

# Background Research on the Fashion and Textile Sector (with particular reference to Cornwall)

## Challenges and Opportunities with reference to developing a Circular Economic Business Model

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## Market Challenges Preventing Circular Solution Implementation

Until recently, the fashion and textiles sector in Cornwall had limited access to art and design skills and specialisms. Recently, however, Falmouth University have introduced a [Masters course and PG Diploma in sustainable fashion](#), and the University of Exeter's EU funded project Future Focus has provided several work packages to support Cornish textile businesses, e.g. the Circular Textiles programme. These have been well received by those businesses that took part. Typical themes highlighted by businesses that took part referred to:

- understanding the processes required to run as a professional business, including setting up a website.
- establishing sales.
- working out how much stock to keep in.
- business administration and marketing – including how to develop a logical pricing strategy based on supply and production costs.
- and finding the right packaging products.

Thus enabling the businesses that took part to make a sustainable profit, improving their resilience and viability of their businesses. Unfortunately, the Future Focus project has now finished.

[Cultivate Cornwall CIC](#) delivers a range of projects aimed at implementing circular economy principles within the Cornish landscape. They are partnered with the University of Exeter, Upcycle Kernow, and the Lottery Community Fund in the delivery of [TEX Innovation](#), a project which is working to stimulate the growth of sustainable fashion in Cornwall. The project provides access to specialist equipment and skills support as well as peer-to-peer learning and networking opportunities.

However, although there is some continuing support in terms of formal learning opportunities and peer-to-peer learning through TeX Innovation, there is little in the way of the bespoke business research projects or workshops. As was demonstrated with Future Focus and other EU-funded projects, one of the key benefits of bespoke business research projects is in providing access to in depth academic knowledge and expertise to those without the time, inclination and/or resources available to them to access this via a more formal academic course such as the Masters in Sustainable Fashion provided by Falmouth University. Workshops provide access to industry experts and practical skills, bringing together businesses from a variety of backgrounds and fostering the conditions for peer-to-peer learning and support networks to flourish.

Another significant challenge facing the sector in Cornwall is the large number of sole traders, manufacturing at home on domestic machines, who need support in scaling up, both in terms of knowledge and expertise, and in terms of affordable access to funding and/or machinery. Increasing sole trader knowledge on topics such as how to work effectively with manufacturers, develop prototypes and successfully negotiate batch production has the potential to enable these micro-businesses to scale up.

A WRAP report from 2022 suggests that there is an emerging market for circular products and business models, though challenges remain<sup>1</sup>. These challenges are technical and behavioural. Businesses need to consider both how their products can be designed for circularity, and how existing behaviours that are receptive towards Circular Business Models (CBMs) can be built upon, and new habits created

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<sup>1</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.6.

amongst those less receptive or, indeed, ignorant of CBMs<sup>2</sup>. The report recognises both cost and monthly trends as key barriers to overcome if CBMs are to replace the more standard linear business model<sup>3</sup>. In particular, it highlights the need for connected thinking regarding both the design and marketing of circular fashion.

The report highlights some interesting 'next steps' to help overcome the market challenges facing CBMs and circular products. It suggests that change from linearity to circularity will be slow and businesses need to be aware that they are selling a concept as much as a product. Further, decisions at the design level need to be made to increase item longevity. Longevity can be further encouraged through increased customer awareness of how to care for and repair clothing<sup>4</sup>.

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<sup>2</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.6.

<sup>3</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.6.

<sup>4</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.6.

## Resource Efficiency Challenges

The linear business model is embedded within the fashion and textiles industry and an obstacle for the uptake of CBMs. There has been enormous growth in the industry in the early 21<sup>st</sup> Century, with the result that the average consumer now parts with a smaller percentage of their income than ever before<sup>5</sup> in exchange for 60% more items of clothing compared to 15 years ago. However, each item is only kept for half as long<sup>6</sup> as in previous years, may only be worn a handful of times and is often discarded long before it reaches its end-of-life<sup>7</sup>. According to the Waste and Resources Action Programme (WRAP), an estimated £140m's worth of clothing is sent to UK landfill sites each year.

This has been driven by the globalisation of both manufacture and demand, the advent of fast fashion and the rise of a growing middle class with an increased disposable income.<sup>8</sup> Globalisation of manufacturing in particular is perceived as an obstacle to the adoption of the circular economy at a regional level as SMEs are too small scale to influence change in the manufacturing practices of big factories – see *Salt and Gravel interview notes*.

According to the UN, the fashion and textiles industry is highly greenhouse gas intensive, and its emissions are estimated at between 2 to 8% of the global total. Much of its impact is due to its heavy reliance on raw materials, which is set to triple by 2050<sup>9</sup>. According to an article by the BBC<sup>10</sup>:

- cotton for the fashion industry uses 2.5% of the world's farmland.
- an estimated 342 million barrels of oil are required annually for the production of synthetic materials.
- 43 million tons of chemicals are used annually in production processes (such as dyeing).

Furthermore, the textiles sector uses a significant amount of water in the production of clothes. For example, a T-shirt takes 2700 litres of water to produce, a pair of jeans 10,000 litres and a pair of cotton socks 600 litres<sup>11</sup>.

In addition, the textile sector has been identified as a major contributor to plastic waste entering the ocean and concerns have been raised relating to dangerous working conditions including unsafe processes, hazardous substances, long working hours and low pay<sup>12</sup>.

A report published by WRAP in 2022 suggests there are several barriers for the uptake of CBMs, which offer solutions to the above listed problems within the fashion and textile industry. The barriers can

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<sup>5</sup> The Economist, fashion as an asset class, 18 December 2021, [Fashion as an asset class | The Economist](#)

<sup>6</sup> UNECE, UN Alliance aims to put fashion on path to sustainability, 12 July 2018, [UN Alliance aims to put fashion on path to sustainability | UNECE](#)

<sup>7</sup> The Economist, fashion as an asset class, 18 December 2021, [Fashion as an asset class | The Economist](#)

<sup>8</sup> Ellen MacArthur Foundation, A New Textiles Economy: Redesigning fashion's future, November 2017, [A New Textiles Economy: Redesigning Fashion's Future \(ellenmacarthurfoundation.org\)](#)

<sup>9</sup> WRAP, sustainable fashion, and textiles, [Textiles | WRAP](#)

<sup>10</sup> BBC News, Esme Stallard, Fast fashion: How clothes are linked to climate change, 29 July 2022, [Fast fashion: How clothes are linked to climate change - BBC News](#)

<sup>11</sup> BBC News, Esme Stallard, Fast fashion: How clothes are linked to climate change, 29 July 2022, [Fast fashion: How clothes are linked to climate change - BBC News](#)

<sup>12</sup> UNECE, UN Alliance aims to put fashion on path to sustainability, 12 July 2018, [UN Alliance aims to put fashion on path to sustainability | UNECE](#)

be classified in two ways. The first is psychological, which WRAP describes as linked to “self-identity” with CBMs being seen as “not really me”<sup>13</sup>. The second is practical and WRAP lists the following:

- cost associated with repair, upcycled and subscription models.
- concerns over the fit/size of or damage caused to items associated with rental and subscription models.
- fit/size/condition of, and difficulty returning items associated with pre-loved and upcycled models.
- and concern over the fit/look of repaired items<sup>14</sup>.

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<sup>13</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.5.

<sup>14</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.5.

## Key Opportunities for Reuse of Textile Waste

There are several businesses already in operation which recycle (**R8** – process materials to obtain the same or lower quality<sup>15</sup>) plastic textiles – see separate *Contact sheet for EVA*. Further, recent research – see Future Focus 2's *Techneopro Report* – highlights potential solutions for the particularly problematic neoprene waste generated by its use in the leisure and healthcare industries. These either involve recycling or repurposing, e.g., using scraps as filling material, or granulating/ shredding to create a crumb that can be repurposed. There are several interesting follow up suggestions from the report, it is not known if they have been acted upon.

There are some exciting new developments to repurpose (**R7** – use discarded product or its parts in a new product with a different function<sup>16</sup>) plastic textile waste. Dr Suzy Moody (Kingston University London) is experimenting with using fungi to grow on 'waste' textiles<sup>17</sup> to metabolise azo dyes, break down plastic fibres, and produce a crop. (Dr Moody has had success with the first two in the laboratory and is working on the third – a change in laboratory conditions is required to facilitate this.) Obviously, there are more traditional ways to repurpose textile waste. The Future Focus 2 report *Square Stories: Reducing textile waste through quilting* presents a more mainstream use for textile waste with leftover, scrap and used fabrics being stitched together and filled with a 'soft substance' to create a quilt.

A 2022 WRAP report, suggests almost three in five UK citizens (59%) say they go to a lot of effort to maintain their clothes, compared to 41% who do not. A similar proportion (57%) say that they look for ways to repair damaged items<sup>18</sup>. This demonstrates that repairing textiles (**R4** – repair and maintenance of defective product so it can be used with its original function<sup>19</sup>) is prevalent in the UK – an encouraging statistic.

Where direct comparisons are possible with WRAP's 2013 research, the results indicate that predicted longevity of clothing items has also increased. For example, the wear-expectancy of jeans has increased from 3.1 years in 2013 to 4.1 years in 2021, dresses 3.8 vs. 4.6 years, and T-shirts/polo shirts/jersey tops 3.3 vs. 4.0 years<sup>20</sup>. Encouragingly, items purchased second hand/vintage have a higher estimated longevity than items purchased new: 5.4 years compared to 4.0 years<sup>21</sup>. Furthermore,

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<sup>15</sup> Kirchherr, J., Reike, D., & Hekkert, M. P. (2017). Conceptualizing the Circular Economy: An analysis of 114 definitions. Social Science Research Network. <https://doi.org/10.2139/ssrn.3037579>. P.4.

<sup>16</sup> Kirchherr, J., Reike, D., & Hekkert, M. P. (2017). Conceptualizing the Circular Economy: An analysis of 114 definitions. Social Science Research Network. <https://doi.org/10.2139/ssrn.3037579>. P.4.

<sup>17</sup> Moody, S. 2023. Circular Solutions for Nature and the Economy [Webinar]. [Online]. CE Hub, University of Exeter, 20 July 2023.

<sup>18</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.3.

<sup>19</sup> Kirchherr, J., Reike, D., & Hekkert, M. P. (2017). Conceptualizing the Circular Economy: An analysis of 114 definitions. Social Science Research Network. <https://doi.org/10.2139/ssrn.3037579>. P.4.

<sup>20</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.4.

<sup>21</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.4.

there is a strong association between longevity and repair – with the results suggesting that on average a repair adds 1.3 years to the life of a garment<sup>22</sup>.

The same report found that just over half (54%) of UK citizens say they are happy to purchase second hand/vintage, compared to 46% who say they deserve better. Women are more comfortable with second hand than men; and those aged 65+ are least comfortable<sup>23</sup>. Indicating that reusing textiles (**R3** – reuse by another consumer of a discarded product still in good condition and fulfils its original function<sup>24</sup>) is a popular option amongst the UK population.

CBMs are gaining traction, especially with pre-loved clothing, e.g., 40% of WRAP's sample stated that they are aware of CBMs, and 19% stated that they had already purchased pre-loved items<sup>25</sup>. Repair and subscription models are less utilised, recognised by 20% and 23% of participants respectively, and used by c.10%<sup>26</sup>. Yet WRAP reports that there is a growing attraction towards CBMs, with 40% of UK citizens suggesting that they would use a subscription service and 58% would use a repair service<sup>27</sup>. This percentage is higher amongst younger people and high frequency/spend shoppers. A key attraction for CBMs is the lower costs involved. This applies to pre-loved, rental, upcycled and repair CBMs. For example, it is seen as a cost-effective way to access well-known brands, whilst also reducing both the customer's and industry's environmental impact<sup>28</sup>. WRAP's findings are supported by other market research reports, e.g., Mintel's Fashion & Sustainability, UK – 2022 report suggests Gen Z and Millennial consumers are becoming more aware of sustainability issues and the four R's: rewear, repair, resell, and recycle<sup>29</sup>.

Other business models that are not necessarily circular in nature but are relevant in facilitating a more efficient fashion and textile business are the Agile, Lean, and Just-In-Time models. Each challenges traditional business models in different ways and by so doing encourages a more innovative approach, perhaps creating a mindset more receptive to embracing circularity over linearity. The Agile model requires both a highly skilled and empowered workforce within a simplified organisation that can react

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<sup>22</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.4.

<sup>23</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.3.

<sup>24</sup> Kirchherr, J., Reike, D., & Hekkert, M. P. (2017). Conceptualizing the Circular Economy: An analysis of 114 definitions. Social Science Research Network. <https://doi.org/10.2139/ssrn.3037579>. P.4.

<sup>25</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.5.

<sup>26</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.5.

<sup>27</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.5.

<sup>28</sup> Citizen Insights: Clothing Longevity and Circular Business Models Receptivity in the UK. (n.d.). WRAP. <https://wrap.org.uk/resources/report/citizen-insights-clothing-longevity-and-circular-business-models-receptivity-uk>. P.5.

<sup>29</sup> Mintel Group Ltd. (2022). EXECUTIVE SUMMARY FASHION & SUSTAINABILITY UK, 2022. In <https://www.mintel.com/>. P.4.

quickly in the face of business (and by extension social and environmental) challenges<sup>30</sup>. Lean business models seek efficiency in time through shortening product development cycles, emphasising customer feedback, and placing flexibility over planning at the heart of its model<sup>31</sup>. The Just-In-Time business model is particularly good for reducing waste as the goods a business produces directly aligns with the business's order book – no surplus or extra goods are stock-piled that could become waste either by manufacturing too many products, supplying too many goods, or using up raw materials that may not be necessary to fulfil the business's orders<sup>32</sup>. Each of these three business models help with efficiency gains, waste reduction, and business resilience and viability; however, none are explicitly circular in nature and can be applied just as effectively to the presently dominant linear economic system.

The UK's Circular Textiles Foundation (CTF), which works closely with WRAP, encourages the fashion and textiles industry to embrace the circular economy, in particular to go beyond just switching to using recycled materials to ensure that garments are fully recyclable at end of use. To facilitate this, the CTF identified the need for fibre-to-fibre recycling technologies. Thus, the CTF have developed Project Plan B fibre to fibre mechanical extrusion technology, with the aim to guide brands and manufacturers to design clothing that is fully recyclable back into clothing. This aligns with Kirchherr et al's circular economy strategy **R6** (use parts of a discarded product in a new product with the same function<sup>33</sup>). They are working with numerous environmentally conscious brands to facilitate this practice<sup>34</sup>.

In Cornwall, Finisterre have recently launched the first-ever Yulex LLC Wetsuit Rental Programme<sup>35</sup>. Yulex wetsuits are a clean alternative to the more commonly used neoprene wetsuits. However, Yulex is harder to come by and more expensive, so Finisterre are hoping that the rental model will both overcome the immediate cost barriers and start to encourage demand for Yulex over neoprene thus bringing down costs in the long term, as well as providing a solution to the environmental problem of using neoprene, which is Petro-chemical based and difficult to reuse at its end-of-life (see Future Focus 2's *Techneopro Report*).

Finisterre and Yulex are not alone in trialling more circular and environmentally friendly alternatives. H&M have trialled the use of a plant-based leather; Puma have tested a biodegradable version of its Suede shoe style; Timberland have designed circular footwear (a removable and easily disassembled outsole, and a removable inner made of 100% recycled plastic ReBotl™ fabric); Zalando are designing products so that they can be recycled or regenerated into new items or materials when they reach their end of life.<sup>36</sup>

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<sup>30</sup> Coker, K. (2022, September 23). Agility: The Business Model Of Today. Forbes.

<https://www.forbes.com/sites/forbesbusinesscouncil/2022/09/23/agility-the-business-model-of-today/?sh=5f655def4269>.

<sup>31</sup> Blank, S. (2022, January 3). Why the Lean Start-Up Changes Everything. Harvard Business Review.

<https://hbr.org/2013/05/why-the-lean-start-up-changes-everything>.

<sup>32</sup> Demir, S., & Paksoy, T. (2023). Just-in-Time and lean management. In CRC Press eBooks (pp. 223–236).

<https://doi.org/10.1201/9781003180302-11>.

<sup>33</sup> Kirchherr, J., Reike, D., & Hekkert, M. P. (2017). Conceptualizing the Circular Economy: An analysis of 114 definitions. Social Science Research Network. <https://doi.org/10.2139/ssrn.3037579>. P.4.

<sup>34</sup> Circular Textiles Foundation. (n.d.). [https://circulartextilesfoundation.co.uk/-](https://circulartextilesfoundation.co.uk/)

<sup>35</sup> Yulex® Wetsuit Rental | Rent, Wear, Return | Finisterre. (n.d.). Finisterre.

<https://finisterre.com/collections/finisterre-wetsuit-rental>

<sup>36</sup> Mintel Group Ltd. (2022). EXECUTIVE SUMMARY FASHION & SUSTAINABILITY UK, 2022. In

<https://www.mintel.com/>. P.3-5.



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