours and mindsets is complex, the overall perspective was that brands and retailers should lead on this issue. Many felt it was the responsibility of brands to design not only for digitisation, reuse and recyclability, but also for emotional and physical durability. Brands and retailers were also urged to be bold in experimenting with new marketing and business models. Through collaborating with local authorities and logistics providers to expand circular and sharing business models, consumer demand for sustainable products and services could be proactively established.

Many participants discussed the need for expanded education campaigns to teach citizens about the value of recycled, sustainable fibres and materials and help them develop greater care for bought and rented clothing. This would combine with improved logistics solutions, which would be more accessible and user-friendly, enabling consumers to easily donate, resell or have their products repaired or redesigned.

“The idea that you can buy clothes to throw away, that needs to change. People used to see clothes as an investment so we need to bring that back.[...] We need to make sure we are creating things with value that can be enjoyed.”

**THOMAS BERRY, GLOBAL DIRECTOR  
SUSTAINABLE BUSINESS, FARFETCH**

“It’s so important we buy less. I think consumer appetite is up there, but I think responsibility lies with retailers. There needs to be a financial imperative for them to change their practices.”

**ADAM MANSELL, CEO & COMPANY  
SECRETARY, THE UK FASHION & TEXTILE  
ASSOCIATION**

“We have a vision to reinvent retail, we want to see more focus on repair, reuse and rental. Ourselves, as well as other retailers are working towards retail change by encouraging customers to change their lifestyle, the most promising ones are repair, resale and rental. It’s up to retailers to put desirable options in front of consumers.”

**CHRISTIAN TØENNESEN, DIRECTOR OF  
SUSTAINABILITY, SELFRIDGES**

“All products should be good choices for people and the environment, customers shouldn’t have to make a choice. Increasing pressure from customers for brands to make fashion products responsible, provides an opportunity for designers to respond by ensuring clothes can be used more, made to be made again, and made from safe and recycled or renewable inputs from outset.”

**LAURA BALMOND, LEAD - MAKE FASHION  
CIRCULAR, ELLEN MACARTHUR  
FOUNDATION**

“We may all know that keeping a piece of garment in use for longer is good for the environment. But the main challenge is the emotional side: we want to look good and feel good. How can the emotional durability of fashion be increased? Design is the starting point.”

**DR KE WANG, KNOWLEDGE LEAD,  
PLATFORM FOR ACCELERATING THE  
CIRCULAR ECONOMY (PACE)**

**Investment in infrastructure  
and digital technology**

Some stakeholders argued that the government had a role to play in investing in infrastructure and services to implement advanced sortation and develop closed-loop recycling. To maximise garment value, they felt it was necessary to invest to create commercially attractive market conditions for recycling technologies and to support training and upskilling of garment workers, collectors, sorters and recyclers, as well as encouraging research and development within the sector.

Participants foresaw the fashion system partnering with digital innovators to develop advanced tracking and sorting systems, robotics, and AI, to enhance the transition to a circular model. Some stakeholders commented on the fashion sector being shaped by the gaming and film industry’s advanced digital innovations.

“There is no major reprocessing infrastructure in the UK. That is the biggest barrier of all. We need to make it easy for consumers and have the infrastructure in order to turn a cotton T-shirt back into cotton.”

**ADAM MANSELL, CEO & COMPANY  
SECRETARY, THE UK FASHION & TEXTILE  
ASSOCIATION**

“Accelerate the transition to a circular economy. The reason we’re not getting there is because of a lack of infrastructure - getting clothes back into circulation cost-effectively.”

**JOE METCALFE, CO-FOUNDER, THRIFT+**

“Governments need to create grants and incentives for innovators..., the government needs to subsidise the cost of scale until the business gets to scale. That is through grant programmes to start-ups or small SMEs that are doing innovative stuff.”

**JEFF DENBY, CO-FOUNDER,  
THE RENEWAL WORKSHOP**

“Some companies operating in the fashion space have attracted significant investment by focusing on business models that rely on the acquisition and analysis of data, to provide insights about customers and products, to aid decision-making.”

**PROFESSOR STEPHEN J. RUSSELL, SCHOOL  
OF DESIGN, UNIVERSITY OF LEEDS**

The themes outlined above were striking in their consistency, revealing that across the UK fashion ecosystem there is already alignment on what the problem is and what needs to change. The need to gain as much value out of garments as possible before they reach the end of their usable life was a clear message from all. Further, while garment recycling is desirable, many felt that the pursuit of increased recycling should not be at the expense of extending the life of a garment. With the role of the UK government emphasised, most felt that investment, regulation and policy changes would be key to supporting brands and manufacturers as they transition to circular business models and change consumer behaviour.

The industry is clearly already thinking about and prepared to play its role in the transition to a circular fashion ecosystem. With this appetite for change confirmed, the UK fashion ecosystem is well-positioned to move the industry forward to be fully circular.

# THE CASE FOR CHANGE

Our research findings make it clear that a new model for the UK fashion ecosystem is urgently needed. The case for a transition to a circular economy begins with the observation that:

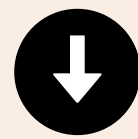
**If enacted globally and across sectors, the circular economy can deliver the reductions in greenhouse gases needed to reach the goals of the Paris Climate Agreement<sup>47</sup>.**

In addition, a circular economy can deliver numerous economic and social benefits. Research on circular business models has found that the growth of sectors such as remanufacturing, recycling, and repair in the UK could lead to an additional 472,000 new jobs by 2035<sup>48</sup>. This job creation presents a chance to reskill, upskill and redeploy workers across the economy and establish decent and fair working conditions as a minimum standard throughout the industry<sup>49</sup>.

Transitioning the economy towards a more regenerative model therefore presents the UK fashion industry with an opportunity: to address the environmental and social challenges within its global supply chains, while realising commercial opportunities in its consumer markets. This opportunity must be grasped by stakeholders from across the fashion industry and bold, urgent, and ambitious action is required.

“Imagine 30 years down the line and what an optimal circular world could look like once it’s been achieved, where products and materials are kept in continual circulation in a way which is within our planetary boundaries.”

**CYNDI RHOADES, FOUNDER, WORN AGAIN TECHNOLOGIES**



## 1. Reduce the flow

**There is a clear environmental case for reducing the flow of new materials and new physical clothing going through the system.**

The current UK demand for new clothing is unsustainable, driving a significant material, carbon, and water footprint for the industry. Greenhouse gas emissions from the global clothing industry account for about 5% of the global total<sup>50</sup>. Modelling by McKinsey & Company (2020)<sup>51</sup> indicates that if the global fashion industry is to align itself with a 1.5°C pathway by 2030, absolute greenhouse gas emissions must be reduced to around half those of the present day. According to the McKinsey & Company model<sup>52</sup>, which is based on current projections of market growth, major efforts to decarbonise upstream operations are needed to achieve such emissions reductions. While such efforts will play a major role, the most effective way to lessen the environmental impact of the ecosystem will be to reduce demand for new clothing. This would remove the requirement for the high levels of fibre production and manufacturing that account for the majority of emissions.

Reducing demand for new physical clothing is also important because the current volume of used clothing exported by the UK will likely not be viable in the long term. Exports of used clothing can, in many cases, lead to improved utilisation and social outcomes in the recipient country<sup>53, 54</sup>. However, the global market for used clothing is becoming increasingly crowded, suggesting that this outlet is narrowing<sup>55</sup>. This is exacerbated by the reduction in quality of used clothing due to fast fashion<sup>56</sup>.



## 2. Increase utilisation

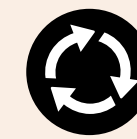
**There is a clear environmental and economic case for reversing the trend of declining clothing utilisation.**

It has been estimated that more than \$500 billion is lost globally every year due to underutilisation of clothing and a lack of recycling<sup>57</sup>. Improving clothing utilisation will ensure that more value is captured from all garments produced. It will also spread the environmental cost of an item across more instances of use. This is validated by WRAP’s (2017)<sup>58</sup> research showing that extending the life of clothing by nine months could reduce carbon, waste, and water footprints by 20-30% each.

CSBMs directly address declining clothing utilisation by both improving it and extending product life. They maximise the value of materials and products by keeping them in use for as long as possible, if not permanently. Potential models include garment maintenance, adjustment and repair; reselling of used garments to new consumers (recommerce); and the provision of clothes to consumers on a temporary basis (clothing rental and subscription).

CSBMs could also offer cost savings and increased profit margins for businesses. Fashion for Good and Accenture Strategy (2019)<sup>59</sup> have found that rental, subscription, and recommerce business models will likely achieve above-baseline profit margins in the luxury market, and that by 2023 the recommerce market will reach \$51 billion. Similarly, McKinsey & Company (2020)<sup>60</sup> found that increased provision of repair services and recommerce models will likely lead to industry-wide cost savings, alongside significant environmental benefits.

Consumer demand for CSBMs is set to grow. Our consumer research found that many high intensity shoppers are already buying pre-owned clothing and desire short-term temporary access to clothing. Further, thredUP’s (2021)<sup>61</sup> research showed that the percentage of US consumers purchasing or open to purchasing pre-owned clothes has risen markedly from 45% in 2016 to 86% in 2020.



## 3. Scale recycling

**Emerging technologies show potential for scaling closed-loop and regenerative recycling of used clothing but planning and investment needs to start now.**

The environmental benefit of any recycling technology depends on: (1) the environmental impact of the recycling process (including direct and indirect emissions); and, (2) the extent to which recycled outputs can substitute more environmentally impactful materials.

There are currently two textile recycling technologies: **Mechanical recycling** shreds garments into fragments, which can then be spun into new yarn, while **chemical recycling** processes break fibres down into their chemical components (the original monomers or polymers) using solvents or enzymes, which are then used to produce new fibres.

Both technologies have advantages and disadvantages. Mechanical recycling is less capital-intensive and technologically advanced, but as it shortens fibres through shredding, the recycled output is substandard compared with virgin fibres. Chemical recycling can produce fibres on par with virgin feedstock, but it is technologically advanced and highly energy-intensive.

Emerging chemical recycling technologies demonstrate the greatest potential for replacing virgin feedstock with recycled inputs in the long term. However, chemical recycling is in its infancy in the UK and currently lacks commercial viability<sup>62</sup>. Emerging chemical recycling technologies include UK-based Worn Again<sup>63</sup>, who can break down polyester and cotton fabrics, and the Green Machine, developed by H&M Group and the Hong Kong Research Institute of Textiles and Apparel, which uses a hydrothermal process to recycle cotton and polyester<sup>64, 65</sup>. Significant remaining challenges include the processing of blended fabrics, as different fibres require different chemicals to break down, and the lack of a consistent supply of quality feedstock material. Solving these issues will offer commercial viability and enable scaling. Improving traceability, implementing fibre labelling legislation and reducing the use of mixed materials represent important first steps<sup>66</sup>.



# 3. TOWARDS A FUTURE CIRCULAR FASHION ECOSYSTEM

The previous sections of this report described the need and the case for systemic change in the UK fashion ecosystem. This section sets out our framework for accelerating the transition to a circular fashion ecosystem. This framework has three core components.

This section introduces each component in turn. It also features exploratory financial modelling to gain insight into how financial value might be generated through circularity.

## THE STRATEGIC FRAMEWORK FOR REALISING A CIRCULAR FASHION ECOSYSTEM

3

TARGET  
OUTCOMES

10

PRIORITY  
ACTION AREAS

30

RECOMMENDATIONS  
FOR STAKEHOLDERS

# THREE TARGET OUTCOMES FOR A CIRCULAR FASHION ECOSYSTEM

The reasons for change described in 'The case for change' on [pages 38-39](#) form the basis of our proposed **target outcomes** for a future circular fashion ecosystem, which are laid out below. Informed by the literature review, stakeholder voice consultations, and consumer research, the target outcomes represent areas where primarily UK-based stakeholders have the potential to deliver significant impact reductions across the value chain. Combined, they make up the **target state** for the circular fashion ecosystem and allow for long-term viability, resilience, and prosperity.



### Reduced volume of new physical clothing

Through circular and sharing business models, extended product lives, consumer empowerment and digital innovation, the UK fashion market could retain revenue and profitability at the same time as significantly reducing the volume of new physical product and material supply.



### Maximised utilisation through product circularity

Through improved conditions for reusing garments, the value and enjoyment of every garment produced is maximised.



### Optimised sorting methods and materials recovery

Through infrastructure and technologies that ensure advanced and efficient methods for sorting used clothing, optimal 'next lives' can be ensured. Rewearable items can be recovered for repair and reuse while sorting of non-rewearables provide the quality feedstock needed for improved recycling.

"The idea is to reduce waste and restore value to the products that have already been produced. The goal is to help brands transition from linear to circular business models and have profitable solutions at scale."

JEFF DENBY, CO-FOUNDER, THE RENEWAL WORKSHOP

Achieving the target outcomes would entail significant changes to material flows, industry operations and consumer practices across the UK fashion value chain and ecosystem. These are summarised in 'The circular fashion ecosystem' on [pages 44-45](#), which is organised along the following parts of the value chain:

**A BRANDS AND DESIGNERS.** Use of digital prototyping to design both virtual and physical garments with circular design principles in mind.

**B DIGITAL TRACKING.** The unique characteristics and journeys of garments are tracked from the first stage of the value chain and accessible to stakeholders throughout the ecosystem.

**C RAW MATERIALS.** Raw material inputs for manufacturing are either renewable, recycled or both.

**D MANUFACTURING.** Zero-waste manufacturing and reuse of waste materials, water and chemicals is the norm. On-demand manufacturing and distribution mean that excessive and unsold stock is minimised.

**E RETAIL.** Provision of pre-owned clothing, virtual clothing, rental clothing, and clothing subscription is mainstream and available through both online and physical retail.

**F USERS.** UK consumers buy less clothing overall. When they do purchase, they buy more pre-owned than new, and items of a higher quality and durability. Consumers wear items more often and for longer (or pass them on for reuse).

**G REPAIR.** Consumers maintain their clothing and repair items at tailors, retailers or at home.

**H REUSE.** Consumers take clothing directly back to retail to be resold or rented to a new user or pass on clothes through recommerce platforms that engage in redesign, upcycling, garment care, tailoring and repair before the item is resold. Consumers also resell clothing to new consumers directly through online trading platforms.

**I DONATION AND COLLECTION.** Consumers have easier and more convenient access to expanded collection and donation channels, including private, kerbside, charity, and via retailers.

**J SORTING.** All used clothing collected in bulk is sorted using sophisticated sorting technologies at efficient sorting facilities and other venues. This allows for optimised determination of the 'next destination' for individual garments, be those channels for reuse or for recovery.

**K RECYCLING FOR OTHER INDUSTRIES.** Material outputs in the form of fibres, yarns, textiles, and clothing that cannot be reused in the fashion industry long-term are utilised by other industries such as agriculture, homewares, and construction, as part of a wider material ecosystem.

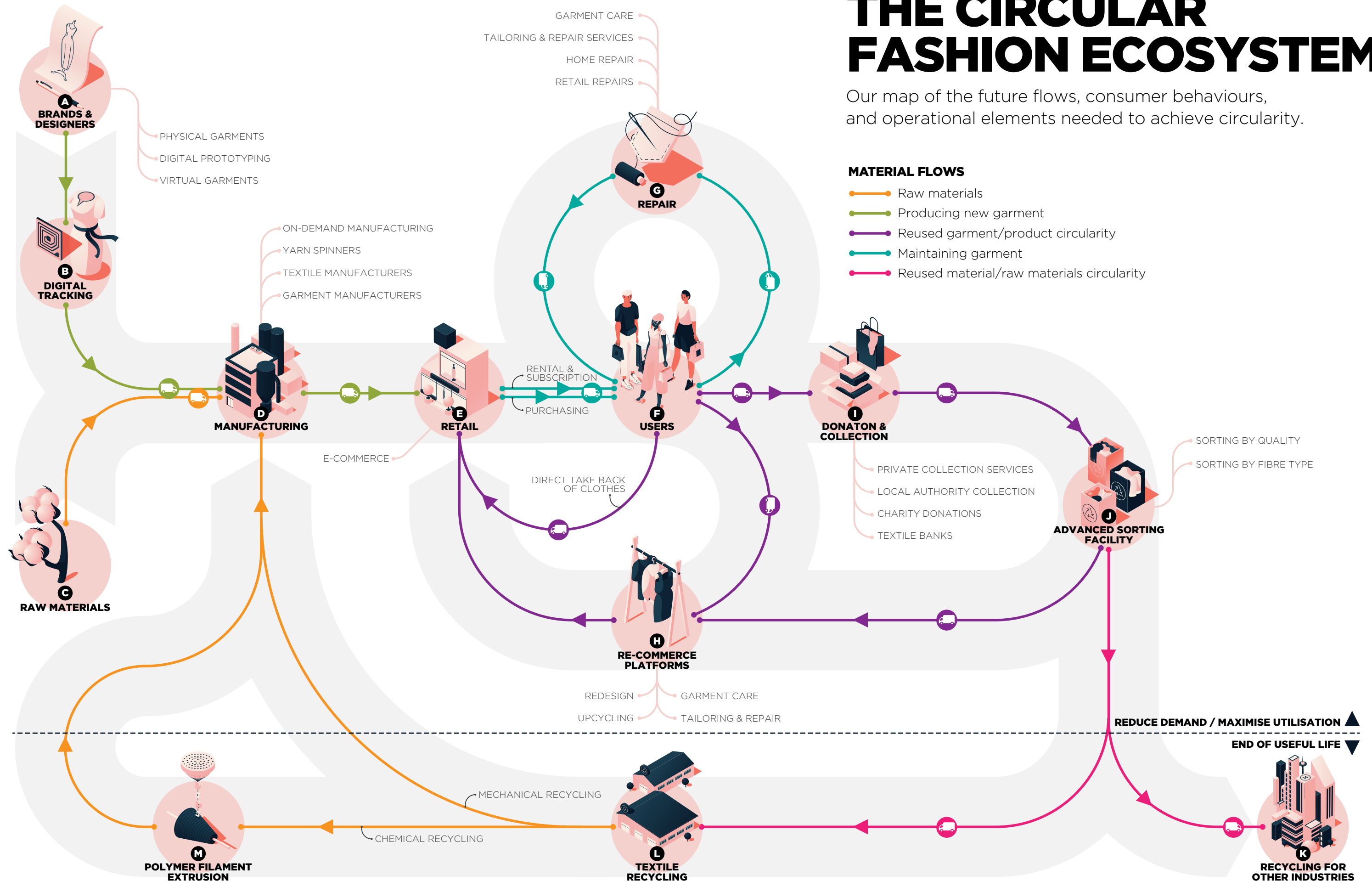
**L TEXTILE RECYCLING.** In the short to medium term, non-wearable garments suited to textile recycling are channelled to existing mechanical recycling facilities. In the long term, the destination will increasingly be facilities for chemical recycling.

**M FIBRE MANUFACTURING (POLYMER FILAMENT EXTRUSION)** In the long-term, improved sorting and scaling of fibre-to-fibre recycling mean an increase in fibre manufacturing from recycled chemical inputs instead of raw materials, including through polymer filament extrusion.



# THE CIRCULAR FASHION ECOSYSTEM

Our map of the future flows, consumer behaviours, and operational elements needed to achieve circularity.



# MODELLING FINANCIAL IMPACTS OF A CIRCULAR FASHION ECOSYSTEM

Given the urgent need for a circular fashion economy and the target outcomes we must achieve, it is important to consider what this necessary transition to fashion circularity might look like. Specifically, what are the potential financial implications of the changes to consumer behaviour required for the transition to a circular fashion ecosystem? To this end, we developed a model to assess potential recovery values for customers and other stakeholders within the post-use ecosystem (e.g. recommerce platforms, charities, recyclers, etc.). The model is designed to provide high-level insights into how financial value could be generated through circularity based on a comparison of scenarios in current and future states. This model is an indicative scenarios assessment tool, and is neither intended for, nor suitable as, a vehicle on which to base a business case or for attracting investment.

### Modelling scenarios

Three scenarios are modelled, under business-as-usual and two potential future states, with each assuming a different customer spend pattern for garment purchases:

- 1. The **current state scenario** assumes that a customer's annual garment purchases consist of 90% new items and 10% pre-owned\* items.
- 2. The **interim state scenario** is based on a shift towards more circular behaviours. We assume a customer's garment purchases in the interim state would be 65% new garments, 25% pre-owned items and 10% virtual garments\*\*.
- 3. The **target state scenario** is in line with the more radical shift needed in customer purchasing behaviour to realise a circular fashion ecosystem. In this scenario, we assume a significant reduction in consumption of new garments. This would be 50% new items, 25% pre-owned garments, 15% virtual garments and 10% temporary access garments such as rentals and subscriptions.

\* Garments that were previously owned by another person: including those passed on by friends, purchased through online trading systems and those purchased in retail outlets such as vintage and charity stores. Buying a reused garment is assumed to replace the need for a new one.

\*\* Garments that only exist online and are used for social media, avatars and gaming characters.

The 'Customer purchases under model scenarios' diagram below summarises the assumed splits of customer garment purchases under each scenario. Based on the different customer purchase combinations described above for each scenario, and using publicly available data from WRAP<sup>67</sup> on current discard and disposal routes for UK consumers, the model assumes a likely split among different potential end-of-life options for garments entering the post-use ecosystem i.e. recycling, recommerce, repair, reuse and disposal. These likely end-of-life options help estimate the financial values that those garments may attract (i.e. via recommerce, tailoring and repair, donation for reuse/recycling or discard to landfill). We assume that financial

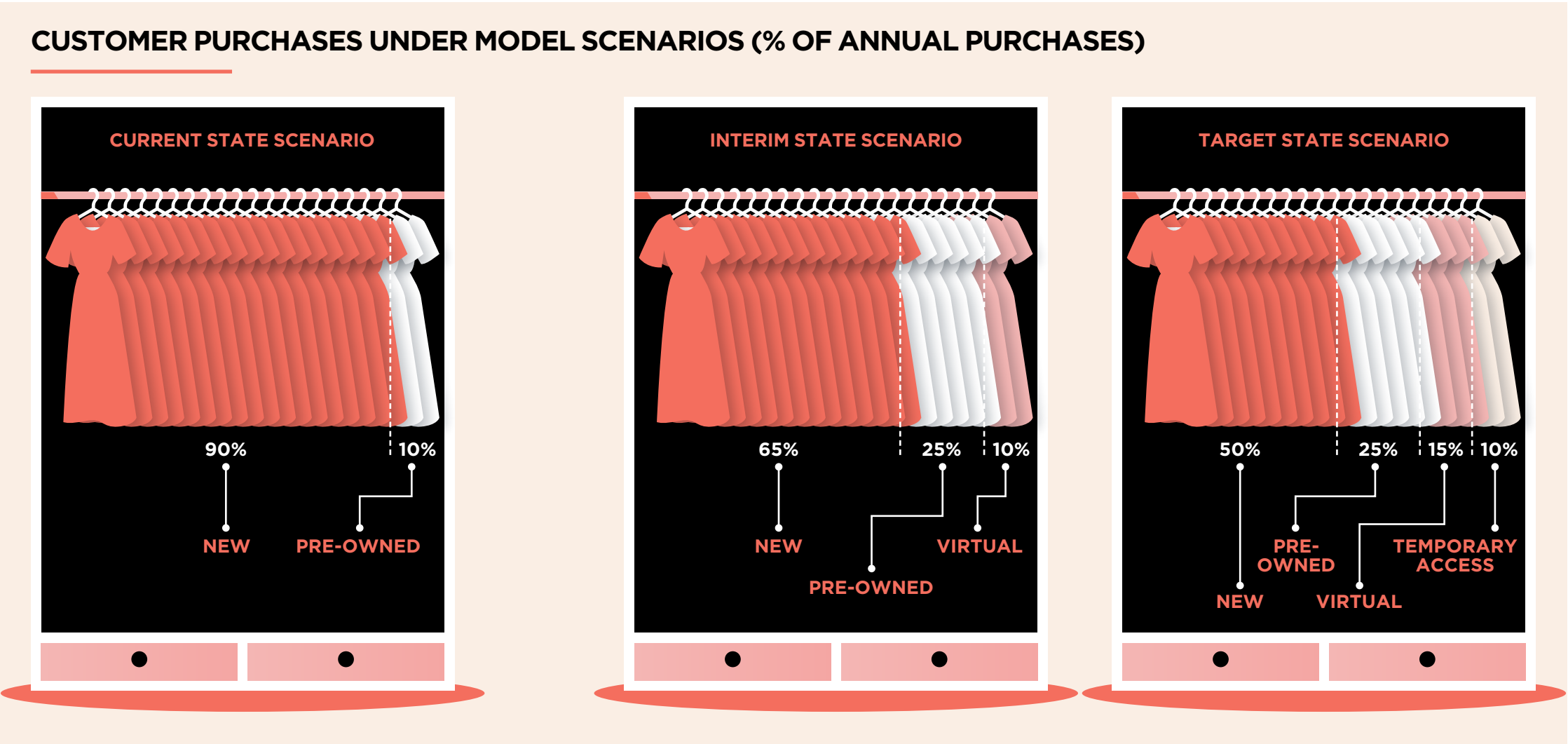
value for resold garments can be captured either by the customer or by resellers or reprocessors downstream, such as collectors, charities, and recyclers. The estimated financial values that can be recovered by customers and downstream industries under each scenario are modelled for two types of fashion consumers:

- 1. **'Average' shoppers**, defined as those shoppers who typically buy two fashion items per month, and
- 2. **'High intensity' shoppers**, defined by the initial omnibus survey of our consumer research as those shoppers who shop often for fashion items and who purchase relatively high quantities on average. An average purchase rate of six fashion items per month was used for modelling this shopper type based on data from our targeted quantitative consumer survey (see 'Consumer behaviour in the UK fashion ecosystem' on [pages 28-33](#)).

The key results of the analysis are presented below, with further detail on the approach, assumptions and outputs included in [Appendix A1.4](#).

"In the UK we dispose of 350,000 tonnes of clothing waste into landfill each year. This represents £140 million in terms of value. Can you imagine what we could do if we kept that value in the economy, recycled it so to speak to spark innovation, develop new industries and drive job creation, all to enable better circularity?"

**SONIA THIMMAH, HEAD OF SUSTAINABLE BRANDS AND CUSTOMER PARTNERSHIP, RECKITT**





Key results

The figure ‘New item spend and financial recovery values’ on this page presents the key findings of the modelling. It shows the amount spent annually on clothing for each scenario and customer type, compared with how much financial value could be recovered for that clothing by the consumer and other stakeholders through the post-use ecosystem. There is a significant opportunity under the interim and target state scenarios for customers and/or other resellers/processors to recover more financial value through utilising circular routes that keep existing items of clothing in use for as long as possible compared to linear disposal. Such routes offer greater value recovery, with potential customer spend recovered through circularity as high as 43% in the target state scenario for average shoppers (and 36% in the analogous scenario for high intensity shoppers). This compares with the minimal return of 6% and 7% (for average and high intensity shoppers, respectively) that can be recovered in the current state scenario.

Specifically, there is far greater financial value gained through using routes such as recommerce, reuse, repair and rental/subscriptions than recycling, which contributes just over 1% to the post-use financial value, or disposal.

The scenarios modelled in this analysis indicate that a circular fashion ecosystem will present significant opportunities for many stakeholders but there are also some clear challenges for those in the fashion industry who are currently focused on making and selling new products. Some of these opportunities and challenges are summarised below.

- **There is market growth potential for circular services**  
While the model presents high-level scenarios rather than a forecast, it indicates potential for a significant new market in the downstream ecosystem through reuse, repair and subscription services. Many stakeholders stand to benefit from this market, with brands and retailers well placed to capitalise by embracing circular and sharing business models. This includes implementing and expanding recommerce, take-back, repair and rental schemes, facilitated by utilising existing logistics and customer engagement routes.
- **The greatest value is retained through reusing rather than recycling existing garments**  
Stakeholders are likely to recover the most value from reusing garments rather than recycling them (e.g. for fibre recovery). This should not, however, detract from the vital role that fibre recycling will play in managing those garments that are no longer usable in any form.

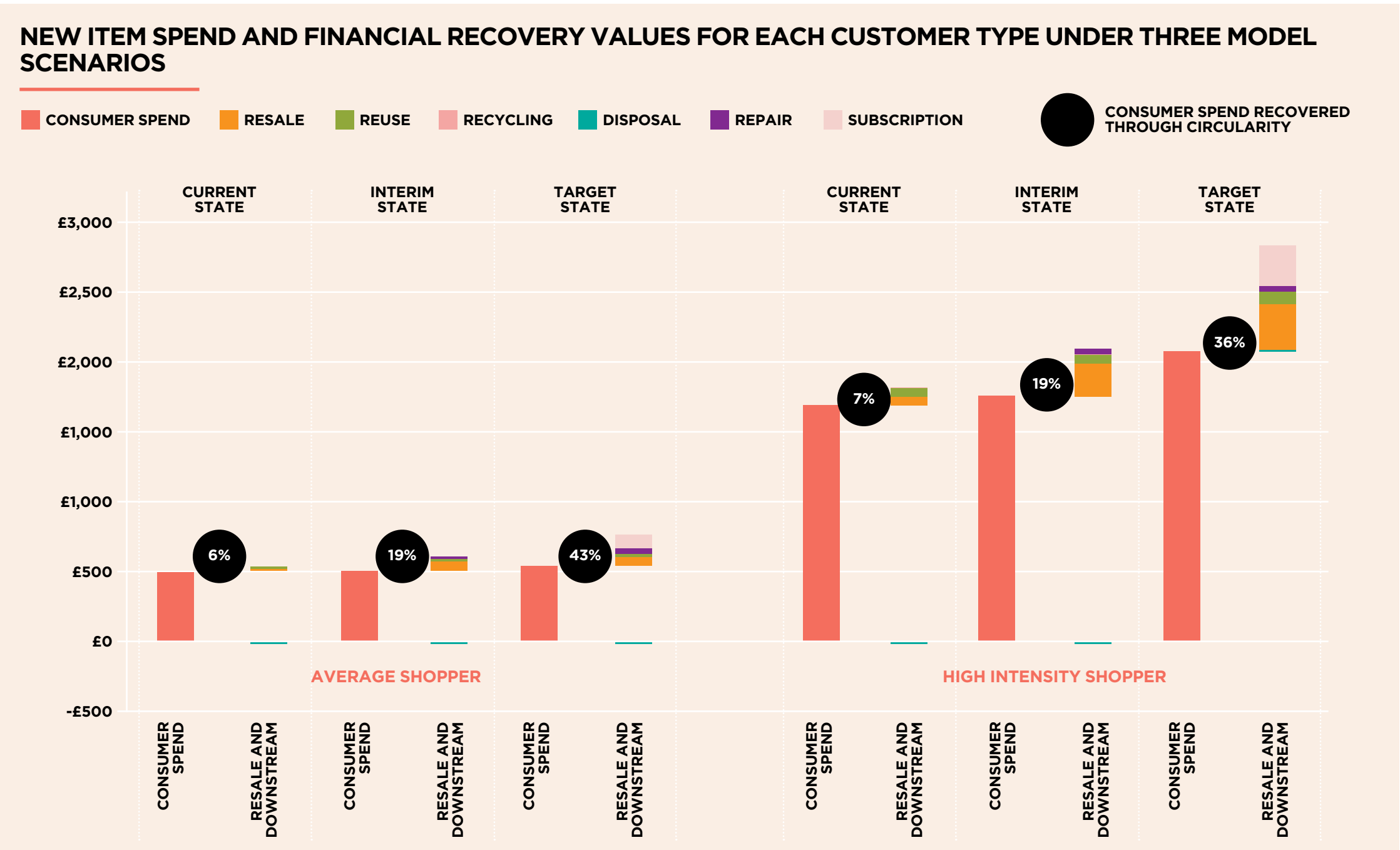
→ **The retail market for new garments would likely shrink**  
With the focus on garment longevity and switch to circular and sharing business models to promote re-use, consumer demand for new physical fashion garments will likely shrink. Innovative and genuinely sustainable brands may adapt by switching revenue streams to circular offers. However, it is possible that other brands may seek to cling on to large-scale linear business models. No policy incentives currently exist to drive an industry-wide change, but this could be partially addressed through an extended producer responsibility scheme (EPR).

Next steps

The model used a straightforward scenarios assessment approach, providing some useful high-level insights that demonstrate that there is market potential for circular measures and more durable products can be key to liberating these financial returns.

The switch to circular services will be complex, and as indicated by our consumer research, service providers must clearly show the benefits to customers to secure their investment (e.g. reduced financial costs for customers over time due to greater product longevity, appealing to customers’ desire for more conscious consumption, etc.).

Our scenario modelling indicates there would be value to developing a detailed, rigorous financial model for returns under different future states. To do this effectively would require key stakeholders to collaborate to provide the required information across the fashion ecosystem, and the results of which could be used to inform the business case for investment in circularity. This modelling exercise could fall within the activities of Phase 2 of the Circular Fashion Ecosystem Project.

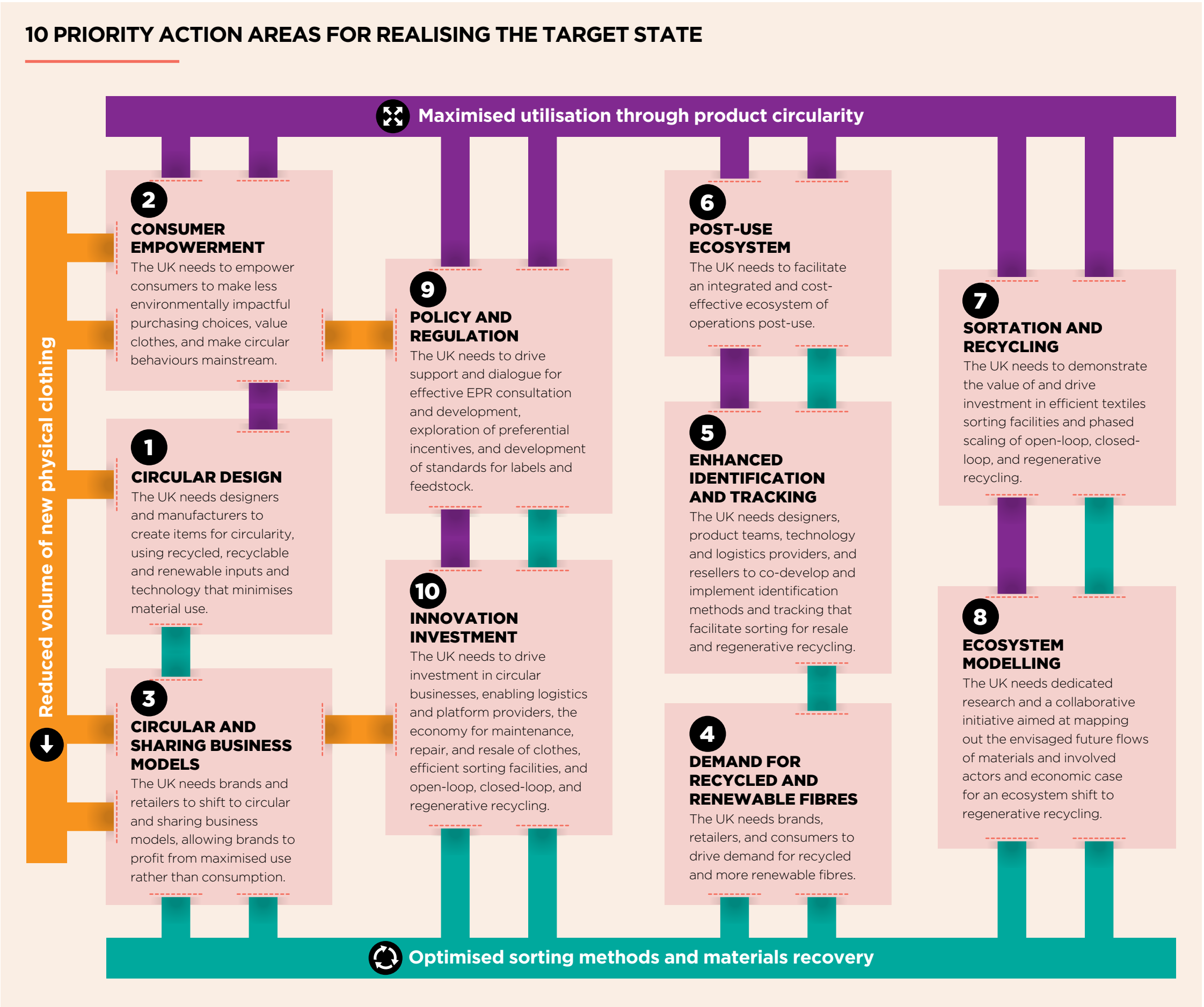


# REALISING THE CIRCULAR FASHION ECOSYSTEM

## Achieving systems change through 10 priority action areas

Transitioning to the target state requires transformation across multiple dimensions of the current system, from behaviours and mindsets to the infrastructure and policies underpinning the fashion and textiles industry. Strategies for realising the target state should be re-evaluated on an ongoing basis to monitor both success and unintended consequences. This is due to the complexities of this system and the need for a fair and just transition (see ‘Ensuring a just and fair transition’ on [pages 92-93](#)).

This section presents the next components of the framework for transitioning the UK fashion economy towards the three target outcomes laid out previously. The first of these are our ten priority action areas. We have developed these by analysing the changes needed to bridge the gap between the current and target state for a circular fashion ecosystem. Transitioning complex systems requires pressure to be applied to several points simultaneously. Through the stakeholder consultations, we were able to better understand which parts of the UK fashion ecosystem that need changing to achieve the target outcomes. The action areas were developed to cover each of these dimensions, and are shown in ‘10 priority action areas for realising the target state’.





### 30 recommendations for stakeholders

Achieving the changes set out in the ten action areas will require involvement from all stakeholders across the UK fashion ecosystem. This report presents 30 recommendations for stakeholders to kick-start these efforts. As shown in ‘Stakeholder actions and connections’ on the next pages, each recommendation has an identified ‘lead’ stakeholder and main priority action area under which it sits. Because each action area requires several stakeholders to make it a reality, a series of ‘enabling’ stakeholders are also identified.

There are also synergies between the different priority action areas. As such, each recommendation also has a secondary ‘synergy action area’ listed. For example, developing a digital tracking system for clothing could be done to ensure that sorters and reprocessors have the information they need to determine how best to recycle an item. Digital information could also provide more information to consumers on the environmental and social footprint of a garment and how to best look after the item.

The following section presents each of the action areas in turn together with its relevant stakeholders, synergy action areas, and recommendations. Selected case studies of global best practice are also featured to illustrate the type of activities that will help make the circular fashion ecosystem a reality. **Government and brands will be instrumental to achieving the target outcomes as they are identified as lead stakeholders for 18 out of 30 recommendations.**

Taken together, the recommendations suggest the following:

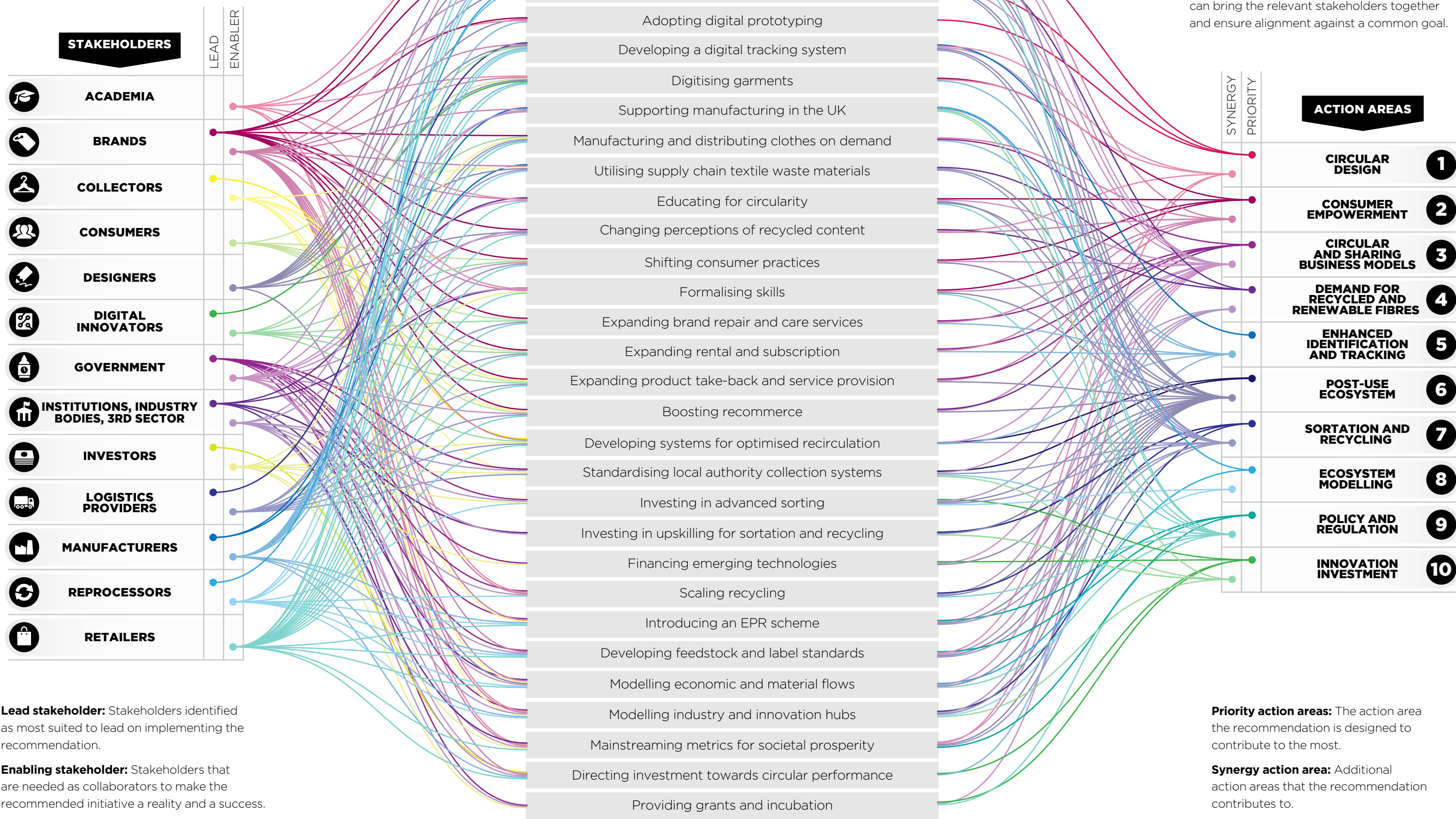
- The UK government should lead on policy creation, incentive-setting and investment for developing the required innovations and enabling infrastructure.
- Brands and retailers should embrace circular and sharing business models, and empower consumers to adopt circular practices.
- Significant research and coordination are needed to maximise collaborative actions. Information accessibility and transparency throughout the ecosystem must be improved.
- There is more work to be done to educate the consumer on garment care, end of garment life, and recycling.
- A shift in attitudes towards circular products and services is required to motivate the transition. Positive messaging and an increased understanding of the value of circular business models will increase demand for a more circular fashion ecosystem.
- Digital technologies can facilitate and unlock multiple elements of the target state.



IMAGE COURTESY OF BRITISH FASHION COUNCIL



# STAKEHOLDER ACTIONS AND CONNECTIONS



To view an interactive version of this diagram, [click here](#)

Across the recommendations, there will be a need for one or more convening actors who can bring the relevant stakeholders together and ensure alignment against a common goal.



# 1 CIRCULAR DESIGN

## KEY STAKEHOLDERS

### LEAD



### ENABLERS



## KEY SYNERGY TOPICS



**To maximise utilisation and help reduce demand for new physical clothing, designers and manufacturers must create items for circularity, using recycled, recyclable, and renewable inputs, and minimising material use throughout the process.** At present, clothing design and creation is far from where it needs to be to maximise value and minimise negative social and environmental impacts. A mindset change is needed across the industry and circular design must become standard practice.

Designing to minimise material use and waste, and using recycled and recyclable materials, represent fundamental first steps. A solid starting point for minimising material use and waste is through embracing digital garments, zero-waste and on-demand manufacturing, the use of post-production offcuts, and digital use in design and sample creation. The overarching focus should be to create garments that have multiple lives. A focus on emotional and physical durability will ensure that garments are suitable for reuse and repair. Garments must also be designed so that they can be easily disassembled and recycled when they can no longer be worn. This mindset and practice shift is crucial, as design is the starting point to the fashion value chain with many critical links across the ecosystem. For example, designing for disassembly and recyclability will enable expansion of recycling infrastructure, as the increase in supply of quality feedstock improves commercial viability of recycling.

## Recommendations

→ **Mainstreaming circular design:** Brands to integrate circular design into core business strategy (including across all product lines) and work with academics, or other specialists, to deliver ongoing training on its principles to designers and key business functions, in line with the development of new technologies and end markets. This is in addition to continuing education and training on circular design for fashion students and independent designers.

→ **Designing for reprocessing:** Reprocessors to orchestrate formal discussions with brands, designers, and manufacturers on working together to achieve design suitable for disassembly and reprocessing. This should include the establishment of clear guidelines on how to make products recyclable without compromising on durability.

→ **Adopting digital prototyping:** Brands to adopt digital prototyping to enable the visualisation of a complete product before it is physically built. This will facilitate the designing out of waste. Academia and other training institutions must also work with brands to ensure that fashion students are being trained in the use of 3D digital prototyping software.

“When we’re talking about design for sustainability, we’re talking about reducing consumption. Durability only works if you’re not buying as much stuff.”

**DILYS WILLIAMS, PROFESSOR OF FASHION DESIGN FOR SUSTAINABILITY AND DIRECTOR OF CENTRE FOR SUSTAINABLE FASHION, LONDON COLLEGE OF FASHION**

“Our new collection involves partnering to get all waste from existing companies and to take their waste into our social manufacturing supply chain. It is about thinking of systems design.”

**BETHANY WILLIAMS, FOUNDER AT BETHANY WILLIAMS**

## CASE STUDY

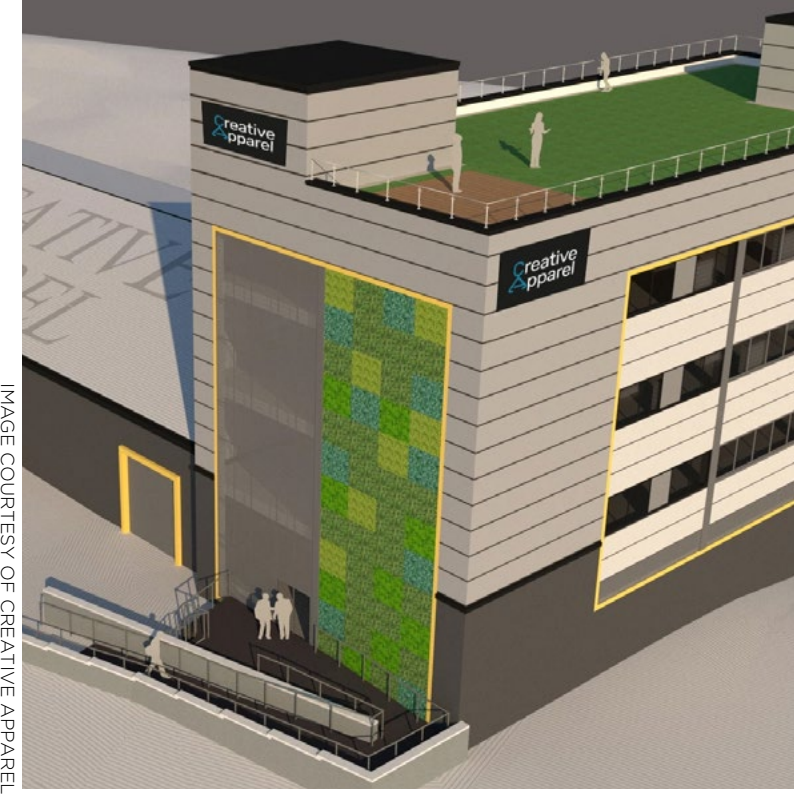
# Future Fashion Factory

## RELEVANT ACTION AREAS 1 5

Future Fashion Factory (FFF) is a £5.4 million industry-led research and development (R&D) partnership driving innovation, through the development of new digital and advanced textile technologies, to enhance the UK luxury fashion and textiles industry’s shift to a circular economy. It links textile design and manufacturing centres, within the Leeds City Region, to London’s creative design and retail centres. Membership extends to nearly 400 businesses across the supply chain and involves collaboration with the University of Leeds, University of Huddersfield, and Royal College of Art.

The aim of FFF is to enable fashion and textile businesses to be more agile in adapting their designs to offer the right product at the right time. FFF projects harness digital technologies, including AI, to make this a reality. This can be through the adoption of data-driven design, where designers and brands use analytics to forecast consumer trends to tailor designs to market demand. It can also be through communicating the tactile and physical properties of fabric virtually to the customer. For example, Numerion Software are working with luxury fabric manufacturers to create digital swatch books, which facilitate realistic virtual try-on for apparel. Similarly, clothing and textile manufacturer Abraham Moon & Sons is constructing digital archives of over 150 years of creative output to allow clients to engage with virtual models of their textiles. In both cases, fewer physical samples are needed. FFF projects, such as this, enhance luxury fashion design whilst continuing to support creativity, keep the process cost-effective, and reduce environmental impact and waste.

IMAGE COURTESY OF CREATIVE APPAREL



## CASE STUDY

# Creative Apparel

## RELEVANT ACTION AREAS 1

Creative Apparel is a Stockport based company, founded in 1988. Its founder, Phil Millar, supplied niche branded T-shirts to the Hacienda, Stone Roses and the Manchester underground music scene. From there, the range came to embrace fast fashion and then workwear. In response to the demand created after Euro ‘96, the company started to work on re-labelling, bagging, printing, and embroidery for a retail market. Currently, Phil Millar is transforming production from a linear take-make-dispose supply chain to a sustainable circular economy model.

The Company is relocating to an Eco factory on a brownfield site, utilising AI to predict orders, which eliminates waste, and drones to deliver to the last mile customer. Pin-registration systems will be used to increase printing accuracy and speed up production times. Collaboration with the University of Liverpool will secure a ‘lights-out manufacturing’ system that is fully automated. Collaboration with the Internet of Things (IoT) will enable machines to talk to each other, balancing production, preventing stagnation and build-up of stock.

Phil Millar aims to put sustainability at the core of manufacturing. The Company only uses ethically sourced materials from factories where people are treated fairly and pushes for UK retailers to provide large-scale contracts, enabling sustainability initiatives in manufacturing to get off the ground.

# CONSUMER EMPOWERMENT

## KEY STAKEHOLDERS

### LEAD



### ENABLERS



## KEY SYNERGY TOPICS



**To realise the target state, consumers must be empowered to make less environmentally detrimental purchasing choices, value clothes more, and contribute to mainstreaming circular practices.** The Phase 1 consumer research suggests that, although high intensity UK shoppers are not significantly driven by sustainability considerations, they are already participating in an emerging circular economy for clothing. Supercharging this emerging circular fashion economy and promoting it more widely will require a suite of measures aimed at shifting the norm away from the notion of 'disposable clothing'. These measures will remove remaining barriers to participation in the circular economy, such as affordability and ease of access. They will also enable consumers to use their clothes more, maintain them throughout their life and eventually pass them on to others.

Achieving this transition will require multi-stakeholder collaboration across the public and private sectors to develop and evolve a social, cultural, and material fashion ecosystem that enables and encourages the desired circular consumer practices. Central to this will be brand and retailer encouragement of the desired consumer practices through the provision of circular products and services, and by tailoring consumer communications and marketing accordingly.

## Recommendations

→ **Shifting consumer practices:** Brands to lead a multi-stakeholder initiative on how brands, retailers and logistics providers can encourage consumer practices that maximise the use and enjoyment of clothes. The initiative should include:

- a) discussions on extending consumer use of clothing;
- b) encouraging consumers to see clothes as an investment;
- c) helping consumers to use a larger proportion of the existing items in their wardrobes;
- d) helping consumers to pass on their clothes through reuse and recycling channels; and
- e) working with logistics providers to improve the convenience of reverse logistics for consumers.

→ **Educating for circularity:** Institutions, industry bodies and third sector to work with government to educate citizens on sustainability, regeneration, and circular economy principles in order to empower consumers to make informed choices. This work is key to raise the profile of environmental issues amongst consumers and deliver the mindset change needed. Developing educational resources and workshops that are suitable for all ages and levels of expertise is central to this. Such efforts could include, for example, the development of campaigns that advise citizens on how to best care for their clothes, including through use of repair and maintenance services.

→ **Digitising garments:** Digital innovators to work with brands, retailers, and academia to continue researching and implementing technologies such as augmented reality (AR) and virtual reality (VR) to expand their use within the industry. These technologies allow consumers to 'wear' or try out products virtually through innovations such as biometrically-specific avatars and 'digital skins'. This research should also include the ethical/privacy implications of such technologies and their role in the reselling of products.

→ **Formalising skills:** Institutions, industry bodies and third sector to convene a multi-stakeholder government-funded initiative which aims to formalise the skills of high street seamsters, dry cleaners, and repairers, among others, e.g. through the creation of educational courses within BTECs and NVQs. This should form part of a concerted effort to grow the economy for clothing repair and maintenance. As part of this, the government should be responsible for quality assurance, accreditation and the reintroduction of teaching on repair and maintenance in secondary and tertiary education.

"How can we maximise the lifetime of each product that we create? Of course, that has to do with how it's made but also how that use is lengthened through the way that you talk to the consumer about care and maintenance."

**GWEN CUNNINGHAM,  
TEXTILES PROGRAMME LEAD,  
CIRCLE ECONOMY**

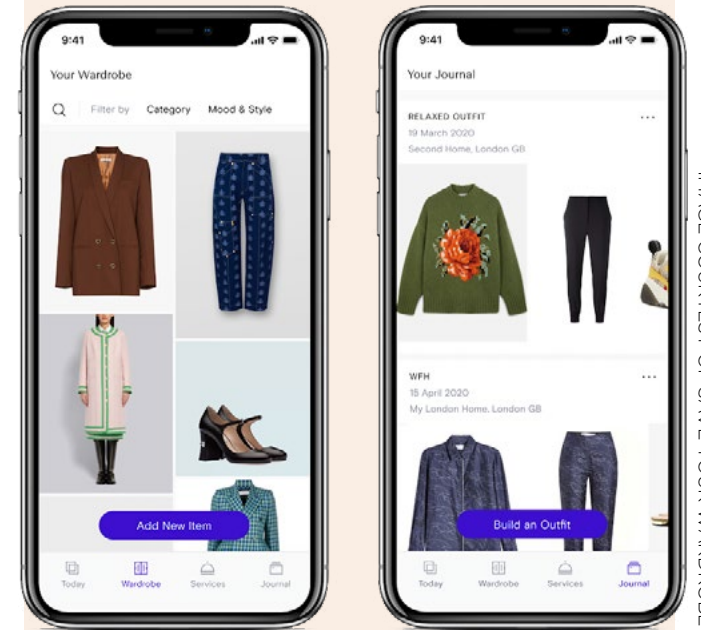


IMAGE COURTESY OF SAVE YOUR WARDROBE

## CASE STUDY

# Save Your Wardrobe

## RELEVANT ACTION AREAS 2 5

Save Your Wardrobe (SYW), founded in London in 2017, offers consumers the ability to digitise their wardrobes, unlocking 80% of unworn clothing through a wardrobe management app, with the mission of reconnecting individuals with the content of their wardrobes. Research conducted by the CFE research consortium members Shaw and Duffy (2020)<sup>68</sup>, revealed that use of the app raised people's awareness of clothing they owned, supporting behavioural change along more sustainable lines. The visibility offered by the digital wardrobe enabled users to understand their patterns of behaviour and clothing usage to engage with and make more sustainable choices. Moreover, through the streamlined tech-enabled platform, users can book aftercare services to extend the life of their garments, further encouraging the principles of circularity. The SYW project has empowered over 50,000 users to make less detrimental purchases, value the clothes that are hidden away in their wardrobes and make circular behaviours more commonplace.





IMAGE COURTESY OF VANISH

## CASE STUDY

# Vanish

### RELEVANT ACTION AREAS **2**

Vanish, the lead brand in fabric treatment globally, helps to reduce unnecessary clothing waste by championing its purpose to help clothes live many lives. Their mission is enacted through a two-pronged approach. First, with the help of cutting-edge technology, Vanish

has fully repurposed their product range to make clothes look like new for longer, thereby reducing the need to buy new clothing. Second, they are working with a number of partners (including BFC, Amazon, Project Everyone, Marie Claire and Havas) to empower consumers to embrace the benefits of responsible consumption and make behaviour changes that support the sustainability of our planet. This program has two clear objectives: 1) maximise reach of households in the

UK to raise awareness (for example, their Marie Claire partnership provides targeted, educational, and engaging digital content aimed at extending the life of clothes) and, 2) encourage behaviour change amongst consumers so that they wear clothes for longer through promoting the use of recommerce platforms for second-hand garments and engaging in online and offline action that creates positive impacts on the environment.

“Consumer action is a powerful enabler of driving circularity for fashion. Based on our research clothes are not kept for a very long time. The reality is that some of the main reasons given for why a garment is discarded can be addressed with the right washing habits, laundry products and choice of textiles. And there remains an opportunity and increasing appetite for consumers to pass on garments they no longer require with recommerce options or even traditional clothes swapping.”

**SONIA THIMMIAH, HEAD OF SUSTAINABLE BRANDS AND CUSTOMER PARTNERSHIP, RECKITT**

# CIRCULAR AND SHARING BUSINESS MODELS

## KEY STAKEHOLDERS

### LEAD



### ENABLERS



## KEY SYNERGY TOPICS



**To thrive in the target state, brands and retailers need to shift to circular and sharing business models (CSBMs), which will allow them to profit from reuse and service provision rather than consumption.** Circular business models are fundamental to ensuring that all products created are kept in use and circulated for as long as possible. Currently, models beyond resale are not widespread, but recent initiatives and pilots by leading brands suggest an opportunity to build momentum for change across the sector.

By focusing on increasing garment utilisation alongside offering services, such as styling, maintenance, repair, redesign and rental, fashion businesses can move to circular models that reduce environmental impact and potentially offer more profitable and stable revenue models. To encourage companies to transition to CSBMs and build confidence in their commercial viability, government support through incentives such as grants and tax breaks will be key. By creating the right business conditions, the government can ensure that circular businesses thrive and that private investment flows into the sector, which will further fuel the transition towards CSBMs.

## Recommendations

→ **Manufacturing and distributing clothing on demand:** Brands to work with manufacturers, logistics providers and digital innovators to develop and adopt technology that facilitates on-demand manufacturing and distribution. This means that only the exact quantity of goods needed is produced. Technologies that can be adopted to facilitate this include predictive analytics, which could be used to predict trends and consumer demand. Brands and logistics providers could also trial inventory models that enable shipping of small batches of new products and designs before quickly ramping up production if they prove popular.

→ **Expanding brand repair and care services:** Brands to seek partnerships throughout the product lifecycle that help accelerate a transition to a circular or sharing business model. One such partnership could be with reverse logistics and repair providers to offer discounted repair services for own brand products at cost price. This would also ensure that repair data is fed back into design decisions to enable continuous product improvement. Working to provide such affordable and easy-to-access repair services will offer greater convenience

to the consumer. Combined with the promise of repair in case of breakage, and the improved durability that would ultimately emerge from such schemes, this could incentivise consumers to shop with such companies.

→ **Expanding rental and subscription:** Brands to develop widescale, convenient and cost-effective options for short-term clothing provision for consumers that seek or require a higher turnover of fashion and/or for cases where the user only requires an item for one or just a few occasions. Consumers are already using rental/hire services and if their desire for engaging with the latest trends and designs can be met through rental, then the flow of lower quality new items (with associated challenges reported for resale and repair) can be reduced. Such rental and subscription models should be developed to ensure low-carbon logistics, packaging, and dry cleaning

→ **Expanding product take-back and service provision:** Brands and retailers to adopt and scale circular economy innovations, such as take-back schemes that integrate sortation, recommerce, repair, and redesign. This has the potential to increase revenues whilst minimising the requirement for new products and materials. Such schemes could involve the provision of services aimed at the current user, such as appropriate garment care, repair and revitalisation, and styling and use options. Rather than reselling all collected clothing via charity outlets, items can undergo screening, repair, and resale via the appropriate outlets or can be collated for supply to reprocessors when they have reached their genuine end of life. Logistics providers can also play a key role in providing the enhanced reverse logistics needed to enable a take-back model, including transport and storage space for collected items.

→ **Boosting recommerce:** Brands and retailers to actively engage in the development, marketing, and mainstreaming of recommerce for their products through existing channels and platforms and/or trial and launch their own resale platforms. A significant barrier to consumers purchasing more used clothing is lack of availability of venues or sites that sell used clothing. The provision of clear advice on the potential resale value of items could also be a promising intervention for encouraging consumers to resell clothing themselves.

“There is momentum now on resale and making sure items retain their value is one of the best ways to ensure products are kept alive for longer.”

**SIMON PLATTS, RESPONSIBLE SOURCING DIRECTOR, ASOS**

“There is an enormous opportunity in the UK to create beautiful products that are regenerative and recyclable for the market [...]. From a consumer-centric point of view, it is to ramp up the use of regenerated and reprocessed inputs in the product. From a commercial point of view, the secondary markets are thriving and ready to be tapped into. The repair of products and prolonging their life when they have been crafted with care and attention is a massive opportunity. Companies need to accelerate experimentation in this space.”

**JALAJ HORA, VICE PRESIDENT OF PRODUCT INNOVATION AND CONSUMER CREATION, NIKE**



# DEMAND FOR RECYCLED AND RENEWABLE FIBRES

## KEY STAKEHOLDERS

### LEAD



### ENABLERS



## KEY SYNERGY TOPICS



**To drive improvements in the performance and availability of sustainably produced recycled and renewable fibres, greater brand, retailer, and consumer demand is needed.** This is critical to drive investment and technological improvements that will be required to meet design needs and enable mass production. To achieve this, it is important that designers, brands, manufacturers (of yarn, dyes, textiles, and garments) and reproducers are in dialogue and work together to achieve: a) designs that are suitable for reprocessing and b) recycled outputs that meet the needs of fashion design and creation. This would ensure that recycled fibres can compete with virgin fibres on choice, speed, and price, enabling all consumers to have access to more circular and sustainable fashion.

Brands and retailers should take the lead on raising the levels of recycled and renewable fibres in their products and promote this to consumers, rather than waiting for consumer expectation and demand to grow. As part of this, industry stakeholders must work to overcome common misconceptions of recycled content as undesirable in terms of performance, durability, and consumer experience. This is a crucial complement to the adoption of circular design. There are significant opportunities for stakeholders, particularly brands and retailers, to drive this much needed change in attitude. Targets and selection policies should be implemented, the relevant actors brought to the table, and best practice shared and showcased to help build capacity and confidence in the technological development and sourcing of recycled and renewable inputs.

## Recommendations

→ **Matching designs and reprocessing:** Brands to lead a multi-stakeholder industry initiative to map out the improvements needed to:

- a) ensure that clothing designs are suitable for reprocessing;
- b) ensure that recycled inputs meet the needs of design and creation, e.g. on choice, speed, and price; and;
- c) help companies identify, capture, and resell excess materials and products.

→ **Utilising supply chain textile waste materials:**

Manufacturers and reproducers to convene a multi-stakeholder initiative, including brands and designers, to explore options for repurposing off-cuts and, more broadly, developing a centralised and accessible B2B market platform for trade in supply chain textiles and recycled materials. This platform should be made available to collectors, resellers, retailers, and brands.

→ **Changing perceptions of recycled content:** Brands to collaborate with retailers to engage in consumer communications on the benefits and use of recycled content. This is important for high-end brands, where such materials may be seen as inferior and hence, problematic in terms of branding. Simultaneously, brands should work internally to change their perceptions of recycled content by engaging in educational activities. This includes working with academia to continue education and training on the benefits of recycled content for fashion students and independent designers.

“...it’s about putting in place requirements and making it clear we require garments we buy to come from certified materials and set criteria for that, and give brands and their suppliers time to adjust to those expectations.”

**CHRISTIAN TØENNESEN, DIRECTOR OF SUSTAINABILITY, SELFRIDGES**

“For the industry to move forward in a less wasteful manner, producers of clothing could use pre and post consumer textile waste within new work, and exercise producer responsibility by fixing and repairing any clothing they have created that holds their brand name. To help this become general practice across the sector, they could be actively encouraged and supported by legislation and tax breaks to mitigate not only their own but the textile waste of others by regularly re-using this textiles ‘waste’ back into new work and building this practice into their business models”

**PHOEBE ENGLISH, FOUNDER AT PHOEBE ENGLISH**

“There is huge appetite for recycled content and so brands would do well to send signals to suppliers to find recycled content more than they are doing today. This would unleash recycling as a major B2B opportunity across fashion supply chains.”

**DAX LOVEGROVE, GLOBAL DIRECTOR OF SUSTAINABILITY, JIMMY CHOO AND VERSACE**

CASE STUDY

# Stella McCartney

RELEVANT ACTION AREAS 2 3 4

Stella McCartney is renowned for placing animal ethics at the heart of the company, and many of their initiatives also explore innovative approaches to circularity. In 2016 they launched recycled Re.Verso™ cashmere, reported to offer the same qualities as virgin cashmere yet with seven times lower environmental impact. Their Gold-Level Cradle to Cradle Certified wool knitwear yarn reflects material health and reutilisation; renewable energy and carbon management; water stewardship; and social fairness. Their Clevercare initiative, active since 2015, encourages customers to use clothes on more occasions and wash them less often to reduce their carbon footprint. The brand has also worked with the RealReal, aiming to support and promote the benefits of a circular economy for fashion by encouraging customers to extend the life of their products through resale. In 2019, they presented the Infinite Hoodie in collaboration with Evrnu® on the adidas by Stella McCartney collection. The Infinite Hoodie is made from regenerated, discarded textiles and is itself infinitely recyclable.



IMAGE COURTESY OF STELLA MCCARTNEY



IMAGE COURTESY OF BURBERRY

CASE STUDY

# Burberry

RELEVANT ACTION AREAS 3 4

Burberry have embraced regional manufacturing across the north of England. In 2020 they launched their Centre for Manufacturing Excellence in Castleford, Yorkshire, to nurture talent and protect traditional, artisanal skills in collaboration with the UK Fashion and Textile Association. The same year, they launched the ReBurberry edit, a collection

of heritage pieces made from materials like Econyl, a recycled nylon made from waste such as fishing nets and industrial plastic. The product labels outline key sustainable elements, including amount of recycled natural fibres, delivery against carbon emissions standards, and social policies such as living wages for workers. Since 2016, the brand has worked

with the RealReal, aiming to support and promote the benefits of a circular economy for fashion by encouraging customers to extend the life of their products through resale. As a result of this portfolio of initiatives, Burberry is the first luxury brand to pledge to become Climate Positive by 2040, going further than its current 2040 net-zero target.



5

# ENHANCED IDENTIFICATION AND TRACKING

## KEY STAKEHOLDERS

LEAD



ENABLERS



## KEY SYNERGY TOPICS

1 3 4 6 7

**Designers, product teams, logistics providers, digital innovators and resellers need to co-develop and implement enhanced identification methods and tracking systems to facilitate circular activities across the value chain.** Implementing such systems throughout the supply chain will revolutionise the transition to a circular ecosystem, particularly downstream in the value chain. By enabling greater efficiency and more accurate sorting of garments and textiles, the end-of-life recovery process both for recommerce and regenerative

“As we move to circularity, what are the traceability and tracking systems in use? There is a myriad of data technologies that will need to function for circularity to commercialise and this includes product passports. [...] We need the information available to everybody. We need to be totally transparent.”

**KARLA MAGRUDER, FOUNDER,  
ACCELERATING CIRCULARITY**

recycling will be optimised. Development of increasingly sophisticated, data-driven identification and tracking systems will only further enhance all areas of the supply chain. For example, it will offer more granular data for brands and retailers to understand their audiences and facilitate other initiatives, including mandatory labelling schemes that raise citizen awareness. Embracing these technology-driven solutions will be critical to enabling and accelerating the transition to a circular ecosystem by allowing it to function effectively and efficiently for both consumers and other supply chain stakeholders.

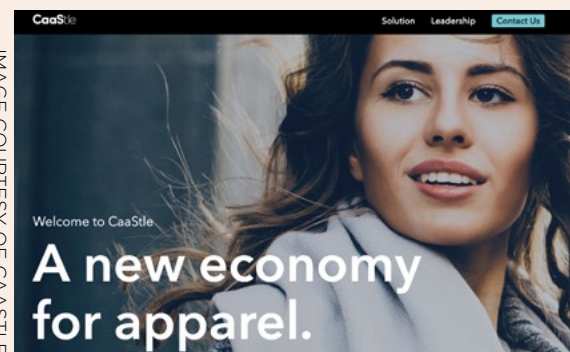
## Recommendations

→ **Developing a digital tracking system:** Logistics providers to lead a multi-stakeholder initiative with brands, retailers, manufacturers and digital innovators aimed at developing a standardised industry framework for accessing item-specific information on provenance; materials; composition; social and environmental impact; and certifications. The initiative should include trials for introducing digital technologies (e.g. blockchain-supported intelligent labels, RFID or QR tags) at the earliest stages of the value chain to enable end-to-end traceability and transparency throughout an item's lifecycle. The framework should be designed to aid the development of take-back schemes and the consequent increase in capacity of reverse logistics. It should also consider opportunities for incorporating Internet of Things (IoT) ecosystems, digital twins, and platforms for provision of services.

“As a clothing resale company dealing with post-consumer clothes, it would be great to be able to identify items really easily once they reach Thrift+. This doesn't need to be over-engineered or onerous for brands - it just needs to be standardised across brands and easily readable by a computer - e.g. holding info by QR code on the brand, department, style, size, material, season.”

**JOE METCALFE, CO-FOUNDER & CEO,  
THRIFT+**

IMAGE COURTESY OF CAASTLE



## CASE STUDY

# CaaStle

## RELEVANT ACTION AREAS 3 5

CaaStle's B2B technology platform enables retailers and fashion brands to provide Clothing as a Service (CaaS), a subscription-based unlimited rental model with an option to buy, as a complement to their existing retail and eCommerce business. For a flat monthly fee that varies by service, members can create a waste-free wardrobe by selecting two styles to rent at a time, with unlimited exchanges through-out the month and the option to keep and purchase any item at a discount. The service also includes free unlimited shipping and returns, and complimentary eco-friendly laundering services. Moss Bros was the first UK retailer to launch their fashion subscription service, 'MOSS BOX', on CaaStle's rental technology platform in April 2021, and LK Bennett soon followed with their 'LK Borrowed' service. CaaStle also provides brands and retailers with data insights, including what pieces customers are most likely to rent and how many times a garment is rented. It is hoped that, equipped with this knowledge, brands and retailers can make more strategic decisions, reduce their inventory risk and improve their yield optimisation. As a provider of an integrated system for launching rental and subscription, CaaStle exemplifies the type of partnership that can help established fashion brands and retailers begin the shift towards circular offerings and business models. Such business models will help to reduce negative environmental impact and potentially offer more profitable and stable revenue models, particularly through the diversification of services to consumers.

IMAGE COURTESY OF PANGAIA



## CASE STUDY

# EON Group

## RELEVANT ACTION AREAS 5

The EON Group is a New York City-based technology start-up that provides a Connected Products Cloud platform for fashion and retail. In May of 2021, EON announced a partnership with PANGAIA, a materials science company, using EON's Connected Product Cloud to power digital passports for PANGAIA apparel. The digital passports will be powered by a QR code printed directly onto PANGAIA's labels, linking the garment to a digital 'twin' hosted on the cloud. Leveraging EON's CircularID™ Protocol, the digital passport provides information that helps consumers and critical partners in the ecosystem maximise the reuse and revaluation of the individual item. For instance, the CircularID includes information about an item's brand, description, size, and materials that can help drive the economic value gained through recommerce. Information provided on the component parts and materials facilitate advanced sorting and both mechanical and chemical recycling processes. The passports also offer transparency on the item's unique journey from production to point-of-sale; guidance to consumers on care and maintenance; and item-level tracking and analytics to enable the reverse logistics required for rental, sharing and subscription business models. The partnership showcases the development of increasingly sophisticated data-driven identification and tracking systems that can empower stakeholders across the ecosystem and benefit all areas of the value chain.



## 6

# POST-USE ECOSYSTEM

## KEY STAKEHOLDERS

### LEAD



### ENABLERS



## KEY SYNERGY TOPICS



**To ensure clothing is circulated at its highest possible value, an integrated and cost-effective post-use ecosystem is needed.** That clothing is circulated at its highest possible means that as much use and financial value as possible is gained from the garment's 'next life' in the circular fashion ecosystem. For example, it means that a garment that is still wearable is resold or rented out to a new user and not passed on to recycling prematurely. To achieve this, it is fundamental to ensure that the UK's post-use ecosystem is fit for purpose and has the capacity to deal with the volumes of used clothing collected domestically. At present, the UK's systems for collecting, sorting, repairing, and reselling used clothing and recovering non-rewearable garments is fragmented and limited in technical capability and capacity. To ensure that collected clothing gets an optimal next life, significant scaling, optimisation, and integration of both public and private systems is needed. Greater integration of collection and revaluation channels will offer more cost-effective and attractive solutions for brands, collectors, and resellers, which should accelerate the uptake of take-back schemes and recommerce. One such option is for brands to repurchase own-brand products for repair, re-use, and resale.

What I wanted to challenge was that we keep using the word "waste". It is a resource. Waste is something that is fundamentally useless or builds on this hierarchy within the fashion industry. I think when we talk about dead stock or "repairing waste", we need to be talking about enhancements. We need to talk about "valuable" resources, or "limited" resource or "precious" resource or something that sounds more enigmatic than dead stock"

**GRAEME RAEURN, LEAD DESIGNER,  
ALBION**

## Recommendations

### → Developing systems for optimised recirculation:

Collectors to work with recommerce platform providers, brands and digital innovators to develop technological systems that ensure that used clothes are rerouted through integrated channels that maximise the life and utilisation of individual items. Through brands and platform providers collaborating, this could involve integration of information and photography from original product listings, providing the potential next user a view of the provenance and journey of individual garments. Expanding solutions for enhanced identification and tracking could facilitate this.

### → Standardising local authority collection systems:

Government to work with institutions, industry bodies and third sector to implement and improve kerbside textiles collection, sorting, and recycling. The priority here should be to achieve a reliable and standardised system across regions, considering both local government and private (tendered) waste treatment facilities. Such consistency will enable multiple benefits, including a single campaign of consistent messaging to all UK citizens. Additionally, successful business case development for further private sector infrastructure investment, using funds raised through the implementation of Extended Producer Responsibility (EPR).

"If it was easier for fashion brands to take back used products and materials into their production systems, and easier for customers as well, I think this would unlock so many opportunities. Infrastructure is absolutely key."

**DAX LOVEGROVE, GLOBAL DIRECTOR OF  
SUSTAINABILITY, JIMMY CHOO AND  
VERSACE**

IMAGE COURTESY OF BRITISH FASHION COUNCIL





## CASE STUDY

# DHL and large British fashion e-commerce retailer

### RELEVANT ACTION AREAS 6

When DHL's customer planned to open a new warehouse in North America, they clearly outlined that the site should meet very specific requirements. This included the provision of strong returns capabilities that would enable it to receive and refurbish customer returns ready for resale. As the fashion industry's leading global logistics partner, DHL offered a suitable warehouse for the retailer and implemented strong standard operating procedures to efficiently manage used and faulty items. These procedures include processes from simple reconditioning like removing dust and spots, cleaning, and polishing items to full repairs like resewing seams or buttons. With these procedures in place, the retailer was able to get 96% of the items back to stock, instead of them going into recycling or liquidation. DHL demonstrated that through greater integration and collaboration between actors across the fashion ecosystem, more cost-effective solutions and sustainable post-use routes can emerge for retailers and brands, helping to maximise utilisation and revaluation through product circularity.

"I think one of the biggest issues the industry faces in the fashion supply chain is the end-to-end transparency. Do we really know what is happening at each part of the supply chain, from sourcing the material to production and transportation? This visibility however is key to navigate the challenges in this industry. Thus, a clear focus for us is to work on ensuring the visibility across the supply chain with the help of technology."

**FRANZ VON BISMARCK-OSTEN, SENIOR DIRECTOR OF SECTOR DEVELOPMENT FOR THE E-RETAIL & FASHION INDUSTRY, DHL**

IMAGE COURTESY OF DHL



# 7

## SORTATION AND RECYCLING

### KEY STAKEHOLDERS

LEAD



ENABLERS



### KEY SYNERGY TOPICS



**Achieving the circulation of clothing at its highest possible value requires investment in efficient textiles sorting facilities and phased scaling of open-loop, closed-loop, and regenerative recycling.** Efficient sorting facilities using a combination of mechanised and manual sorting allow identification of optimal 'next life' routes for donated and discarded clothing through pinpointing and segregating garments that are suited for different reuse and recycling options. To build such a system, multiple barriers must be overcome. These include ensuring that there is enough quality feedstock for recycling; investing in technologies for cost-effective mechanised sorting in the UK, investing in the skills needed for both sorting and recycling; and raising the capital needed to build both sorting and recycling facilities. Importantly, a phased approach is required to ensure that infrastructure evolves at pace with the emergence of new recycling technologies and end markets.

### Recommendations

→ **Scaling recycling:** Government to carry out a feasibility assessment and conduct a consultation for the phased scaling of open-loop, closed-loop and regenerative recycling within the UK. This should include:

- a) developing a roadmap informed by industry, academic and civil society research into the system-wide environmental impacts of scaling chemical recycling; and
- b) exploring options for technical solutions that enable high value fibre-to-fibre recycling.

Scaling activities should take into consideration interlinkages with the transition to renewable energy within the UK.

→ **Modelling industry and innovation hubs:** Government to undertake a feasibility study, including economic and material flows modelling, for the development of centralised textiles circularity hubs that involve:

- a) co-location of R&D facilities;
- b) advanced and large-scale sorting facilities;
- c) warehouses and outlets for recommerce and licenced upcycling;
- d) plants for reprocessing; and
- e) channels for the raw materials to feed into end markets, including UK textiles and garment manufacturing.

→ **Investing in upskilling for sortation and recycling:** Institutions, industry bodies and third sector to work with government on investing in, promoting and implementing the upskilling of workers to meet the emerging demand for sortation and recycling. As new sorting and recycling technologies are developed, there will be a need for technicians, technology developers, engineers and manual sorters, who will remain crucial for finer sorting even as automation increases. These changes will also require greater logistics expertise across the sector.

"We need investment in chemical recycling and regenerative processes to stimulate the market."

**ALAN WHEELER, CEO, TEXTILE RECYCLING ASSOCIATION**

"Ideally, we would like to resupply more recyclable items into textile supply chains in the UK, as there is an environmental and economic advantage to doing that. British textiles are well regarded with a heritage and could reinvent itself as having provenance and sustainability, by using recycled content."

**BERNIE THOMAS, CIRCULAR ECONOMY AND SUSTAINABILITY MANAGER, THE SALVATION ARMY TRADING COMPANY LTD (SATCOL)**

"There is a huge amount of textile waste. To date, there is no emphasis on creating infrastructure that would allow for its recycling. The UK should take a leadership role in providing municipal services - better textiles collection, sorting it and creating the space and place for recycling."

**CLAIRE BERGKAMP, COO, TEXTILE EXCHANGE**



IMAGE COURTESY OF WORN AGAIN TECHNOLOGIES

### CASE STUDY

## Worn Again Technologies

### RELEVANT ACTION AREAS 7

Worn Again Technologies has developed a polymer recycling technology for non-rewearable textiles which separates, decontaminates and extracts polyester and cellulose (from cotton) to be returned back into supply chains. The goals of the technology are to produce virgin equivalent quality and cost competitive outputs via an environmentally beneficial industrial process. Trials and product testing are being carried out at the Worn Again Technologies' pilot plant in Redcar, England and the company is working with Swiss engineering partner Sulzer Chemtech to scale up. The business is backed by investors including H&M Group, Sulzer Chemtech, garment supplier Himes Corporation, and textiles supplier Directex. It has the support of pioneer members including Kering, Asics Europe, Sympatex, Dibella and Dhana. Their model is based on licensing to plant operators worldwide, indicating the potential scalability of circular technologies.



# ECOSYSTEM MODELLING

## KEY STAKEHOLDERS

### LEAD



### ENABLERS



## KEY SYNERGY TOPICS



In order to build a circular fashion ecosystem, there must be a clear demonstration of (a) the flows of materials and operational activities envisaged for the future and (b) the economic case for the shift. Multiple industry-led projects to prove concepts are essential to involve all actors and test the system. This is a crucial activity to build confidence in the vision for the future and allow actors across the fashion industry to realise their future role within a circular fashion ecosystem. Fundamentally, stakeholders need to understand exactly what is entailed by this transition for them to come on-board and collaborate in building the circular fashion ecosystem together.

“We have an opportunity here, if we are focused on the UK, to get all the right players around the table and create a virtual system before we implement the real one.”

**CYNDI RHOADES, FOUNDER,  
WORN AGAIN TECHNOLOGIES**

## Recommendations

→ **Modelling economic and material flows:** Institutions, industry bodies and third sector to lead a government-commissioned project dedicated to modelling the detailed economic and material flows of a future circular ecosystem for UK fashion. This would entail robust quantification of materials flows, for instance through Material Flows Analysis (MFA). The modelling should also assess the subsequent economic implications of these flows, including economic impacts on businesses in the post-use ecosystem.

→ **Supporting manufacturing in the UK:** Manufacturers to convene a multi-stakeholder initiative, including brands and government, to support and develop garment manufacturing in the UK. This initiative should focus on facilitating the fundamental conditions for:

- a) fair and decent work for all workers; and
- b) the utilisation of recycled inputs for UK manufacturing.

This should include research into the drivers of the success of certain UK retailers in expanding domestic manufacturing. The research should also aim to understand the capabilities, technology, capacity, and skills that the UK needs to develop within its infrastructure and workforce.

“It is about inverting the current system which is about economic growth. Starting with a paradigm of nature is wealth and human equity, and you design your business or your course on that premise.”

**DILYS WILLIAMS, PROFESSOR OF FASHION DESIGN FOR SUSTAINABILITY AND DIRECTOR OF CENTRE FOR SUSTAINABLE FASHION, LONDON COLLEGE OF FASHION**



IMAGE COURTESY OF NEW COTTON PROJECT

## CASE STUDY

# New Cotton Project

## RELEVANT ACTION AREAS 4 7 8

The New Cotton Project is a collaboration between twelve pioneering stakeholders within the textile and fashion industry, aimed at demonstrating a circular model for commercial garment production. Over a three-year period, they will collect and sort textile waste and turn it into a soft, new, cotton-like textile fiber, Infinna™, using Infinited Fiber Company's technology. The

fibres will be spun into different types of yarns and fabrics for clothing that will be designed, manufactured and sold by adidas and H&M. The collaboration has already improved dialogue between actors across the textile manufacturing value chain and given members deeper insight into their current and future roles within the fashion ecosystem. By bringing together

brands, manufacturers and research institutes, the project demonstrates the potential of scaleable and collaborative pilot initiatives, to both serve as testbeds, and provide blueprints for further collaborative projects to redesign systems for greater circularity.

# 9

## POLICY AND REGULATION

### KEY STAKEHOLDERS

LEAD



ENABLERS



### KEY SYNERGY TOPICS



**The UK government needs to actively consult on and introduce effective extended producer responsibility (EPR) legislation.** As well as exploring the options, it must support the transition to a circular fashion ecosystem, including offering preferential incentives and developing standards for labels and feedstock. The UK Government will play a critical role in propelling the move to a circular fashion ecosystem. To support this transition, it must consult on and implement policy and regulation to incentivise responsible business behaviours and practices. This is important to ensure that ‘first adopters’ in the circular economy are not penalised with relatively higher costs in developing solutions and technologies than ‘late adopters’, who may gain commercial advantage by holding out to change until costs have dropped.

Potential policy and legislative levers include EPR; preferential tariffs; tax breaks; a carbon tax; grants for circular small and medium enterprises; requirements for reused or recycled content in products; sustainability considerations when negotiating new Free Trade Agreements, and the establishment of standards and certification for the industry in areas like labelling and feedstock. These options subscribe to the fundamental principle that policy and regulation must take into account the environmental and social costs of producing goods alongside considering traditional economic costs. This principle was also emphasised by several of the stakeholders consulted for this report.

### Recommendations

→ **Introducing an EPR scheme:** Government to implement an industry-led approach to Extended Producer Responsibility (EPR) legislation, that clearly incentivises brands, designers and retailers to go beyond the minimum standards for circular design and adopt circular business models. This EPR scheme should ensure that a guaranteed percentage of funds raised is invested into recycling infrastructure and repair services, thereby increasing the industry’s investment potential and the potential profit margin achieved from recycled products.

→ **Developing feedstock and label standards:** Government to develop a) feedstock standards for the textiles recycling industry and b) label standards for ensuring accurate and standardised information for textile reproducers, manufacturers, and consumers. Such standards should be included as part of an Extended Producer Responsibility scheme. As part of this standards development, definitions and processes for textile and non-textile recycling inputs should be standardised and clearer definitions of waste should be developed. Appropriate clothing design and the development of intelligent labels and product passports will be critical to ensuring optimised sorting downstream, requiring designers, logistics providers and digital innovators to be included in the development of standards and supporting technologies.

→ **Mainstreaming metrics for societal prosperity:** Institutions, industry bodies and third sector to convene a multi-stakeholder initiative to mainstream within the UK fashion ecosystem:

- a) alternative metrics for measuring business success; and
- b) alternative metrics for evaluating societal prosperity.

This should include industry-wide training to ensure finance departments understand and appreciate metrics that go beyond the traditional financial models.

### CASE STUDY

## Amsterdam City Doughnut

### RELEVANT ACTION AREAS 9

Launched in 2020, the Amsterdam City Doughnut (ACD) is inspired by, and in partnership with, Kate Raworth’s (2017)<sup>69</sup> ‘Doughnut Economics’ book and theory of change that challenges ‘growth’ as a progress indicator for our society and economy. ACD is the outcome of the partnership of Kate Raworth, with Circle Economy and C40 network of cities, and is motivated by the need to create ecologically safe and socially just cities. The tool is used to foster big-picture thinking, and cross-departmental collaboration within the City and with a wider network of city changemakers, to create the city’s transformation. Many cities around the world are currently applying the tool and its methodology to design holistic circular strategies and innovative metrics to measure their successes. While the ACD encompasses a number of different industries, including housing and transport, it is also promoting access to, instead of ownership of, consumer goods, as well as extending the life cycle of fashion and textiles by adopting the waste hierarchy of reducing, reusing and recycling. The ACD exemplifies the power of government and policy makers in promoting and incentivising environmentally positive actions within the fashion industry at scale, as well as the importance of transitioning in a co-creative and participatory way.

“There is limited incentive for producers to be stewards for the items they place on the market, over the full life cycle, so EPR is necessary”

**BERNIE THOMAS, CIRCULAR ECONOMY AND SUSTAINABILITY MANAGER, THE SALVATION ARMY TRADING COMPANY LTD (SATCOL)**

### CASE STUDY

## French EPR Scheme

### RELEVANT ACTION AREAS 9

The French Extended Producer Responsibility (EPR) policy came into effect on 1 January 2007 and since then, all legal entities putting new textiles and clothing onto the French market (such as garments, footwear and household linens for residential use) are held responsible for the recycling or proper disposal of their products<sup>70</sup>. As the first country to adopt an Extended Producer Responsibility (EPR) scheme, France has had remarkable success. The EPR for Textiles, Footwear and Linen (Eco-organisme du Textiles, du Linge et de la Chaussure) has 29 associate members that represent the whole textiles value chain, including general large retailers (e.g., Carrefour), fashion retailers (e.g., Galeries Lafayette), direct sales and mail/online retailers (e.g. Groupe 3SI), manufacturers and wholesalers (e.g. LVMH), and apparel industry associations. This network group has driven and accelerated innovation, and made circular principles more mainstream within France, overall contributing to a threefold increase in the collection and recycling rates of post-consumer textiles since 2006<sup>71</sup>. Its success demonstrates how effective government participation can be in supporting and regulating circular activities.

“Policymakers have a key role to play in incentivising service based business models, extended producer responsibility is absolutely part of the solution.”

**GWEN CUNNINGHAM, TEXTILES LEAD, CIRCLE ECONOMY**



# INNOVATION INVESTMENT

## KEY STAKEHOLDERS

### LEAD



### ENABLERS



## KEY SYNERGY TOPICS



**To achieve the multiple elements of the target state, more capital is needed for circular businesses, technologies, and infrastructure. Greater funding will support the activities of stakeholders across the ecosystem in developing circular models and promote the economy for maintenance, repair, and resale of clothes.** As has been noted throughout this report, there is a need for significant capital investment to achieve the target state and its three desired outcomes. The current investment gap is most clear in the UK's waste infrastructure and its capacity for optimised sorting and recovery at the end of use. The transition is therefore a unique opportunity for government and investors to work together to invest in innovation and infrastructure across the ecosystem. The government will be a key stakeholder in providing, enabling, and supporting this investment. Additionally, brands, retailers, and reprocessors should look to leverage government support and private capital that will become increasingly available in the coming years as efforts to transition to a circular economy gather pace.

## Recommendations

→ **Financing emerging technologies:** Government to provide direct financial support for businesses developing technologies that enable closed-loop and regenerative recycling and related infrastructure. This will position the UK as a global leader in these technologies and ensure that uncertainty in policy direction does not restrict opportunities for private investment.

→ **Investing in advanced sorting:** Government to convene multi-stakeholder initiatives, with brands and reprocessors, to coordinate investment into new sorting technologies, such as near-infrared (NIR), and large-scale facilities for their use. Sorting technologies must be able to sort according to fibre composition and colour. They must also ensure that used clothing is appropriately pre-processed through cleaning, removal of hardware, and product disassembly.

→ **Providing grants and incubation:** Government to support innovation and R&D by providing grants and technical support to start-ups and innovators who adopt circular business models. Such support should have the explicit aim to create world leading UK-based intellectual property and to help smaller companies compete with big brands.

→ **Directing investment towards circular performance:** Investors to work with government and industry bodies to push businesses in the fashion industry to demonstrate clear strategies and action plans for transitioning to circular business models. As a part of this, investors should continue to embed circular economy principles in disclosure standards that go beyond traditional Environmental, Social and Governance (ESG) standards.

“There’s a huge capital investment needed to make upgrades to sourcing and processing. Government should also help to accelerate this as part of their national decarbonisation plans.”

**CHRISTIAN TØENNESEN, DIRECTOR OF SUSTAINABILITY, SELFRIDGES**

“For the retailer, for the environment, for the customer, the best thing would be to only make what people want. There are technology innovations coming through, like increased digitisation, that would really support that.”

**SIMON PLATTS, RESPONSIBLE SOURCING DIRECTOR, ASOS**

## CASE STUDY

# Laudes Foundation

## RELEVANT ACTION AREAS 10

Laudes Foundation, launched in 2020, is building on the work of C&A Foundation by broadening its mandate to tackle deep systemic issues of production and consumption through transforming the fashion and built environment industries, both of which have an outsized negative impact on carbon emissions and social inclusion. At the same time, it focuses on finance and capital markets, whose influence impacts decisions and corporate action throughout the real economy.

Laudes is the founding partner of Fashion for Good, an industry innovation accelerator whose objective is to change the global trajectory of sustainable innovation in fashion. In order to foster a regenerative and just material system, Laudes accelerates investments into next-gen and circular materials that can substitute oil based synthetic fibres. For this it funds pilots to validate innovations for scale.

In collaboration with the Institute of Sustainable Communities, the World Resources Institute and the Wageningen University & Research, Laudes commissioned the ‘Spinning Future Threads’ research to study 40 agricultural residues as textile fibre feedstock in South and South East Asia. With global fibre production reaching 100 million tonnes per year in 2019, the report recommends alternative use of waste streams, from rice straw to pineapple leaves, generating new revenue streams for low-income agricultural communities.





IMAGE COURTESY OF FASHION FOR GOOD

## CASE STUDY

# Sorting for Circularity

## RELEVANT ACTION AREAS 7 8

Fashion for Good has launched the 'Sorting for Circularity' project to create a stronger link between textile sorters and textile recyclers. The project aims to stimulate the recycling market and to help commercialise textile waste, creating new business models for sorters and enhancing circularity across the industry. The project brings together key industry stakeholders from across the value chain - from brands to retailers to

some of the largest textile sorters - to act in a pre-competitive manner and drive the industry forward. Key project initiatives include a textile waste analysis using innovative Near Infrared (NIR) technology across multiple European contexts, while also mapping the capabilities of leading textile recycling companies, thus demonstrating the alignment between the industries. Moreover, the analysis will provide the most representative snapshot of textile

waste composition generated in Europe. The project will culminate in the support of a digital textile waste mapping platform that matches textile waste with recyclers. As an open-source platform, the Sorting for Circularity project hopes to bring greater transparency, spark greater harmonisation within the industry, and ensure the learnings contribute to foundational change for the industry at large.

## CASE STUDY

# Good Fashion Fund

## RELEVANT ACTION AREAS 10

The Good Fashion Fund (GFF) is a first-of-its-kind initiative to create systemic change in the textile and apparel industry by financing the implementation of highly effective and disruptive production technologies in Asia<sup>72</sup>. They do this by providing long term debt (in the range of \$1-5 million) to recipients who can prove they will reduce - by at least 50% - one of the three relevant 'Goods' (Materials, Energy and Water). In addition to financial aid, the GFF provides technical, environmental, and social expertise to manufacturers to adopt more

sustainable production techniques. This investing model exemplifies how effective significant capital investment can be in achieving a target state, whilst supporting and bringing onboard those impacted by the change. Moreover, the GFF directly addresses the issue of lack of capital investment to scale disruptive technologies within the supply chain, thereby enabling manufacturers and operators to build a restorative and regenerative apparel supply chain by investing in circular solutions.



IMAGE COURTESY OF GOOD FASHION FUND





PHOTO BY JORDAN WHITFIELD

## A perspective on Life Cycle Assessments by Claire Bergkamp, Textile Exchange

“ Life Cycle Assessment (LCA) is one important piece of the apparel and textile industry’s data equation, particularly given the EU Commission’s adoption of LCA as the underlying methodology for its forthcoming product labeling legislation. However, Textile Exchange also recognises that LCAs do not capture the breadth of impacts and trade-offs involved in our Climate+ Strategy, which prioritizes the areas of biodiversity, soil health, and water along with climate.

Where LCAs focus solely on reducing negative impacts – ‘doing less bad’ – we strongly believe in the need to drive positive outcomes as well. Additionally, LCA methodology requires a selection of specific parameters, in a specific location, at a specific moment in time, with ample room for different approaches and assumptions. This makes LCA data difficult to compare, and the steep cost to conduct a single LCA makes it challenging to get and maintain representative data at scale.

Textile Exchange employs an approach to impact data we call ‘LCA+.’ This means that in addition to working toward improving the LCA data and methodologies used by the industry, we are also looking to other sources of data to help us benchmark and measure the positive impacts being driven by our members through our programs and initiatives.

”

## A perspective on exporting clothes for reuse and the global recycling market by Alan Wheeler, The Textile Recycling Association

“ The used clothing and textile recycling industry has been finding sustainable solutions and markets for second hand textiles for many decades. Our sector has played a leading role in bringing the environmental impacts of the fashion industry to the fore and the proposals that are being put forward here offer a real opportunity for us to work together with stakeholders from across the clothing supply chain to deliver a circular and sustainable fashion sector.

We will continue to increase the longevity of clothing by placing good quality reuseable clothing into sustainable markets. This keeps clothing higher up the waste hierarchy and reduces demand for new clothing. It also creates real social and economic benefits by employing millions of people globally and providing good quality clothing at affordable prices.

We also look forward to working with our partners to establish new processes to help improve the efficiency of collections and processing of used textiles, whilst at the same time working towards developing new markets and applications for the material that our sector deals with, thus helping to ensure that the circularity of textiles is maximised.

”



# SELECTED UK DESIGNERS WHO ARE PART OF THE VANGUARD FOR CHANGE

The following designers are highlighted here due to their commitment to environmentally and socially conscious design that has the potential to inspire larger businesses.

## Bethany Williams

Bethany Williams is a sustainable fashion designer focusing on positive social and environmental change. Her collections are approached from a social manufacturing perspective, creating long-standing partnerships with initiatives like 'Making for Change', a project that has been teaching level 1 and level 2 garment making at HMP Downview since 2014, as well as international social initiatives including San Patrignano and Manusa. Her designs use organic, recycled and deadstock materials, from book waste to reclaimed fabrics. Bethany Williams co-created the Emergency Designer Network in 2020 in response to a lack of PPE in hospitals, and is working to establish a textile recycling and upcycling hub in London.



IMAGE COURTESY OF BRITISH FASHION COUNCIL



IMAGE COURTESY OF BRITISH FASHION COUNCIL

## Helen Kirkum

Helen Kirkum is a footwear designer who reworks discarded and recycled sneakers, working with clients including Adidas, Reebok, Lacoste and Nike. She collects sneakers from recycling charities such as Traid, often taking single sneakers which cannot otherwise be reused. In both 2021 and 2019 Helen Kirkum created 20 unique pairs of Reebok trainers from deconstructed component parts of Reebok sneakers with stitch lines still in place. Her work promotes the craftsmanship of handmade footwear, using social media to build awareness about extending the lifespan of products.

"We should look at what micro and small businesses are doing – look at the exemplars and how large businesses could be inspired by that"

**DILYS WILLIAMS, PROFESSOR OF FASHION DESIGN FOR SUSTAINABILITY AND DIRECTOR OF CENTRE FOR SUSTAINABLE FASHION, LONDON COLLEGE OF FASHION**

## Graeme Raeburn

Graeme Raeburn is the Lead Designer at cycling clothing company Albion and was previously Lead Designer at Rapha. He favours the term "responsible" design because it implies designer and business accountability. As part of his work at Albion, he is developing a 'closer to market' method of sampling and manufacturing, using digital patterns that can be printed out and sampled within the London studio prior to scaling up. This enables much greater flexibility and efficiency than the traditional longer lead sampling time.



IMAGE COURTESY OF GRAEME RAE BURN



# Phoebe English

Phoebe English is a fashion studio that focuses on a solution-based fashion practice. The studio creates garments that are entirely produced in England with a focus on mitigating environmental impact and attempting to positively influence our environment by working with other small businesses and their fabric waste. Phoebe English co-founded the Emergency Designer network in 2020 as a response to a lack of PPE in hospitals and created a WhatsApp group named 'Fashion on Earth' to share sustainability resources with other designers and students.



IMAGE COURTESY OF BRITISH FASHION COUNCIL

IMAGE COURTESY OF BRITISH FASHION COUNCIL



# Joshua James Small

Joshua James Small is a sustainable womenswear designer who applies a couture approach to design and construction. His garments use organic fibres and ethically produced fabrics, as well as upcycled deadstock fabrics and embellishments from companies including Ultrafabrics, Swarovski and Sophie Hallette. In order to provide transparency, all components of each garment are listed through his website on the date of release. The garments are all made in England, produced on a made-to-order basis, and can be re-made after use.

IMAGE COURTESY OF BRITISH FASHION COUNCIL

# Olubiyi Thomas

Olubiyi Thomas is a fashion designer with an artisanal approach to design, exploring multiculturalism as a self-reflection on his Nigerian origins and Scottish upbringing. His collections reimagine the linkages between British Post-Colonialism and African cultural history, focusing on craftsmanship and hand manipulated textiles rich in identity and meaning. Each piece is handmade in London using natural fibres such as wool, cotton and silk; and antique hand woven and dyed West African textiles. Geometric pattern cutting explores universal and archetypal shapes of Africa and the East, such as Nigerian bubas, kimonos and kaftans.





# **4. LOOKING FORWARD**



# ENSURING A JUST AND FAIR TRANSITION

In transitioning to a circular economy, it is critical that key relevant social and political issues are not neglected in favour of purely economic considerations. As noted in the Chatham House research paper entitled ‘Promoting a Just Transition to an Inclusive Circular Economy’<sup>73</sup>, “‘Combining circular economy policies with social protection measures will be important in order to ensure that the burden of efforts to promote circularity will not fall on the poor through worsening working conditions and health impacts, reduced livelihoods, or job losses’”. The COP24 Just Transition Declaration, signed by 53 countries in 2018<sup>74</sup>, emphasised international concern over the potential for stranded workers and communities, and recognised the need to support these groups to build broad societal support for the transition to decarbonisation<sup>75</sup>.

A just and fair transition to a circular fashion ecosystem looks to ensure that the opportunities and benefits on offer in the target state are shared equitably across society. This means that all people have access to a viable, prosperous, and secure future<sup>76</sup>. It also recognises that the transition may represent a moment of instability and fragility for some individuals, communities, businesses, and nations, and that they will need support to avoid being left behind and to take advantage of the opportunities created. Typically, it is the most vulnerable in society who face the largest challenges in adapting to change, and the transition offers a moment in which to address not just existing inequalities, but also historic ones<sup>77</sup>.

Within the future circular fashion ecosystem, the shift towards circular business models, including clothing-as-a-service, repair, take-back services, and resale, will entail significant changes to the supply chain. This will result in a different suite of jobs, and investment in skill development to fulfil these roles. As Dr Ke Wang, Knowledge Lead at PACE, stated in our stakeholder interviews:

*“The circular transition will shift jobs from upstream extraction and manufacturing to downstream collection and recycling. It has been estimated that overall, the circular transition will result in a net increase in jobs globally. But each country will look different. Asia, for example, is a large base of both cotton cultivation and clothing manufacturing. On the other hand, jobs in the*

*mid-stream (such as repair and resale) are located close to consumers. Therefore, moving to a circular economy may result in an initial net loss of jobs in the fashion industry in some Asian countries.”*

This represents a likely outcome of the shift to a circular fashion ecosystem and demonstrates the value of ecosystem modelling, as cited in our recommendations, in mapping out system changes. During this period of change, the fashion industry must be mindful of its social impact, particularly where the risk of modern slavery remains. According to Simon Platts, Responsible Sourcing Director at ASOS, commenting on UK manufacturing, it will be important to educate and empower workers on their rights and “...work with the community, councils, government, retailers, stakeholders to ensure that this becomes a reality so that we can create a level playing field.”

The imbalance of socio-economically disadvantaged citizens across the entire supply chain was an insight that emerged from our CFE Industry roundtable. Many people buy less expensive clothing out of necessity. Since increasing the amount of recycled materials or improving the longevity of an item often comes at a higher financial cost, initiatives aimed at these outcomes could result in the items being less affordable. There is a perception that sustainable fashion means a higher price point, which needs to be considered in business decisions. The fashion industry must remain accessible.

Within the Phase 1 research, literature on the social and economic impacts of a circular transition was reviewed. While the importance of ensuring a just and fair transition is increasingly being recognised, current research is often highly speculative on the social and political ramifications of the changes ahead. We have endeavoured to incorporate the principles of a just and fair transition in our recommendations for stakeholders where feasible, to create a more holistic outcome and have provided certain actions that reflect the need to invest in, educate, and support workers during such a major economic transition. Such recommendations include ‘supporting manufacturing in the UK’, ‘formalising skills’, ‘directing investment towards circular performance’ and ‘mainstreaming metrics for societal prosperity’.

As outlined in ‘The Circular Fashion Ecosystem Project: Next steps’ on [pages 93-94](#), however, specific targeted research into the complexities of balancing environmental and societal needs throughout the transition with specific reference to the fashion industry should be completed and integrated into Phase 2, to develop an appropriately phased implementation. Ahead of that research, we present below some considerations and opportunities for industry stakeholders as they engage with the transition to a circular economy. These should be considered as cross-cutting themes which are relevant across all the target outcomes, action areas and recommendations laid out in this report.

## Supporting and protecting workers’ rights

→ As labour markets transition to a circular fashion economy, governments and businesses will need to work with social enterprises and unions, and invest in upskilling or retraining workers who find themselves under-utilised or unemployed. For example, there will likely be a shift in global employment as jobs are created in sortation and recycling industries, while they disappear in virgin fibre production, manufacturing and extractive industries. As part of this, workers should be supported to relocate to enable job market matching across the economy<sup>78</sup>.

→ It will be vital that the government consults on the implementation of an EPR scheme and the potential consequences of diverting textile waste material from foreign to domestic markets. For example, halting UK exports of textile waste material could mean a loss in income and jobs for people employed in recycling industries abroad<sup>79</sup>.

→ It will be essential to focus on training and recruiting traditionally marginalised groups. The fashion industry could for example, create and support diversity and inclusion initiatives that help under-represented designers and manufacturers contribute to circular economy textile work.

→ Maximising the quality of labour-intensive jobs through establishing decent and safe working conditions and fair wages will be essential as a minimum standard for all workers throughout the fashion industry<sup>80</sup>.

## Knowledge, collaboration, and consultation

→ Effective multi-stakeholder collaboration will enable the sharing of resources, knowledge, and ideas on implementing circular economy principles to ensure that no one is left behind. For example, stakeholders could look to publicise all research outputs, in publicly accessible formats, and where

they are not commercially sensitive, to enhance wider industry knowledge for our collective advantage.

→ It will be key to conduct inclusive research to allow for a diverse set of stakeholders to be consulted and recognised. This needs to include all levels beyond Executive, but also those who are considered to be working “frontline” throughout the fashion supply chain. This is particularly important to ensure that traditionally marginalised groups have their voices heard and included in the transition.

→ Research funding must be provided to a more diverse set of stakeholders in the supply chain, to enable action-oriented outcomes to benefit a wider group of stakeholders. For example, research can be conducted by industry in collaboration with academia to remove the siloed approach that persists in this key area.

→ Companies operating in open-loop systems must consult with both UK and global communities living near their operational facilities. This is particularly important in cases where a company’s facilities have a harmful environmental or social impact.

## Investing in the future

→ It is fundamental that internet access and other enabling technological and transportation infrastructure for a transition to a circular economy continues to gain investment and see improvement while remaining affordable. This will allow individuals to improve their digital literacy and engage with the, frequently digital, sharing economy. Ensuring such access is critical to enabling individuals and workers to thrive in a circular economy<sup>81</sup>.

→ Targeted assistance programmes will be required for many low- and middle-income countries that are negatively impacted by the transition to more circular practices, such as through a resultant loss in trade and jobs<sup>82</sup>.

It is clear that the transition to a circular economy offers a unique opportunity for the fashion ecosystem to reset and establish new social standards and relations to benefit all stakeholders. Individuals, communities and regions must be supported to take advantage of the opportunities on offer and must not be left behind, as has happened in previous economic transitions. The provision of investment and support will be key to enabling this, and government should look to lead from the front to champion a fairer economy.

# THE CIRCULAR FASHION ECOSYSTEM PROJECT: NEXT STEPS

The IPF Circular Fashion Ecosystem Project comprises three distinct phases:

**Phase 1 - Research and recommendations**

**Phase 2 - Developing the roadmap for change**

**Phase 3 - Implementation of the target state**

With this report representing the culmination of Phase 1, it is important to look ahead to Phase 2 to consider how to deliver the UK circular fashion ecosystem. This is in preparation for Phase 3, where full, cross-stakeholder action will be required to implement the target state.

Phase 1 sets out a bold vision for change and a strategic framework that will act as a blueprint for driving circularity within the UK fashion and

textiles industry. Phase 2 will require buy-in from all stakeholders to begin the transition from a vision to reality. An optimal path must be charted for how best to implement the necessary actions within a defined timeframe. As depicted in the 'Stakeholder actions and interconnections' diagram on [pages 54-55](#), all proposed recommendations require actions by multiple stakeholders, with one stakeholder group taking the lead and others playing an enabling role. Phase 2 will involve the creation of a time-bound roadmap for implementation. Our recommended approach for developing this roadmap is shown in 'A recommended approach to phase 2 of the CFE Project' below.

Building on input from all relevant stakeholders (item A), we recommend conducting an assessment of the 30

recommendations against multiple criteria, to develop the 'Roadmap for change'. The assessment should note characteristics such as:

- complexity;
- ease of execution;
- potential for collaboration;
- time required for implementation;
- impact on circularity;
- societal impacts;
- level and source of necessary investment; and
- opportunity to leverage existing initiatives.

The 'Roadmap for change' assessment (item B), would enable identification of those activities that represent 'quick-wins', those that have the highest intervention potential, and those that require the most extensive change. The collaboration involved in its creation would also further pull stakeholders together to realise the vision.

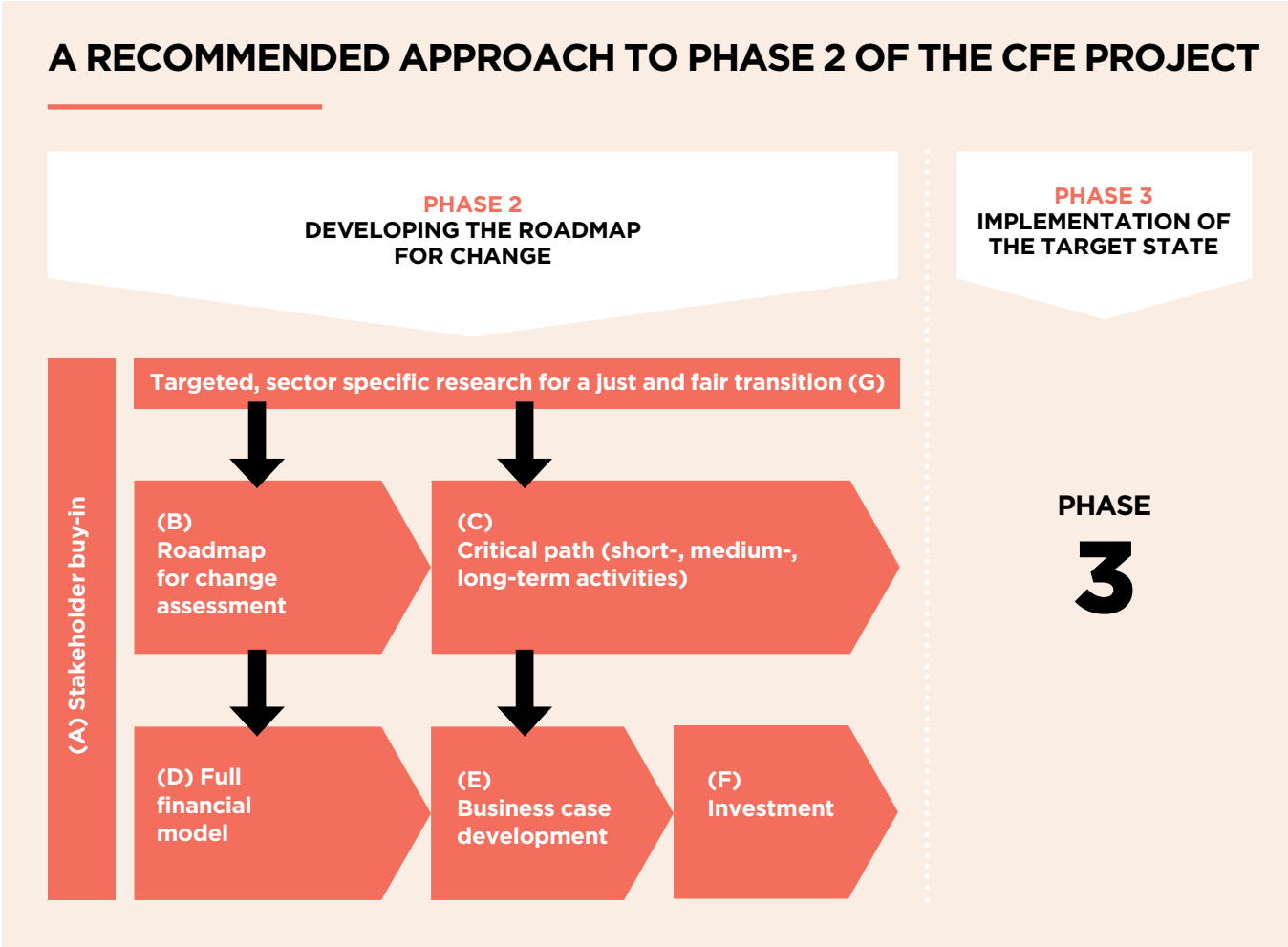
Additional output from this analysis could be used to provide supporting information for project proposals and bid writing to obtain investment. It will also unearth the specific interdependencies essential for developing a critical path of activities for the time-driven roadmap (item C). Some of the recommendations from Phase 1 will be less complex to implement, easier to fund, and more readily achievable in a short timeframe. Others will require multiple conditions to be met, extensive collaboration, and very significant investment. The critical path will take these variations into account through description of short-, medium-, and long-term activities and will include the phased requirements for business cases (item E).

The challenge of balancing the environmental and societal impacts of the transition to a circular system are widely acknowledged. In developing our vision and recommendations, we have taken the views from existing literature together with those expressed by stakeholders into account, with the aim of creating a more holistic outcome. However, as outlined in 'Ensuring a just and fair transition', current research is often highly

speculative on the social and political ramifications of the changes required and not sector-specific. As such, it is recommended that targeted research on how the transition to a circular economy for the fashion sector will affect individuals, communities, and societies is conducted (item G). This would benefit both the circular fashion ecosystem and the wider circular economy transition. This research should feed into the 'Roadmap for change' assessment to enable an appropriately phased implementation plan to be developed.

Whilst some high-level indicative financial modelling was performed as part of Phase 1 of the CFE, and presented in 'Modelling financial impact of the circular fashion ecosystem', it was not intended to be the basis for a business case or for attracting investment. The results generated from the scenario-based analysis provided useful insight into the potential value creation for the downstream ecosystem through moving to circular behaviours. Most, if not all, of the recommendations presented will require investment and as such, will require comprehensive financial data on for building a business case. It is therefore recommended that a full financial model is created (item D). The model should be based on rigorous assumptions agreed between stakeholders such that the output can be used for the development of robust business cases (item E) required to attract investment (item F).

Stakeholder engagement and collaboration is key to taking our collectively developed vision and executing the clear path that will be laid out in Phase 2; to include pilots and proof of concepts wherever possible. Phase 3 will begin realising the transition, requiring multiple stakeholders implementing the recommendations in parallel to attain the collective goal. Entirely dependent on the recommendations and associated projects to be executed, Phases 2 and 3 can overlap, with certain initiatives accelerating to Phase 3 implementation ahead of others. This overlap is expected, given the varied nature and complexities of the next step projects to be delivered by the Institute of Positive Fashion. Whether from pilot-scale execution of innovation projects, changes to policy, or full industry collaborations, what is presented here as the output of Phase 1 sets the ambition and our clear vision for change.





# **5. CONCLUSION**



# COMING TOGETHER TO DELIVER A BETTER FUTURE

Climate change, resource depletion and the destruction of the natural environment present existential crises requiring fundamental shifts in both how the economy functions and how society acts. The Sixth Assessment Report of the IPCC sends a stark message – time is running out to prevent catastrophic climate change with experts stating that society has four years to deliver urgent and radical action<sup>83</sup>. Within this context, the fashion and textiles supply chain is the third most detrimental globally, accounting for around 5% of global greenhouse gas emissions, consuming 98 million tonnes of non-renewable resources every year, and using 93 billion cubic metres of water annually<sup>84</sup>.

Circularity has a key role to play in addressing these challenges. If acted upon globally and across sectors, the circular economy can deliver the reductions in greenhouse gases needed to reach the goals of the Paris Climate Agreement<sup>85</sup>. For the fashion sector, reducing the flow of materials, improving clothing utilisation, and planning and investing in the solutions needed to scale closed-loop recycling, will collectively lead the transition.

In this report on Phase 1 of the Circular Fashion Ecosystem Project, we have presented our analysis of the current state of the ecosystem, the case for change and our vision for a new, circular target state for the UK fashion industry. This vision is centred around three target outcomes:

- Target outcome 1:**  
**Reduced volume of new physical clothing**
- Target outcome 2:**  
**Maximised utilisation through product circularity**
- Target outcome 3:**  
**Optimised sorting methods and materials recovery**

Collectively, the 30 recommendations proposed in this report, across ten priority action areas, provide a blueprint for the future of the fashion industry. They drive change across the multiple dimensions of the system, clearly setting out the areas and initiatives

where different stakeholders should take ownership of removing barriers and lead implementation of solutions.

For the fashion sector, this chance to transform the economy to a more regenerative model also presents an opportunity to address the systemic environmental and social challenges that exist in its global supply chains, while realising commercial opportunities in its consumer markets as the balance of products and services shifts. In pursuing partnerships for change, it will be vital to consider which groups, regions or environments might be negatively impacted by the transition. Including them on the journey and re-evaluating strategies as needed, to minimise potential unintended side effects, is fundamental to achieve a circular fashion ecosystem that brings improved societal and planetary wellbeing, resilience, and prosperity.

The way we behave and relate to clothes is shaped by the social, cultural, and material structures around us. However, a shift in mindset is essential to bring about the change required. Wide-scale collaboration by all parties will be critical to success, requiring all stakeholders, including those viewed as competitors, to work together as never before and deliver against the vision.

The transition required is significant, but the ecosystem is ripe for change. With stakeholders aligned behind the need for transformation and the collective vision to achieve it, the UK fashion industry has a real opportunity to drive that transition and create a world-leading circular fashion ecosystem that retains its creativity and emotion, is fair and equitable and provides a radical blueprint for change for others to follow.

This report calls on all those engaged in UK fashion to come together, embrace that vision, and create a circular fashion ecosystem for the UK.

IMAGE COURTESY OF BRITISH FASHION COUNCIL





# Glossary

The definitions of key terms and concepts as they are used in this report are detailed below. These have been determined based on a range of sources as cited in the list of References on [pages 124-127](#).

Term	Report definition
<b>Academia</b>	Individuals and institutions involved in higher education and research, e.g. universities.
<b>Artificial intelligence</b>	The use of computer hardware and software to effectively replicate human intelligence and thinking capabilities digitally. The intention is to allow a machine to ‘think’ like a human being.
<b>Augmented reality</b>	The use of computer-generated artefacts to modify the visual experience of a real-world environment to enhance or change the user’s perception of reality.
<b>Blockchain</b>	A digital database technology that typically functions as a distributed ledger of transactions. A ‘block’ represents new information that has been input into the system and once this ‘block’ is complete, it becomes part of a ‘chain’ of other blocks, which are in chronological order. This blockchain can be decentralised, which effectively means it is stored across numerous nodes in a peer-to-peer network, and therefore, enables full transparency.
<b>Brands</b>	Producers of garments, who are responsible for the design and branding of products for the market.
<b>Chemical recycling</b>	A recycling process in which collected waste textile material is chemically treated using solvents or enzymes to produce new filaments, typically either cellulosic or synthetic fibres. Recovered synthetic fibres are converted to pellets suitable for being reused in the yarn manufacturing process. Recovered cellulosic fibres are dissolved into a pulp that can be used in the production of viscose-like materials <sup>86</sup> .
<b>Circular and sharing business models (CSBMs)</b>	Business models, such as clothing rental or subscription schemes, that minimise the material used and waste produced while maximising the value of materials and products by keeping them in use for as long as possible, if not permanently. These models promote a focus on the triple bottom line – people, planet and profit <sup>87</sup> .
<b>Circular design</b>	The concept of designing products and services in line with the principles of a circular economy. Using sustainable materials and designing out waste and pollution represent fundamental first steps. The overarching focus is to preserve the value of a safe to use product or service for as long as possible by designing for upgradeability/modularity, repair/refurbishment, and reuse. Recognising that end-of-life can be inevitable for some products, the focus shifts to maximising the sustainability of the end-of-life process by designing for redesign, disassembly, and recycling. Within this, circular clothing design refers to designs that use recycled and renewable materials (and/or post-production offcuts), and designs for emotional and physical durability, reuse, repair, redesign, modularity, disassembly, and recyclability <sup>88</sup> .

Term	Report definition
<b>Circular economy</b>	An economic system that eschews traditional linearity and is built on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems <sup>89</sup> .
<b>Circularity</b>	The concept of goods, services and systems adhering to circular economy principles and therefore being suitable for consistent circulation within the economy <sup>90</sup> .
<b>Closed-loop recycling</b>	A recycling system in which all the waste materials collected are converted into new materials that are of the same quality as the original input and can be reused in the same applications <sup>91</sup> .
<b>Clothing recommerce / resale</b>	The buying and selling of pre-owned clothing.
<b>Clothing rental</b>	A business model in which clothing products are temporarily provided for use in return for a set fee, typically determined by the length of use.
<b>Clothing subscription</b>	A business model in which clothing products or services are sold, and revenue is collected by the provider on a recurring basis.
<b>Collectors</b>	Businesses focused on collecting waste material throughout the supply chain and selling it on to reprocessors, often for a profit.
<b>Consumers</b>	Individuals who purchase goods and services for personal use.
<b>Cradle-to-grave life cycle</b>	Cradle-to-grave describes the full life cycle assessment from resource extraction (‘cradle’) to the use and disposal phase (‘grave’) <sup>92</sup> .
<b>Designers</b>	Individuals who produce designs for garments.
<b>Digital innovators</b>	Businesses that provide digital services, including software and hardware.
<b>Digital prototyping</b>	The production of virtual versions of new clothing designs.
<b>Digital twin</b>	A virtual replica of an item that exists in the physical world.
<b>Digitalisation</b>	The implementation of digital technologies and data into previously analog processes <sup>94</sup> .

Term	Report definition
<b>Digitisation</b>	The conversion of data and information from analog formats to digital formats.
<b>Ecosystem</b>	A dynamic network of interconnected actors operating within a bounded geographical space <sup>95</sup> .
<b>Extended Producer Responsibility (EPR)</b>	Extended Producer Responsibility (EPR) schemes make producers responsible for the disposal of post-consumer products and their environmental impact. In this way, it they are designed to incentivise producers to reduce waste through design and facilitate better waste management <sup>96</sup> .
<b>Fibre-to-fibre recycling</b>	A recycling process in which collected waste textile fibres are sorted and processed into textile fibres suitable to be reused in the supply chain <sup>97</sup> .
<b>Government</b>	The Government of the United Kingdom of Great Britain and Northern Ireland.
<b>Infrastructure</b>	Both the ‘hard’ physical facilities and structures that underlie the operation of society and the ‘soft’ non-physical assets, including systems of government, education, and finance.
<b>Institutions, industry bodies and third sector</b>	A wide array of organisations, including non-governmental organisations, consultancies, labour unions, community groups, charities, professional associations, and foundations.
<b>Internet of things (IoT)</b>	A concept in which any device is connected to the internet and therefore forms part of an enormous network of devices which continuously share data about their use and their environment.
<b>Investors</b>	Individuals and institutions who invest capital with the expectation of maintaining value or achieving a profit. Such actors include banks, asset managers, institutional investors, and private equity.
<b>Just and fair transition</b>	A transition that looks to ensure that the unprecedented opportunities and benefits on offer are shared equitably across society so that all have access to a viable, prosperous, and secure future <sup>98</sup> .
<b>Linear economy</b>	An economic system in which raw materials are extracted, transformed into goods and services, consumed, and ultimately disposed of as waste. This is currently the dominant system in the global economy <sup>99</sup> . This report uses the related terms linearity and linear to describe activities, processes and flows that are characteristic of a linear economy.
<b>Logistics providers</b>	Businesses that provide logistics services and management for clients to enable the flow of goods from their point of origin to their point of consumption and potentially, to their end-of-life destination.
<b>Manufacturers</b>	Businesses focused on producing fibres, fabrics, or garments at a set cost for retailers, brands, and designers.

Term	Report definition
<b>Mechanical recycling</b>	A recycling process in which machinery physically separates and deconstructs waste textile material, typically through a chopping and pulling process, into shredded fragments until a stage is reached at which fibres can be recovered individually <sup>100</sup> .
<b>Near infrared spectroscopy (NIR)</b>	A spectroscopic technique in which a light source of known wavelength pattern is used to analyse a material to understand its organic composition <sup>101</sup> .
<b>Non-rewearable</b>	The state at which garments are no longer fit for being worn on the body by consumers and has therefore reached its end-of-life stage.
<b>On-demand manufacturing and distribution</b>	A manufacturing and distribution model that prioritises flexibility, as only the exact quantity of goods are produced at the point at which they are needed.
<b>Open-loop recycling</b>	A recycling system in which the waste materials collected are converted into both new materials and waste products. The new material is typically not of the same quality as the input and is therefore used for alternative applications <sup>102</sup> .
<b>Platform</b>	A digital environment which enables software, products, or services to be provided and often facilitates the exchange of information and data.
<b>Product circularity</b>	The concept of a product adhering to circular economy principles and therefore being suitable for consistent circulation and reuse by consumers and/or businesses <sup>103</sup> .
<b>Product passport</b>	A concept in which a dataset for a product would be maintained to track it throughout its entire lifecycle. The dataset would include information concerning components; constituent materials and their sources; disassembly procedures; and recycling procedures <sup>104</sup> .
<b>QR code</b>	A matrix barcode that is a machine-readable optical label, typically storing information, such as a website URL.
<b>Raw material circularity</b>	The concept of raw materials adhering to circular economy principles and therefore being suitable for consistent circulation and reuse by industry <sup>105</sup> .
<b>Recycled inputs</b>	Synthetic or natural raw material that is derived from the recycling of used textiles and other fashion related materials and either suited to replacing virgin inputs for new clothing manufacturing or suited to use in alternative applications and industries.
<b>Recycling</b>	The process of collecting, sorting, and converting waste materials into new materials in order for them to be reused.
<b>Regenerative</b>	Enabling the preservation or enhancement of the planet’s resources and environment <sup>107</sup> .
<b>Regenerative recycling</b>	A recycling process which restores fibres to their original raw material state, with no degradation in quality. This allows for the fibres to be continually reused in the same application, creating a closed loop of constant circulation <sup>108</sup> .



Term	Report definition
<b>Renewable inputs</b>	Raw materials that are naturally replenished at a faster rate than they are consumed.
<b>Reprocessors</b>	Businesses focused on reprocessing, typically through recycling processes to convert waste material to reusable and re-merchandisable materials.
<b>Retailers</b>	Businesses focused on distributing and selling goods to consumers through brick and mortar stores or websites.
<b>Reverse logistics</b>	The process of moving goods from their typical final destination for the purpose of capturing value, or proper disposal <sup>1108</sup> .
<b>RFID (radio frequency identification)</b>	A wireless technology in which electromagnetic waves are used to communicate between a reader and a tag (which can be passive or active). An RFID tag can store anything from a serial number to an extensive dataset, which a reader can access <sup>109</sup> .
<b>Secondhand clothing</b>	Clothing that has been previously owned/used.
<b>Stakeholders</b>	An individual, group, or party who has an interest in, or who is affected by, the operation and outcomes of the UK’s fashion ecosystem.
<b>Sustainability</b>	The state in which we are able to meet all of our needs within the ecological boundaries of the planet. These needs range from minimum standards for education, housing, social equality, income, and health to the basic provision of food, water, and energy. Meeting them within the ecological boundaries of the planet means that we must stop damaging and demanding too much of our planetary environment <sup>110</sup> .
<b>Sustainable development</b>	As defined by the Brundtland Report (1987): “[...] development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. <sup>111</sup>
<b>Synthetic fibres</b>	Fibres that are produced through chemical synthesis, as opposed to natural fibres (plant-based or animal-based) obtained from naturally occurring sources.
<b>Utilisation</b>	The number of times that a product is used by a consumer.
<b>Vintage clothing</b>	Clothing that is between 20 and 100 years old that recognisably follows the style of the era in which it was produced.
<b>Virtual reality</b>	A computer-generated simulation of a three-dimensional space/environment that a user can interact with in such a way that it feels ‘real’.
<b>Waste</b>	Materials that have deteriorated in quality or been contaminated to the extent that they are no longer suitable for reuse and must be reprocessed within the UK’s waste infrastructure.
<b>Zero-waste manufacturing</b>	A manufacturing model that, in designing and assembling products, focuses on reducing and eliminating toxicity and waste throughout the process.

# A1. Methodology

As described in ‘Phase 1: Foundational research’ on [page 22](#), Phase 1 involved four main strands of research and analysis. The following sections describe the method and approach followed for each of these, in the order in which they were completed.

## A1.1 Literature review

The first piece of research conducted as part of Phase 1 took the format of a desk-based literature review. This included review of academic and grey literature as well as analysis of secondary data sources from market research platforms such as Statista. The purpose of the review was threefold:

- Establish the current state of the UK fashion ecosystem, from a perspective of its size, position in the global fashion economy, environmental impact and circular performance in terms of the consumption, use and disposal of clothing;
- Compile a list of best practice case studies from across the world; and
- Outline an initial vision for the future ‘target state’ of the UK fashion ecosystem.

We used the following definition of ‘clothing’ to guide the scope for this literature review, as based on the definition available used in the French EPR scheme (2007):

- Socks, tights, stockings, leggings;
- Panties, briefs, thongs, pants, undershirts, swimwear.
- Bras, corsets, girdles, bustiers, panties, bodysuits, nighties, dressing gowns, jumpsuits, dress bottoms, garter belts, garters, camisoles, leotards, petticoats;
- Pyjamas, nightgowns, dressing gowns, bathrobes; pants, bobbins, corsairs, knickers, overalls, jodhpurs, bermudas, shorts, sweatpants, jogging pants;
- Skirts, culotte pants, dresses;
- Shirts, blouses, t-shirts, sweatshirts, polo shirts, undershirts, sweaters, tank tops, sports shirts;
- Pullovers, vests, cardigans, blouses, aprons, tunics, sweat tops, jogging tops jackets, blazers;
- Duffle coats, trench coats, gabardines, pea coats, parkas, anoraks, down jackets;
- Waterproof rainwear, waxes, capes, pelerines, overcoats, ponchos, overcoats;
- Suits (2 and 3 pieces), tuxedos;

- Ski suits, ski jackets and pants, kimonos;
- Hats, berets, caps, toques;
- Gloves, mittens; and
- Ties, bow ties, belts, pocket squares, handkerchiefs, shawls, scarves, mufflers, mantillas.

As the first piece of research in this project, the findings of the literature review were used to shape the approach and focus of the stakeholder voice consultations, consumer research and financial modelling (see Appendix A1.2, A1.3 and A1.4 below).

Further to refining the vision for the target state via the stakeholder consultations ([see Appendix A2.2](#)), we conducted a second, complementary literature review focussed on the topic of ensuring a just and fair transition. The findings of this complementary review are described in ‘Ensuring a just and fair transition’ on [pages 92-93](#) of the report.

## A1.2 Stakeholder voice consultations

As noted in ‘Stakeholder voice’ on [page 34](#), Phase 1 of the CFE Project involved conversations and discussions with 26 representatives of various organisations and individuals involved in the UK fashion ecosystem. The four methods for these consultations are shown in ‘The stakeholder consultation process’ on [page 34](#). This figure also depicts the stakeholder groups involved.

The approach followed for each of the four consultation forms were as follows:

- **Stakeholder interviews:** To test the vision for the target state developed through the literature review, we conducted interviews with representatives of stakeholders from across the UK fashion ecosystem. In total, our research consortium interviewed 26 participants, either individually or in pairs. The interviews followed a semi-structured format that was tailored to the stakeholders and their specific areas of expertise. All interviews were conducted online through video calls and were recorded. Transcripts were subsequently produced for each interview and analysed to identify key themes, concerns, and takeaways for the report.

- **Designer focus group:** To gain the perspectives of designers on the vision for the target state, we conducted a focus group. This focus group followed the same format as the interviews but with a larger number of participants present (five).

- **IPF Forum roundtable:** As part of the IPF Forum on 10th of June, we held a roundtable discussion with a focus on discussing the newly refined vision for the target state and the ten priority action areas for realising it. Representatives from industry and government were invited to participate under Chatham House rules and received a briefing document in advance. This described the purpose and conditions of the discussion as well as the refined vision in the form of three target outcomes and ten priority action areas. Participants were further provided with follow-up summary output.

- **CFE Advisory Board:** Throughout Phase 1 of the CFE Project, a series of meetings were held with the CFE Advisory Board. During these meetings, input was sought on emerging findings and overall project progress.

The interviews, designer focus group and roundtable were designed to yield greater understanding of the barriers and opportunities for transitioning to the target state and to explore the collaboration and partnerships needed to enable the transition. They informed the development of the vision for the future and the strategic framework for realising it in slightly different ways.

In both the interviews and designer focus group, the participants received a briefing document describing the purpose and conditions of the interview as well as the initial vision for the target state which had

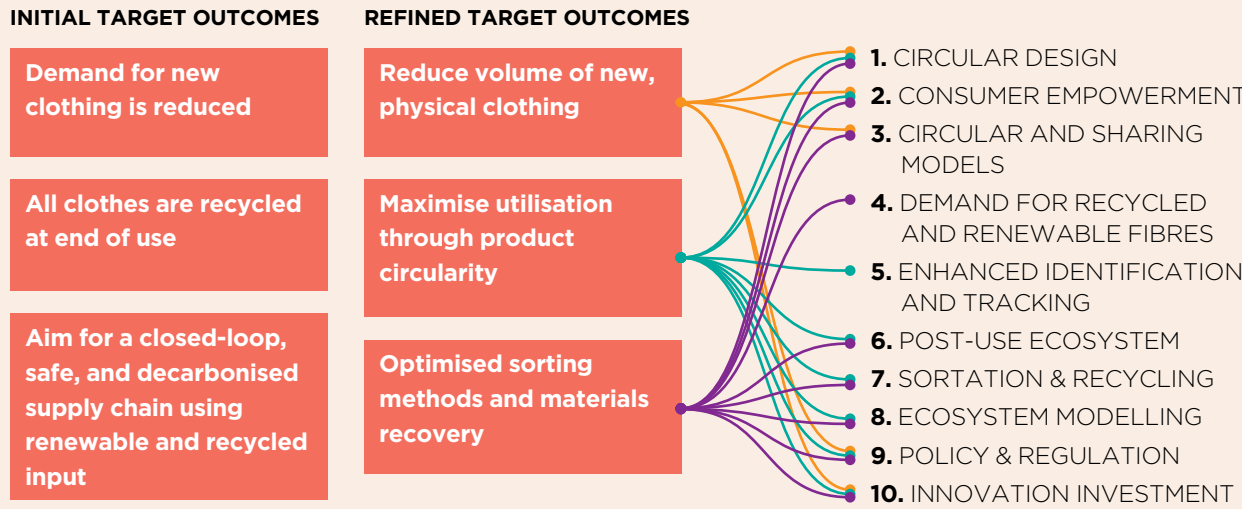
been developed through the literature review. The participants were asked to comment on their agreement with the vision and offer additional points for inclusion (if relevant). The original three ‘focus areas’ for the target state, as shown in ‘The evolution of vision through stakeholder views’ below, could then be adjusted to reflect the consistent messages coming through from these stakeholders. The vision also began to crystallise around recurring themes, which were consolidated to create the ten priority action areas.

The government and industry roundtable was held after the stakeholder interviews and focus group were completed. At this point, the original three focus areas had been refined into the three target outcomes and the ten action areas had been defined. Ahead of the roundtable, participants received an updated briefing document with a top-line description of this refined vision for the target state. Following a presentation of this vision by the consortium and IPF team, the discussion and debate focussed around three questions:

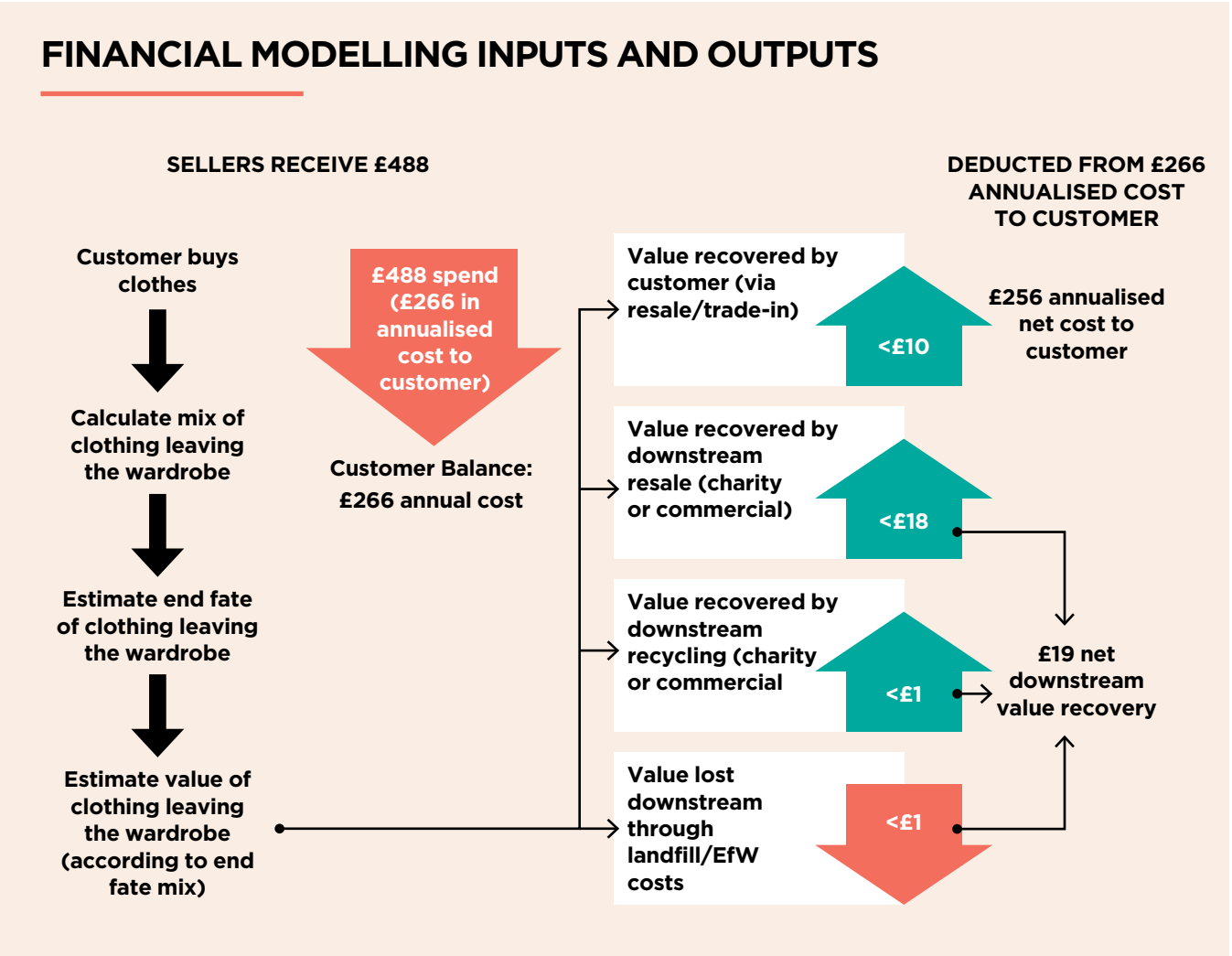
- What is the most effective way to achieve our vision and succeed in our target areas?
- What are the barriers that will need to be overcome?
- Where are the biggest opportunities for collaboration to effect change?

The output from the session took the form of written notes which were analysed for key themes and takeaways. The insights gained were subsequently used in the further refinement of the vision for the target state, including the generation of the 30 recommendations, as well as for related areas of the final report, such as the section ‘Ensuring a just and fair transition’.

## EVOLUTION OF VISION THROUGH STAKEHOLDER VIEWS







### A1.3 Consumer research surveys

Prior to primary data collection, we conducted a desk-based analysis of existing relevant consumer research to identify potential themes for the consumer market research. This analysis identified a lack of research on the habits of 'high intensity' clothing shoppers, so this group was identified as the target respondents for our consumer research. An initial omnibus survey was therefore carried out on 14-15th June 2021 in the UK to identify the socio-demographic profile of a typical high intensity shopper. This survey was conducted online with a sample of 2,080 adults (18+) representative of the UK geographical and socio-demographic mix (i.e. age, gender, region, social class and ethnicity).

From this initial survey, we identified a profile and definition for high intensity shoppers in the UK: individuals who shop for clothes, shoes and/or accessories (in-store or online) at least once a month and who purchase two or more items per month. This group is typically younger and has a higher proportion of females than the UK national average population.

Using the findings from our initial desk-based research, a quantitative consumer insights survey was designed for high intensity shoppers to understand existing behaviours, how these related to the target state and the receptiveness of this group to potential new models of clothing purchase, consumption and disposal. The survey was conducted on 2nd-5th July 2021 in the UK with a non-representative sample of 1020 adults (18+). All respondents were pre-screened to ensure that they met the definition of a high intensity shopper.

In addition to assessing current behaviours and receptivity, the survey aimed to identify whether there were core characteristics of the high intensity shopping audience that ran particularly in opposition to circular behaviours, or that suggested a greater predisposition to take part in circular activities.

### A1.4 Financial modelling

#### A1.4.1 What it covers

Based on the premise that in future, customers will embrace circular fashion options and purchase fewer new physical garments, what might this mean financially

for retailers, service providers and for customers? Our model sought to estimate the potential financial value that customers and other stakeholders may be able to recover from used garments in the future circular fashion ecosystem.

#### A1.4.2 How it works

The model assumed a mix of garment and service purchases by a typical clothing customer, to calculate a yearly average spend on fashion. Some items will last longer than a year, so we adjusted the spend estimates based on the average item lifespan.

Every year, garments will leave the customer's wardrobe for reuse, recycling and possibly to waste disposal destinations. Each has a value: positive for reuse and recycling, negative for disposal and destruction.

The model resulted in a range of values: the yearly customer spend, their annualised spend (i.e. their yearly spend adjusted to account for average item lifespan), and the downstream value recovered. These values were calculated for three scenarios based on business-as-usual and two potential future states, with each scenario assuming a different customer spend pattern for garment purchases (see model assumptions and outputs below for further details on the scenarios modelled and the types of fashion consumers these were applied to). The figure 'Financial modelling inputs and outputs' to the left summarises key model inputs and outputs and provides an example calculation for customer and downstream stakeholder recovery values.

#### A1.4.3 What is the basis for the data in the model?

Where our research identified consumption patterns and price points, these were used to sense check our model assumptions. For example, in the base user case, WRAP's research on clothing discard and disposal behaviours (WRAP, 2020) during lockdown was used to determine a disposal split and guide the output mix. Similarly, assumptions on price points were sense checked based on the professional judgment of industry representatives.

#### A 1.4.4 What do the outputs mean?

The model can be used to compare scenarios and to answer relevant questions about future markets. For example:

- Does the future circular system necessarily mean less revenue for sellers of goods and services?
- Does it necessarily cost more for customers?
- Do potential revenue streams exist for recyclers and reuse companies and organisations?

### A1.4.5 Assumptions in the modelling

#### Clothing types

Looking at two types of fashion consumers (an 'average' shopper and a 'high intensity' shopper), we modelled the transition of a customer moving from typical existing purchase behaviour to future circular behaviours. The types of product modelled are:

##### → Virtual

Garments that only exist online and are used for social media, avatars and gaming characters. An example is <https://www.thefabricant.com>.

##### → Pre-owned

Garments that were previously owned by another person: including those passed on by friends, purchased through online trading systems and those purchased in retail outlets such as vintage and charity stores. Buying a pre-owned garment is assumed to replace the need for a new one (this is not always the case but is an adequate assumption for the purposes of this indicative model).

##### → New - standard quality

New garments commonly available and with typical durability characteristics. It is an oversimplification to presume that high-street branded goods are all 'standard' durability as some are ultra-durable.

##### → New - high quality

Higher-quality, more durable garments.

##### → New - highest quality

The most durable garments. These are presumed here to be more expensive simply because they are designed and specified to have strong durability characteristics.

##### → Repair

Return of an existing garment to wearable condition through repair (either done by the owner or a professional repairer, including alteration). Repairing a garment is assumed to replace the need for buying a new one.

##### → Temporary access

Garments available on a temporary basis either through hire, rental or a capsule subscription system. Returned for others to use after a set time.

CUSTOMER GARMENT PURCHASE SCENARIOS

Type of garment	Current state scenario (% of annual purchases)	Interim state scenario	Target state scenario
Virtual	None	10%	15%
Pre-owned	10%	25%	25%
New - standard quality	70%	50%	30%
New - high quality	15%	10%	15%
New - highest quality	5%	5%	5%
Repair items	None	1 per year	2 per year
Temporary access	None	0	10%

Scenarios

The table above summarises the assumed splits of customer garment purchase behaviour under each scenario.

Uplift factors

We assume there are increases in the value of used garments and recycled materials for the interim and target state scenarios. These assumptions are estimates intended to signify the potential for value increase in those markets as the circular fashion economy evolves.

A1.4.6 Outputs

Average shoppers

‘Average’ shoppers are defined in the model as those shoppers who typically buy two fashion items per

month<sup>113, 114</sup>. The model outputs for these shoppers are summarised in the table below.

All cases assume that the customers still have access to 24 garments each year (an average of two items each month), but that the mix switches more towards pre-owned, repaired, hired and virtual garments and away from new garments as we transition to the more circular interim and target state scenarios.

These calculations show us how a circular fashion economy could influence finances across the system. There is only moderate change in the annual spend of customers, but there are significant differences in how much of that value is passed on and recovered by downstream industries including repairers, subscription/ services providers, and recyclers. Given that these

AVERAGE SHOPPERS

Scenario	New garments purchased by the customer each year	Total annual customer spend	Value recovered by customer (sold to reuse)	Value recovered downstream (repair, reuse and recycling, net of disposal)	Customer spend recovered through circularity (%)
Current state scenario	22	-£488	+£10	+£19	6%
Interim state scenario	16	-£524	+£65	+£36	19%
Target state scenario	12	-£520	+£61	+£161	43%

HIGH INTENSITY SHOPPERS

Scenario	New garments purchased by the customer each year	Total annual customer spend	Value recovered by customer (sold to reuse)	Value recovered downstream (repair, reuse and recycling, net of disposal)	Customer spend recovered through circularity (%)
Current state scenario	65	-£1,696	+£61	+£62	7%
Interim state scenario	47	-£1,768	+£233	+£107	19%
Target state scenario	36	-£2,088	+£322	+£422	36%

industries are likely to be closer to the end market in the UK, the opportunity for capturing more fashion value in the UK is significant. The net value to customers and downstream operators is highest in the most circular target state scenario.

High intensity shoppers

In our targeted consumer survey, we found that our high intensity shoppers group purchased, on average, three times more clothing and invested over three times more money on clothing than the national average. They are more inclined to buy pre-owned clothing (55% have purchased used clothing in the last six months vs. a national average of 31%) and over a third of them admit to ordering and wearing clothes before then returning them to retailers for a full refund (effectively using fashion retail businesses as free fashion libraries).

Because this group is already exhibiting many strong circular behaviours, we also modelled the three scenarios outlined above for these high intensity shoppers. We based this on the average number of monthly purchases reported amongst the respondents to our targeted quantitative consumer survey (six fashion items per month).

There is an increase in the total spend made by customers, predominantly due to assumptions about subscription service cost and uptake, but this is accompanied by a significant benefit in recovered value (through selling garments on for reuse or through trading them in). There is also substantial downstream value generated in reuse, repair, service, and recycling markets, much of which could be available to the UK through local service provision.

A1.4.7 Model assumptions and interpretation

As with all scenario-based modelling, the scenarios in this analysis are necessarily reliant on assumptions for certain inputs. Where we were able to collect necessary model inputs from desk-based research and our original consumer research, we have done so. However, some data points and projections in the model are based on estimates and professional judgement. None of the details within the scenarios can be predicted with precise accuracy, nor can the future uptake rates or price points for reuse, repair, subscription, and virtual services be guaranteed. In addition to those noted previously, key modelling assumptions include:

- The model assumes a range of durability types are available for new garments and that higher durability garments cost more without making assumptions about brand mix, categories or composition of the clothing purchased.
- Given challenges in predicting how customers will behave when the durability of their purchases improves, the model assumes that their wardrobes operate on a “one in, one out” basis - i.e. that they never reduce the quantity of clothing they have available.
- There is no clear data available on how the value of non-reusable clothing might increase once large-scale fibre-to-fibre recycling processes are established. The model has assumed an uplift in value.

Outputs should therefore be considered to provide a high-level indication of potential impacts rather than a precise or comprehensive prediction of future states.



# A2. The 30 stakeholder recommendations

## A2.1. Recommendations by Lead stakeholder and priority topic

The tables below set out the 30 stakeholder recommendations developed as part of this project. The first table lists recommendations in order of their appearance in the stakeholder actions and connections diagram while the second groups them by stakeholder type.

No. Lead stakeholder	Priority topic	Recommendation
1. Brands	Circular design	<b>Mainstreaming Circular design:</b> Brands to integrate circular design into core business strategy (including across all product lines) and work with academics, or other specialists, to deliver ongoing training on its principles to designers and key business functions, in line with the development of new technologies and end markets. This is in addition to continuing education and training on circular design for fashion students and independent designers.
2. Brands	Demand for recycled and renewable fibres	<b>Matching designs and reprocessing:</b> Brands to lead a multi-stakeholder industry initiative to map out the improvements needed to <ul style="list-style-type: none"><li>a) ensure that clothing designs are suitable for reprocessing;</li><li>b) ensure that recycled inputs meet the needs of design and creation, e.g. on choice, speed, and price; and</li><li>c) help companies identify, capture, and resell excess materials and products.</li></ul>
3. Reprocessors	Circular design	<b>Designing for reprocessing:</b> Reprocessors to orchestrate formal discussions with brands, designers and manufacturers on working together to achieve design suitable for disassembly and reprocessing. This should include the establishment of clear guidelines outlining what makes products recyclable without compromising on durability.
4. Brands	Circular design	<b>Adopting digital prototyping:</b> Brands to adopt digital prototyping to enable the visualisation of a complete product before it is physically built. This will facilitate the ‘designing out’ of waste. Academia must also work with brands to ensure that fashion students are being trained in the use of 3D digital prototyping software.

No. Lead stakeholder	Priority topic	Recommendation
5. Logistics providers	Enhanced identification and tracking	<b>Developing a digital tracking system:</b> Logistics providers to lead a multi-stakeholder initiative with brands, retailers, manufacturers and digital innovators aimed at developing a standardised industry framework for accessing item-specific information on provenance; materials; composition; social and environmental impact; and certifications. The initiative should include trials for introducing digital technologies (e.g. blockchain-supported intelligent labels, RFID or QR tags) at the earliest stages of the value chain to enable end-to-end traceability and transparency throughout an item’s lifecycle. The framework should be designed to aid the development of take-back schemes and the consequent increase in capacity of reverse logistics. It should also consider opportunities for incorporating Internet of Things (IoT) ecosystems, digital twins, and platforms for provision of services.
6. Digital innovators	Consumer empowerment	<b>Digitising garments:</b> Digital innovators to work with brands, retailers, and academia to continue researching and implementing technologies such as augmented reality (AR) and virtual reality (VR) to expand their use within the industry. These technologies allow consumers to ‘wear’ or try out products virtually through innovations such as biometrically-specific avatars and ‘digital skins’. This research should also include the ethical/privacy implications of such technologies and their role in the reselling of products.
7. Manufacturers	Ecosystem Modelling	<b>Supporting manufacturing in the UK:</b> Manufacturers to convene a multi-stakeholder initiative, including brands and government, to support and develop garment manufacturing in the UK. This initiative should focus on facilitating the fundamental conditions for: <ul style="list-style-type: none"><li>a) fair and decent work for all workers; and</li><li>b) the utilisation of recycled inputs for UK manufacturing.</li></ul> This should include research into the drivers of the success of certain UK retailers in expanding domestic manufacturing. The research should also aim to understand the capabilities, technology, capacity, and skills that the UK needs to develop within its infrastructure and workforce.
8. Brands	Circular and sharing business models	<b>Manufacturing and distributing clothing on demand:</b> Brands to work with manufacturers, logistics providers and digital innovators to develop and adopt technology that facilitates on-demand manufacturing and distribution. This means that only the exact quantity of goods needed is produced. Technologies that can be adopted to facilitate this include predictive analytics, which could be used to predict trends and consumer demand. Brands and logistics providers could also trial inventory models that enable shipping of small batches of new products and designs before quickly ramping up production if they prove popular.

No. Lead stakeholder	Priority topic	Recommendation
9. Manufacturers	Demand for recycled and renewable fibres	<b>Utilising supply chain textile waste materials:</b> Manufacturers and reproprocessors to convene a multi-stakeholder initiative, including brands and designers, to explore options for repurposing off-cuts and, more broadly, developing a centralised and accessible B2B market platform for trade in supply chain textiles and recycled materials. This platform should be made available to collectors, resellers, retailers, and brands.
10. Institutions, industry bodies and third sector	Consumer empowerment	<b>Educating for circularity:</b> Institutions, industry bodies and third sector to work with government to educate citizens on sustainability, regeneration, and circular economy principles in order to empower consumers to make informed choices. This work is key to raise the profile of environmental issues amongst consumers and deliver the mindset change needed. Developing educational resources and workshops that are suitable for all ages and levels of expertise is central to this. Such efforts could include, for example, the development of campaigns that advise citizens on how to best care for their clothes, including through use of repair and maintenance services.
11. Brands	Demand for recycled and renewable fibres	<b>Changing perceptions of recycled content:</b> Brands to collaborate with retailers to engage in consumer communications on the benefits and use of recycled content. This is important for high-end brands, where such materials may be seen as inferior and hence, problematic in terms of branding. Simultaneously, brands should work internally to change their perceptions of recycled content by engaging in educational activities. This includes working with academia to continue education and training on the benefits of recycled content for fashion students and independent designers.
12. Brands	Consumer empowerment	<b>Shifting consumer practices:</b> Shifting consumer practices: Brands to lead a multi- stakeholder initiative on how brands, retailers and logistics providers can encourage consumer practices that maximise the use and enjoyment of clothes. The initiative should include: <ul style="list-style-type: none"> <li>a) discussions on extending consumer use of clothing;</li> <li>b) encouraging consumers to see clothes as an investment;</li> <li>c) helping consumers to use a larger proportion of the existing items in their wardrobes;</li> <li>d) helping consumers to pass on their clothes through reuse and recycling channels; and</li> <li>e) working with logistics providers to improve the convenience of reverse logistics for consumers.</li> </ul>
13. Institutions, industry bodies and third sector	Consumer empowerment	<b>Formalising skills:</b> Institutions, industry bodies and third sector to convene a multi-stakeholder government-funded initiative which aims to formalise the skills of high street seamsters, dry cleaners, and repairers, among others, e.g. through the creation of educational courses within BTECs and

No. Lead stakeholder	Priority topic	Recommendation
		NVQs. This should form part of a concerted effort to grow the economy for clothing repair and maintenance. As part of this, the government should be responsible for quality assurance, accreditation and the reintroduction of teaching on repair and maintenance in secondary and tertiary education.
14. Brands	Circular and sharing business models	<b>Expanding brand repair and care services:</b> Brands to seek partnerships throughout the product lifecycle that help accelerate a transition to a circular or sharing business model. One such partnership could be with reverse logistics and repair providers to offer discounted repair services for own brand products at cost price. This would also ensure that repair data is fed back into design decisions to enable continuous product improvement. Working to provide such affordable and easy-to-access repair services will offer greater convenience to the consumer. Combined with the promise of repair in case of breakage, and the improved durability that would ultimately emerge from such schemes, this could incentivise consumers to shop with such companies.
15. Brands	Circular and sharing business models	<b>Expanding rental and subscription:</b> Brands to develop wide scale, convenient and cost-effective options for short-term clothing provision for consumers that seek or require a higher turnover of fashion or for cases where the consumer only requires an item for a few occasions. Consumers are already using rental/hire services. If their desire for engaging with the latest trends and designs can be met through rental, then the flow of lower quality new items can be reduced. Such rental and subscription models should be developed to ensure low-carbon logistics, packaging, and dry cleaning.
16. Brands	Circular and sharing business models	<b>Expanding product take-back and service provision:</b> Brands and retailers to adopt and scale circular economy innovations, such as take-back schemes that integrate sortation, recommerce, repair, and redesign. This has the potential to increase revenues whilst minimising the requirement for new products and materials. Such schemes could involve the provision of services aimed at the current user, such as appropriate garment care, repair and revitalisation, and styling and use options. Rather than reselling all collected clothing via charity outlets, items can undergo screening, repair, and resale via the appropriate outlets or can be collated for supply to reproprocessors when they have reached their genuine end of life. Logistics providers can also play a key role in providing the enhanced reverse logistics needed to enable a take-back model, including transport and storage space for collected items.
17. Brands	Circular and sharing business models	<b>Boosting recommerce:</b> Brands and retailers to actively engage in the development, marketing, and mainstreaming of recommerce for their products through existing channels and platforms and/or trial and launch their own resale



No. Lead stakeholder	Priority topic	Recommendation
		platforms. A significant barrier to consumers purchasing more used clothing is lack of availability of venues or sites that sell used clothing. The provision of clear advice on the potential resale value of items could also be a promising intervention for encouraging consumers to resell clothing themselves.
18. Collectors	Post-use ecosystem	<b>Developing systems for optimised recirculation:</b> Collectors to work with recommerce platform providers, brands and digital innovators to develop technological systems that ensure that used clothes are rerouted through integrated channels that maximise the life and utilisation of individual items. Through brands and platform providers collaborating, this could involve integration of information and photography from original product listings, providing the potential next user a view of the provenance and journey of individual garments. Expanding solutions for enhanced identification and tracking could facilitate this.
19. Government	Post-use ecosystem	<b>Standardising local authority collection systems:</b> Government to work with institutions, industry bodies and third sector to implement and improve kerbside textiles collection, sorting, and recycling. The priority here should be to achieve a reliable and standardised system across regions, considering both local government and private (tendered) waste treatment facilities. Such consistency will enable multiple benefits, including a single campaign of consistent messaging to all UK citizens. Additionally, successful business case development for further private sector infrastructure investment, using funds raised through the implementation of Extended Producer Responsibility (EPR).
20. Government	Innovation investment	<b>Investing in advanced sorting:</b> Government to convene multi-stakeholder initiatives, with brands and reproprocessors, to coordinate investment into new sorting technologies, such as near-infrared (NIR), and large-scale facilities for their use. Sorting technologies must be able to sort according to fibre composition and colour. They must also ensure that used clothing is appropriately pre-processed through cleaning, removal of hardware, and product disassembly.
21. Institutions, industry bodies and third sector	Sortation and Recycling	<b>Investing in upskilling for sortation and recycling:</b> Institutions, industry bodies and third sector to work with government on investing in, promoting and implementing the upskilling of workers to meet the emerging demand for sortation and recycling. As new sorting and recycling technologies are developed, there will be a need for technicians, technology developers, engineers and manual sorters, who will remain crucial for finer sorting even as automation increases. These changes will also require greater logistics expertise across the sector.

No. Lead stakeholder	Priority topic	Recommendation
22. Government	Innovation investment	<b>Financing emerging technologies:</b> Government to provide direct financial support for businesses developing technologies that enable closed-loop and regenerative recycling and related infrastructure. This will position the UK as a global leader in these technologies and ensure that uncertainty in policy direction does not restrict opportunities for private investment.
23. Government	Sortation and Recycling	<b>Scaling recycling:</b> Government to carry out a feasibility assessment and conduct a consultation for the phased scaling of open-loop, closed-loop and regenerative recycling within the UK. This should include: <ul style="list-style-type: none"> <li>a) developing a roadmap informed by industry, academic and civil society research into the system-wide environmental impacts of scaling chemical recycling; and</li> <li>b) exploring options for technical solutions that enable high value fibre-to-fibre recycling.</li> </ul> Scaling activities should take into consideration interlinkages with the transition to renewable energy within the UK.
24. Government	Policy and regulation	<b>Introducing an EPR scheme:</b> Government to implement an industry-led approach to Extended Producer Responsibility (EPR) legislation, that clearly incentivises brands, designers and retailers to go beyond the minimum standards for circular design and adopt circular business models. This EPR scheme should ensure that a guaranteed percentage of funds raised is invested into recycling infrastructure and repair services, thereby increasing the industry's investment potential and the potential profit margin achieved from recycled products.
25. Government	Policy and regulation	<b>Developing feedstock and label standards:</b> Government to develop: <ul style="list-style-type: none"> <li>a) feedstock standards for the textiles recycling industry; and</li> <li>b) label standards for ensuring accurate and standardised information for textile reproprocessors, manufacturers, and consumers.</li> </ul> Such standards should be included as part of an Extended Producer Responsibility scheme. As part of this standards development, definitions and processes for textile and non-textile recycling inputs should be standardised and clearer definitions of waste should be developed. Appropriate clothing design and the development of intelligent labels and product passports will be critical to ensuring optimised sorting downstream, requiring designers, logistics providers and digital innovators to be included in the development of standards and supporting technologies.

No. Lead stakeholder	Priority topic	Recommendation
26. Institutions, industry bodies and third sector	Ecosystem Modelling	<p><b>Modelling economic and material flows.</b> Institutions, industry bodies and third sector to lead a government-commissioned project dedicated to modelling the detailed economic and material flows of a future circular ecosystem for UK fashion. This would entail robust quantification of materials flows, for instance through Material Flows Analysis (MFA). The modelling should also assess the subsequent economic implications of these flows, including economic impacts on businesses in the post-use ecosystem.</p>
27. Government	Sortation and Recycling	<p><b>Modelling industry and innovation hubs:</b> Government to undertake a feasibility study, including economic and material flows modelling, for the development of centralised textiles circularity hubs that involve:</p> <ul style="list-style-type: none"> <li>a) co-location of R&amp;D facilities;</li> <li>b) advanced and large-scale sorting facilities;</li> <li>c) warehouses and outlets for recommerce and licenced upcycling;</li> <li>d) plants for reprocessing; and</li> <li>e) channels for the raw materials to feed into end markets, including UK textiles and garment manufacturing.</li> </ul>
28. Institutions, industry bodies and third sector	Policy and regulation	<p><b>Mainstreaming metrics for societal prosperity:</b> Institutions, industry bodies and third sector to convene a multi-stakeholder initiative to mainstream within the UK fashion ecosystem:</p> <ul style="list-style-type: none"> <li>a) alternative metrics for measuring business success; and</li> <li>b) alternative metrics for evaluating societal prosperity.</li> </ul> <p>This should include industry-wide training to ensure finance departments understand and appreciate metrics that go beyond the traditional financial models.</p>
29. Investors	Innovation investment	<p><b>Directing investment towards circular performance:</b> Investors to work with government and industry bodies to push businesses in the fashion industry to demonstrate clear strategies and action plans for transitioning to circular business models. As a part of this, investors should continue to embed circular economy principles in disclosure standards that go beyond traditional Environmental, Social and Governance (ESG) standards.</p>
30. Government	Innovation investment	<p><b>Providing grants and incubation:</b> Government to support innovation and R&amp;D by providing grants and technical support to start-ups and innovators who adopt circular business models. Such support should have the explicit aim to create world leading UK-based intellectual property and to help smaller companies compete with big brands.</p>



# A2.2 Recommendations in order of stakeholder

Stakeholder	As Lead	As Enabler
Academia	N/A	<div>1. Mainstreaming circular design</div> <div>4. Adopting digital prototyping</div> <div>6. Digitising garments</div> <div>10. Educating for circularity</div> <div>11. Changing perceptions of recycled content</div> <div>13. Formalising skills</div> <div>23. Scaling recycling</div> <div>27. Modelling industry and innovation hubs</div> <div>28. Mainstreaming metrics for societal prosperity</div>
Brands	<div>1. Mainstreaming circular design</div> <div>2. Matching designs and reprocessing</div> <div>4. Adopting digital prototyping</div> <div>8. Manufacturing and distributing clothes on demand</div> <div>11. Changing perceptions of recycled content</div> <div>12. Shifting consumer practices</div> <div>14. Expanding brand repair and care services</div> <div>15. Expanding rental and subscription</div> <div>16. Expanding product take-back and service provision</div> <div>17. Boosting recommerce</div>	<div>3. Designing for reprocessing</div> <div>5. Developing a digital tracking system</div> <div>6. Digitising garments</div> <div>7. Supporting manufacturing in the UK</div> <div>9. Utilising supply chain textile waste materials</div> <div>10. Educating for circularity</div> <div>13. Formalising skills</div> <div>18. Developing systems for optimised recirculation</div> <div>23. Scaling recycling</div> <div>24. Introducing an EPR scheme</div> <div>25. Developing feedstock and label standards</div> <div>26. Modelling ecosystem flows and economics</div> <div>27. Modelling industry and innovation hubs</div> <div>28. Mainstreaming metrics for societal prosperity</div> <div>29. Directing investment towards circular performance</div>

Stakeholder	As Lead	As Enabler
Collectors	<div>18. Developing systems for optimised recirculation</div>	<div>9. Utilising supply chain textile waste materials</div> <div>16. Expanding product take-back and service provision</div> <div>17. Boosting recommerce</div> <div>18. Developing systems for optimised recirculation</div> <div>19. Standardising local authority collection systems</div> <div>24. Introducing an EPR scheme</div> <div>26. Modelling ecosystem flows and economics</div> <div>27. Modelling industry and innovation hubs</div>
Designers	N/A	<div>1. Mainstreaming circular design</div> <div>2. Matching designs and reprocessing</div> <div>3. Designing for reprocessing</div> <div>4. Adopting digital prototyping</div> <div>5. Developing a digital tracking system</div> <div>6. Digitising garments</div> <div>9. Utilising supply chain textile waste materials</div> <div>11. Changing perceptions of recycled content</div> <div>26. Modelling ecosystem flows and economics</div>
Digital innovators	<div>6. Digitising garments</div>	<div>5. Developing a digital tracking system</div> <div>8. Manufacturing and distributing clothes on demand</div> <div>12. Shifting consumer practices</div> <div>14. Expanding brand repair and care services</div> <div>15. Expanding rental and subscription</div> <div>16. Expanding product take-back and service provision</div> <div>18. Developing systems for optimised recirculation</div>
Government	<div>19. Standardising local authority collection systems</div> <div>20. Investing in advanced sorting</div> <div>22. Financing emerging technologies</div> <div>23. Scaling recycling</div> <div>24. Introducing an EPR scheme</div> <div>25. Developing feedstock and label standards</div> <div>27. Modelling industry and innovation hubs</div> <div>30. Providing grants and incubation</div>	<div>1. Mainstreaming circular design</div> <div>7. Supporting manufacturing in the UK</div> <div>10. Educating for circularity</div> <div>11. Changing perceptions of recycled content</div> <div>12. Shifting consumer practices</div> <div>13. Formalising skills</div> <div>17. Boosting recommerce</div> <div>21. Investing in upskilling for sortation and recycling</div> <div>26. Modelling ecosystem flows and economics</div> <div>28. Mainstreaming metrics for societal prosperity</div> <div>29. Directing investment towards circular performance</div>

Stakeholder	As Lead	As Enabler
Institutions, industry bodies, and third sector	10. Educating for circularity	7. Supporting manufacturing in the UK
	13. Formalising skills	11. Changing perceptions of recycled content
	21. Investing in upskilling for sortation and recycling	19. Standardising local authority collection systems
	26. Modelling ecosystem flows and economics	20. Investing in advanced sorting
	28. Mainstreaming metrics for societal prosperity	23. Scaling recycling
		25. Developing feedstock and label standards
Investors	29. Directing investment towards circular performance	27. Modelling industry and innovation hubs
		29. Directing investment towards circular performance
		30. Providing grants and incubation
		8. Manufacturing and distributing clothes on demand
		13. Formalising skills
		18. Developing systems for optimised recirculation
Logistics providers	5. Developing a digital tracking system	19. Standardising local authority collection systems
		20. Investing in advanced sorting
		22. Financing emerging technologies
		28. Mainstreaming metrics for societal prosperity
		30. Providing grants and incubation
		8. Manufacturing and distributing clothes on demand
Manufacturers	7. Supporting manufacturing in the UK	9. Utilising supply chain textile waste materials
	9. Utilising supply chain textile waste materials	12. Shifting consumer practices
		14. Expanding brand repair and care services
		15. Expanding rental and subscription
		16. Expanding product take-back and service provision
		17. Boosting recommerce
	18. Developing systems for optimised recirculation	
	19. Standardising local authority collection systems	
	1. Mainstreaming circular design	
	2. Matching designs and reprocessing	
	3. Designing for reprocessing	
	4. Adopting digital prototyping	
	5. Developing a digital tracking system	
	6. Digitising garments	
	8. Manufacturing and distributing clothes on demand	
	24. Introducing an EPR scheme	
	25. Developing feedstock and label standards	
	27. Modelling industry and innovation hubs	
	29. Directing investment towards circular performance	

Stakeholder	As Lead	As Enabler
Reprocessors	3. Designing for reprocessing	2. Matching designs and reprocessing
		5. Developing a digital tracking system
		9. Utilising supply chain textile waste materials
		20. Investing in advanced sorting
		23. Scaling recycling
		24. Introducing an EPR scheme
		25. Developing feedstock and label standards
		26. Modelling ecosystem flows and economics
		27. Modelling industry and innovation hubs
Retailers	N/A	1. Mainstreaming circular design
		2. Matching designs and reprocessing
		5. Developing a digital tracking system
		6. Digitising garments
		8. Manufacturing and distributing clothes on demand
		14. Expanding brand repair and care services
		15. Expanding rental and subscription
		16. Expanding product take-back and service provision
		17. Boosting recommerce
		18. Developing systems for optimised recirculation
		24. Introducing an EPR scheme
		25. Developing feedstock and label standards
		26. Modelling ecosystem flows and economics
		28. Mainstreaming metrics for societal prosperity
		29. Directing investment towards circular performance



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