Support Report Mapping Sustainable Fashion Opportunities for SMES

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May 2019

EUROPEAN COMMISSION

Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
Directorate F — Innovation and Advanced Manufacturing
Unit GROWF.4 — Tourism, Emerging and Creative Industries

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European Commission
B-1049 Brussels

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2019

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Luxembourg: Publications Office of the European Union, 2019

ISBN 978-92-79-99648-1
Two: 10.2873/694021

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EXECUTIVE SUMMARY

Overview

As identified in the COP 2015 Paris Agreement there is an urgent imperative for global efforts to tackle climate change and environmental damage from major industrial activities. This report supports this process in the European textiles, fashion and footwear sector, a major industry providing employment for nearly 1.7million people across the EU in approximately 176,000 businesses. These are mainly small businesses with less than 50 employees, representing 90% of the overall workforce. Small and micro businesses (with less than 10 employees) are recognized as key players in change-making for the industry, due to their agility and overall control of their operations. Here we focus on the potential for SMEs to adopt more sustainable business models and embrace the circular economy, and the key enabling factors.

This report maps many current initiatives and key organisations operating in sustainable fashion and textiles across Europe and provides an overview of the opportunities for and challenges hindering the adoption of environmentally and economically sustainable business models in the fashion sector. It also identifies key enablers that will assist in the transformation towards a circular economy. With a special focus on designers, start-ups and SMEs, the report provides 12 case studies drawn from 9 member states as exemplars of best practice, to encourage sustainability throughout all stages of the fashion value chain from design and production, to services and end-of-life solutions. These include: new fibre development and materials recycling (Orange Fiber, Ecoalf, re:newcell); design and manufacture of fashion products and accessories using a range of sustainable, recycled and upcycled materials (Elvis & Kresse, VEJA, REDU, Rifò, MUD Jeans, Stanley/Stella); retail customer services including repair and take back (MUD Jeans, Elvis & Kresse), new clothes sharing and reselling business models (The Nu Wardrobe), software systems for on-demand fashion production (Unmade), plus a consumer and industry facing campaign for positive action and education for a more transparent and sustainable fashion system (Fashion Revolution). Within each case study comparator businesses have also been identified, working around particular business models, sub-sectors or practices that may use a different assortment of sustainable or circular activities.

The research has compiled a cross-Europe database of over 400 entries segmented into three main categories in relation to sustainable/circular practices: 1) Fashion Brands/Designers, 2) Materials, Technology and Recycling Organisations, 3) Supporting Organisations. The latter category 3) comprises a range of different types of players, providing a wide range of support for SMEs – these cover *Fashion/textiles Networks, Sustainable Fashion Networks, Trade Associations, Business Support Organisations, NGOs/Campaigns, Consultancies* and *Education and/or Research Organisations.* This data is presented as a table in Annex 7.2 and geographical visualisations in section 3.2.

Key Findings: challenges and opportunities for fashion SMEs to engage with sustainability and the circular economy.

Findings have been triangulated across the three elements of the research process:

- literature review and desk research;
- 43 interviews with industry and academic experts across 28 EU countries with a minimum of 1 in each country and between 2 and 4 interviews in 25% of countries;
- 12 exemplar case studies comprising 11 businesses working with sustainable practices and circularity across the textiles and fashion value chain, and 1 campaign organization.

Emerging trends within sustainable fashion activities have been identified as follows:

Changing consumer attitudes: A shift towards a new values-led consumerism and away from possessions to experiences and sharing, rather than owning. This is particularly evident in the younger generations of millennials and Gen Z, who are passionate about social and environmental issues.
Extending clothing lifetimes: Longer active life is now considered the most effective way of improving the sustainability of clothing (WRAP, 2017) when also accompanied by a reduction in purchase of new items.
Clothes Sharing: The new 'sharing economy' that has disrupted other sectors (car hire, accommodation) is emerging strongly in fashion, with new business models for reuse, collective use, rental and prolonged life of clothes indicating a growth in the market for pre-owned clothing.
Digital technologies, customisation and Fashion on Demand: Digital technology is enabling new business models based on personalisation and customisation of clothing and footwear and significantly, demand-led production. It also enables the sharing economy to be extended to fashion via online platforms for rental and reselling.
"FashionTech" or "Wearables" - integration of technology and/or electronic components into clothing and accessories for enhanced functionality or monitoring – is a significant emerging trend, but one that urgently needs a design for sustainability approach.

Advantages and opportunities recognized by fashion SMEs working with sustainability include: 1) opportunity to achieve sustainability vision and impact through creative entrepreneurship; 2) freedom in decision making and ability to control strategic direction and develop relationships with suppliers; 3) flexibility to test ideas and experiment with materials and business models; 4) exploring design–driven innovation for environmental, social, cultural and economic sustainability; 5) enabling first mover advantage through sustainability; 6) positive engagement with customers, suppliers and community.

Key challenges for fashion SMEs working with sustainability include:1) Competition from high volume/low price corporations, particularly on costs of materials and labour, meeting minimum fabric quantities; 2) access to showcases and responsive markets; 3) consumer awareness to facilitate scaling up of 'niche' businesses; 4) lack of appropriate finance and grants, including repayable finance and patient capital; 5) technical challenges such as access to design tools and sustainable (eg recycled) materials; 6) establishing full supply-chain transparency.

Exemplar cases studies – highlights

Case studies selected cover different stages of the textiles and fashion value chain and engage in a broad range of sustainability practices. The fashion cases range from startup and micro businesses (**RiFò, REDU**) to a large volume leisurewear manufacturer (**Stanley/Stella**); the challenges at each scale of business are evident from struggling to finance the enterprise to maintaining oversight and quality control of even a limited scale supply chain. The development of truly circular textile systems requires the transformation of used and waste textiles into new textiles and products of equal or higher value. **Re:newcell** achieves true textile to textile circularity by chemical recycling of cotton and viscose textile waste into new cellulosic fibre of the same quality as virgin fibre. Their focus is now on scaling up beyond their pilot plant to impact the sector. **Ecoalf** recovers and upcycles ocean plastics and collaborates with recycling companies to develop high quality polymer textiles for new outdoor clothing. However, consumer perceptions of recycled materials can still be somewhat negative. Several case studies demonstrate product ideas to overcome this: **RiFò**, **MUD Jeans**, **REDU**, **Elvis & Kresse** and **VEJA** reuse and upcycle textile or leather waste from the fashion industry into new fashion products. MUD Jeans use between 23% and 40% recycled post-consumer denim from used jeans in their new jeans, and RiFò use 100% post-consumer recycled cashmere (a high value material) for their new cashmere knitwear and 100% post-

consumer recycled denim made into yarn for their unique denim knitwear. REDU operate as a social enterprise to engage with job creation and community issues through upcycling waste textiles. Three businesses, **Elvis & Kresse**, **Ecoalf** and **Orange Fiber** repurpose waste from different industry sectors (fire hose and parachutes, plastic waste, citrus juice waste) into textiles and fashion to transform a useless waste product into a material or product with new higher value. Exemplifying the growing trend for sharing and renting to extend the use-life of clothing, **The Nu Wardrobe** demonstrates the model of a peer-to-peer collaborative consumption platform aimed at students and graduates, developed from clothes swapping events. This and other businesses, including Unmade, benefited from support from an incubator organisation at the start. **Unmade** is a technology service company that has developed B2B software systems enabling customised small batch manufacturing, achieving a form of mass customisation, where nothing is produced until ordered in advance by customers – a new paradigm of fashion on demand. The final case study features a campaign organization **Fashion Revolution** whose successful and simple message "who made my clothes?" has spread globally to 90 countries to raise awareness of the realities of the mass market fashion industry, with a focus on garment workers, social justice and transparency, exemplifying how key sustainability messages can be translated across cultures and geographies.

Key enablers to support SMEs to adopt sustainable/circular business models

The findings from interviews and case studies indicate a range of key enablers including:

economic instruments

- tax incentives, grants and subsidies for sustainable initiatives
- carbon taxes and penalties for non-sustainable operations
- appropriate finance and grants, including repayable finance and patient capital

information flows

- improving textiles collection and recycling statistics and reporting
- creating knowledge and resource sharing platforms and networks connecting sustainable businesses with suppliers, markets and funding opportunities
- education for sustainability
- public information campaigns

regulatory instruments/policy

- creating clear end-of-waste criteria for textiles to facilitate upcycling of waste
- mandatory EPR Schemes
- harmonising regulations across EU and removing administrative barriers

technological developments

- access to design and manufacturing tools
- information on and access to emerging R&D e.g into recycling

collaboration and mentoring schemes

- enhanced collaboration of small and larger players
- alignment of values across the supply chain
- dedicated mentoring for fashion start-ups

Conclusions

To close the loop in materials the implementation of **infrastructure related to clothing and textiles end of life** needs to be accelerated and distributed at all industry levels and importantly at retail for the consumer to easily engage, and to enable clothing second/third life. Knowledge and resource sharing and alignment of values across the supply chain are needed for truly circular material flows. **Definitions of textile waste** need to be refined to enable more use of waste textiles by SMEs wishing to upcycle textiles.

SMEs need to be supported in their business and sustainability endeavours, **supporting infrastructure** is inconsistent across EU countries. **Mentoring** and role models are

needed for capacity building, plus easy access to information and tools for self-evaluation.
Circularity must be matched with reduced consumption and consumers educated.

1. INTRODUCTION

1.1 Introduction

As Europe seeks to tackle climate change and environmental damage from textiles, fashion and footwear, there are a number of innovative approaches that illustrate how the future of fashion can be more sustainable in these terms**.** This report provides an overview of current activities and key initiatives and players in sustainable fashion and textiles across Europe. Small and medium sized businesses (SMEs) make up the majority of businesses in the fashion sector and are recognized as key players in change-making. This report offers an overview of the opportunities for, challenges to and obstacles hindering the adoption of environmentally and economically sustainable business models by SMEs in the fashion sector.

The fashion sector comprises clothing, footwear and accessories of which key components are textiles (natural and man-made) and leather. The textile sector refers to the production of yarn and fabrics while the clothing industry (also known as the garment/apparel/fashion industry) refers to the production of garments, with the fashion industry also including shoes, bags, jewellery and other accessories (European Commission, 2017). In addition, the fashion industry also comprises less tangible elements including promotion, sales and servicing of fashion products. As required by the tender document, the report takes as its key focus the environmental impact of the fashion industry's supply chain. Although social justice issues are inevitably bound up in the fashion value chain, these important factors, well documented elsewhere, are beyond the subject of enquiry in the primary and secondary research.

The scale of the opportunity is substantial due to the size of the fashion industry across Europe. Based on the latest available data from 2017, the EU textile and clothing sector is estimated to directly employ nearly 1.7 million people, in over 175,000 companies, with a turnover of EUR 181 billion (Statista, 2017). The sector is largely comprised of small businesses with less than 50 employees. These represent 90% of the overall workforce (Ibid). Despite shrinking overall employment levels in the sector, the European Skills Council estimated up to 600,000 jobs becoming available across the EU textile and fashion sector up to 2025, taking into account those leaving the industry through retirement and other factors (European Skills Council, 2014)[1].

Our approach builds upon the expertise and knowledge of four academic partners across three EU countries, together with results of prior research from EU initiatives. The research is structured into three tasks:

1. Desk Research: review of literature, initiatives, relevant players and funding opportunities to support the adoption of sustainable and circular business models.

[1] For an overview of employment trends in the sector since 2009 see also https://www.statista.com/statistics/417725/eu-european-union-textile-clothing-industry-employment-by-segment/

2. Mapping the Opportunities: Triangulating and extending the desk research by interviewing sustainability experts in industry and academia from across the EU member states, generating further recommendations.
3. Developing 12 exemplar Case Studies relating to findings from 1 and 2.

1.2 Objectives

- To map the opportunities and obstacles for small companies (especially designers, start-ups and SMEs) in the fashion industry to invest in and adopt sustainable business models and practices throughout different stages of the value chain.
- To provide 12 exemplar case studies of best practice to improve sustainability throughout different stages of the fashion value chain, especially as regards SMEs.

1.3 Methodology

Our approach involved four main stages to address the three tasks and build a knowledge base cumulatively and iteratively:

- Firstly, a desk-based literature and evidence review and gap analysis identified the opportunities and challenges/obstacles for EU small companies - with particular emphasis on designers, start-ups and SMEs across the fashion value chain - to adopt sustainable/circular solutions for reducing environmental impact. This review was based on existing academic literature, industry reports, and both current and previous EU research and enterprise initiatives, building also on the team's knowledge and experience. **(Task 1, Section 2)**
- In the second stage, based on the desk research, the team's knowledge and networks, and referrals from contacts, we identified and invited 43 experts in sustainability and/or fashion within both industry and academia, drawn from across the 28 EU member states, to participate in a survey of expert opinions. This comprised a minimum of one expert per country and between 2 and 4 in 25% of the member states. Semi-structured qualitative interviews were undertaken either online or by telephone, recorded and summarised. Both stages of the research informed the creation of a comprehensive database of current initiatives, key players, supporting organisations and funding schemes that either exemplify or support SMEs adopting sustainable and circular business models. This database was thematically structured to represent the different types of organisations within the ecosystem and has been visualised in a geographical mapping giving a snapshot of relative levels of activity according to the triangulated findings. **(Task 2, Section 3)**
- The results from the expert survey and mapping flowed into stage three where we reviewed our preliminary list of potential exemplar businesses. Based on the breadth and range of their actions towards sustainability and circularity, and fashion industry segment, we selected 12 relevant case studies from 9 member states across the European Union to study in-depth. The cases have been compiled from new interviews conducted with key representatives of each selected organization, together with a range of published sources. These case studies cover all parts of the circular fashion value chain – design, production, services, marketing, retail and end of use/life. **(Task 3, Section 4)**

- In the final stage, the findings from the desk-based evidence review, gap analysis, our survey of expert opinions and exemplar case-studies have been integrated to inform the final report mapping the opportunities, obstacles, key players and initiatives and good practice for SMEs to embrace sustainability and circularity in fashion. **(Task 3, Section 5)**

The research was conducted over a limited period of five months, and sometimes constrained by pragmatic considerations such as interviewees availability. Therefore the research could not aim to be exhaustive, but the results are as comprehensive as the timeframe allowed, giving an indicative snapshot of the EU landscape regarding activity towards sustainability and circularity in the fashion and textile sector. Contextual elements including emerging trends and shifts in consumer behaviour and attitudes to environmental issues, identified through the desk research and expert interviews, have also informed the report.

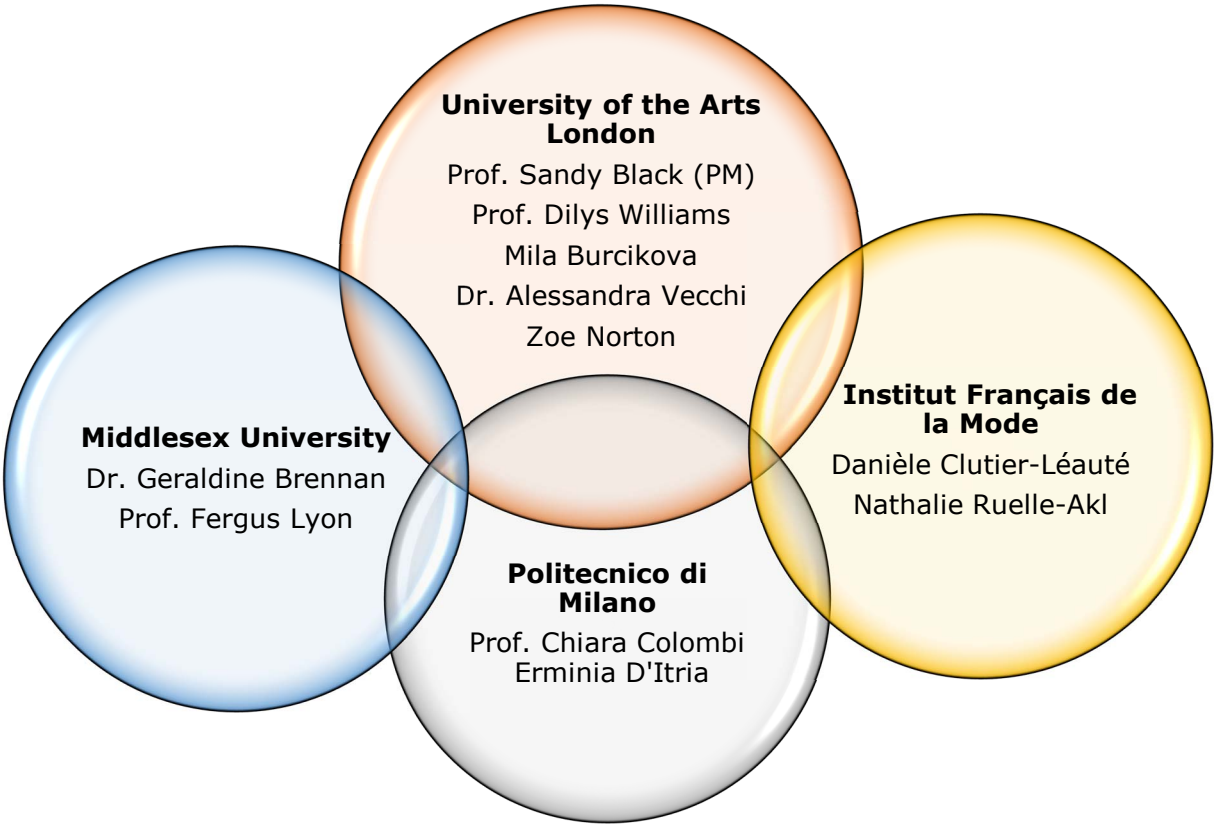
The scope of the research covered all the EU 28 countries in order to obtain a comprehensive overview of sustainability-focused initiatives and current activity. However, attention has been especially focused on the 10 countries most active in the textiles and fashion industry that represent 80% of the EU population, namely: **Austria, Belgium, France, Germany, Italy, Poland, Portugal, Romania, Spain and UK** together with 4 additional countries active in developing the fashion and sustainability agenda: **Denmark, Finland, The Netherlands and Sweden**. The 12 case studies cover 9 countries, with reference to further examples included in most cases, for comparative purposes.

Note: We have for convenience in discussion utilised the UN M49 subdivision of 28 EU member states into 4 groups as follows:

- **Northern Europe**: Denmark, Finland, Ireland, Sweden, UK
- **Central/Western Europe**: Austria, Belgium, France, Germany, Luxembourg, The Netherlands
- **Southern Europe**: Cyprus, Greece, Italy, Malta, Portugal, Spain
- **Eastern Europe** (Countries of the former Eastern Bloc): Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia

1.4 Expert Team

The team comprised people with deep and broad expertise in fashion, textiles and sustainability, entrepreneurship and SMEs and alternative business models for circular economy. The experienced Project Manager, Prof. Sandy Black, with a strong background in leading research activities in the area of fashion sustainability, was supported by a core team with experience in performing consultancy in the fashion sustainability field, across the fashion value chain and in collaboration with research and policy specialists.



Acknowledgements

Prof. Sandy Black would like to thank all the team members mentioned above for their contributions to this research and report, and particularly the support of Geraldine Brennan, Mila Burcikova and Zoe Norton. Many thanks in addition to the research management team at UAL, led by Nicola Dorigo Salamon, for continued support throughout the development and delivery of the project. Special thanks are due to all the interviewees who gave freely of their time to enrich our research, either as country-based experts from academia and industry, or senior representatives from the case study businesses whose experiences benefit the sector overall. Finally, thanks to the officers at European Commission DG GROW for the constructive collaboration.

2. OPPORTUNITIES AND CHALLENGES FOR SUSTAINABLE FASHION – DESK RESEARCH

2.1 Introduction

This section summarises the findings from the review of the academic and grey literature on SMEs, and the results collated from recent studies funded by the EU and others, in particular those studies most involved with and relevant to the fashion and textiles sector, such as MISTRA Future Fashion in Sweden, Trash-2-Cash and including current projects in progress for example TCBL (Textiles and Clothing Business Labs) and Worth. *(please see Annex 7.4 for a detailed overview of funded initiatives, their main focus, aims and results).* Many findings in the literature are triangulated by our expert interviews, as noted in some of the following sections. *(see Section 3* and Annex 7.1*)*

Our analysis of the literature comprises an overview of the sector, key emerging trends, the challenges and obstacles hindering the adoption of sustainable/circular business models and practices by SMEs, designers and start-ups, and opportunities for SMEs to become more sustainable and circular in their practices. In addition, we identify a number of incentives and enablers of transition to sustainable practices in fashion production and consumption, including policy drivers and recommendations.

2.2 Overview of the sector

With the huge environmental impact and scale of the existing fashion industry, there are considerable benefits in making the fashion industry more sustainable. In addition to the moral imperative to tackle this environmental pollution, there are significant costs to economies and societies from the pollution caused. This provides a financial opportunity for creating a more sustainable and circular fashion system. The estimated overall benefit to the world economy until 2030 if environmental and social externalities were addressed by the fashion sector could be as much as EUR 160 billion every year (Global Fashion Agenda & Boston Consulting Group, 2017). If the current trend in speed and increasing volume of production and generation of waste in both production and end-of-use stages are taken as a starting point, the industry's contribution to global waste will more than double before 2030 (Global Fashion Agenda & Boston Consulting Group, 2017: 12).

Clothing represents over 60% of total textile use (Ellen MacArthur Foundation, 2017: 18), yet more than two thirds of approximately 57 million tons of waste generated by the fashion industry every year (17.5 kg per capita equivalent) is directed to landfills or incinerators (Global Fashion Agenda & Boston Consulting Group, 2017: 12). The industry employs over 300 million people globally and is worth approximately USD 1.3 trillion (Ellen MacArthur Foundation, 2017: 18). On the European level, the textile and clothing sector is estimated to directly employ nearly 1.7 million people, with a turnover of EUR 181 billion in 2017 (Statista, 2017). According to the European Commission, nearly 5 million people are directly employed in the fashion value chain, with a turnover of over EUR 577 billion (European Commission, 2016: 296). More than 1 million people are employed by the high-end industries that comprise 10% of all EU exports (European Commission, n.d.).

Scaling up alternative business models is often projected as a desirable scenario to help move towards a more sustainable future. The United Nations Fashion Industry Charter

for Climate Action (2018) stresses that existing business models and technologies will not be adequate to deliver the necessary climate reductions required by 2030. The whole fashion industry "needs to embrace a deeper, more systemic change and scale low-carbon solutions" (United Nations, 2018: 2). This context makes systemic interventions throughout the lifecycle of garments essential for the transition to a sustainable/circular fashion industry (Fletcher & Grose, 2012; Fletcher & Tham, 2014; MISTRA Future Fashion, 2015, 2019).

There is a need for reduced carbon emissions and resource efficiency, but such positive change will be completely negated if consumption of fashion continues to increase as it has in recent decades. (House of Commons, 2019). Overconsumption related to the norm of 'fast fashion' can be tackled through the development of sustainable/circular business models to explicitly address slower modes of fashion production and consumption that counteract the still prevalent practice of high turnover of fashion products (Greenpeace, 2017:15).

Greenpeace argue that fashion needs an entirely new narrative, one that allows for more responsible use of resources through improved quality and repairs that keep garments in use for second and third lives because it is insufficient to implement circular business models unless they also contribute to slowing down the throughput of clothing through our economy (Ibid:15). Moreover, in addition to urgent value chain interventions, a paradigm shift in terms of how consumers shop for, use and care for garments is also crucial (see e.g. Fletcher, 2012, 2016; Laitala & Boks, 2012; Niinimäki, 2013; Rigby, 2016). These perspectives are also reflected in the MISTRA Future Fashion research programme which contends that in order to transition to a sustainable/circular fashion system the strategy for future fashion requires acceleration in terms of "exploring multiple business models, involving customers, enabling the designer and inventing efficient recycling" (MISTRA Future Fashion, 2015:3).

2.3 Key Emerging Trends and new business models.

Some of the key emerging trends evident in the literature and in particular in recent industry reports include: consumer attitudes, extending clothing lifetimes, sharing, and the introduction of digital technologies enabling customisation and 'fashion on demand'. The order of listing below reflects the sequence of mutual interdependence of developments as well as their significance as discussed in the literature. For example, a shift in consumer attitudes is essential for extending clothing lifetimes before disposal. Similarly, commitment to extending clothing lifetimes is a prerequisite for sharing. While these factors are here discussed separately, they are always interlinked and must be considered in context.

Consumer attitudes

New, value-based consumerism, with a shift away from possessions to experiences and sharing rather than owning was propelled by a reassessment of priorities after the financial crises (Euromonitor, 2016a; see also e.g. Pine & Gilmour, 2011 [1999]). The State of Fashion 2019 report identifies significant opportunities for smaller business that can successfully tap into the raising consumer interest in smaller brands with values and strong narratives at their core (Business of Fashion & McKinsey 2019: 74). Scale, the report argues, no longer guarantees consumer interest. Smaller brands can flexibly cater for niche markets and capitalize on current trends in three areas: millennial interests,

digital marketing, and appeal to retailers in terms of distinctive approach and margins (Ibid). These opportunities may currently be more pronounced in Western Europe, where low growth is predicted for the fast fashion market (Euromonitor, 2016b). In emerging markets of Eastern Europe, however, such developments are not yet notable (Ibid) and according to The State of Fashion "much of emerging Europe will continue to see strong spending growth with more global players entering these markets". (Business of Fashion & McKinsey 2019: 12). Changing consumer attitudes are particularly evident in the young generation of millennials, passionate about social and environmental issues (Business of Fashion & McKinsey, 2019: 16). This offers significant future opportunities for concepts of 'servitisation' that facilitates more efficient use of resources through fashion as a service rather than fashion as a product, and 'sufficiency' with active focus on reducing consumption and production (SITRA & Circle Economy, 2015).

Extending clothing lifetimes

Among the key trends in sustainable fashion is extending clothing lifetimes. Longer active life is now considered the most effective way of improving the sustainability of clothing (WRAP, 2017) when also accompanied by a reduction in purchase of new items. Research shows that if the active life of 50% of UK clothing is extended by an extra 9 months, potential savings of carbon (8%), water (10%) and waste (4%) could be made per tonne of clothing (WRAP, 2017: 47). This, however is not enough in itself, and requires that overall clothing consumption is actually reduced through a joint effort of producers and users, where "people must actually keep and wear their clothes for longer and businesses therefore may need to consider their business models" (WRAP, 2017). Evidence from the Life-cycle Assessment (LCA) of 5 commonly used garments, conducted during the MISTRA Future Fashion research programme (2011-2019) showed that if garments are used 3 times longer a reduction of 65% in carbon footprint and 66% in water use can be achieved (MISTRA Future Fashion, 2015: 7).

Sharing

The emerging business models for reuse, collective use and prolonged life of clothes have also been documented through the MISTRA Future Fashion project (2011-2019). According to the latest The State of Fashion report the shift away from ownership in fashion is among the most significant current trends, also suggesting that "resale market, for instance, could be bigger than fast fashion within ten years." (Business of Fashion & McKinsey, 2019: 39). As the demand for pre-owned clothing is increasing, the growth of the so-called "sharing economy" that has disrupted previous paradigms in the car hire and hotel business sectors has also begun to emerge in the fashion sector. Both mature and startup businesses are introducing re-selling and rental subscription models – such as Vigga Childrenswear (DK), Rent the Runway and Eileen Fisher Renew (USA), Lena Fashion Library, Spinning Closet and The Next Closet (NL), Filippa K (SE) and Vestiaire Collective (FR/international). The research by MISTRA (2018 (3)) that focused on eight alternative business models across four EU countries (Sweden, Germany, Poland and USA) pointed to a lack of awareness among consumers; cultural differences in adoption; differences related to geography - these models are rarely available outside major cities; age and gender variations with younger consumers and females being more open to exploring new innovative models (MISTRA, 2018 (3)). The models studied included clothing libraries, fashion rental, fashion leasing, swapping markets, online reselling platforms, incentivized take back services, traditional repair services, and repair services in store.

Key trends in relation to the **potential growth of market for pre-owned clothing** also identified by MISTRA (2019:37-40; 43-44), which is based predominantly on Swedish experiences, include:

- While preowned clothing reduces negative impacts, the main driver for pre-owned clothing markets is profit.
- The pre-owned clothing market is largest for womenswear and sought after high-end brands. This suggests that replicating the retail models used for new clothing to resell second-hand clothes could be a viable growth model.
- While innovative ways of exchange/sharing/re-selling pre-owned clothing are emerging, this does not necessarily correlate with growth of the second-hand market.
- Many traditional fashion businesses are now involved in collection of pre-owned clothing, yet only very few are actively involved in encouraging further use and distribution.
- The impact of cultural context cannot be underestimated in normalizing and encouraging second-hand clothing purchases and there is a need for further research to understand how to incentivise changing consumer behaviour in different EU countries.
- Ultimately the demand for pre-owned clothing globally lags behind the continuous increase of supply and with the arrival of new players margins are decreasing.
- The pre-owned clothing market does not currently disrupt the mainstream fashion industry but if innovative new players gain traction in the market it has the potential to drive a transition to a sustainable fashion system.

More comparative research is still needed in other EU countries and across the EU, as experience and receptiveness to pre-owned clothing can vary, see section 3.3 for some opinions gathered in our expert interviews.

Digital technologies, Customisation and Fashion on Demand

One of the most significant emerging trends in the fashion sector is the integration of digital technology and/or electronic components into clothing and accessories referred to as "FashionTech" or "Wearables". FashionTech can be defined as "*where a garment's physical characteristics converge with a digital experience*" (Accenture, 2018:3). While digital technologies have the potential to reduce negative sustainability impacts in relation to consumption and use of clothing (Ibid), they are also likely to result in new waste streams which, similarly to other composite materials, are highly challenging to deal with at the end-of-life. This issue needs to be dealt with at the earliest stages of concept and design.

The recent EU funded project WEAR Sustain (2017-18) was set up to begin to address some of these issues and supported 44 collaborative projects by design-led start-ups and technology providers with sustainability as a prime element, but much more support is required in order for design for sustainability to be fully integrated in product development. *(See Annex 7.4).* London-based fashion tech company Cute Circuit have pioneered developments in modular design for wearables where the electronic components can be disassembled and reused, for applications in both the entertainment sectors and to support users with disabilities (Black 2018).

With the rise of a range of digital technologies, the possibilities for new business models based on personalisation and customisation of clothing and footwear (for example by Nike, Farfetch and Converse) have also greatly increased. This new business model on the one hand facilitates agile responsiveness to customer preferences and on the other it also reduces surplus goods by manufacturing only those items that have been pre-ordered. Customers can order individual pieces and even create products for themselves. This concept revives and evolves the traditional practice of exclusive made-to-order and bespoke services in the luxury sector but aiming much closer to mass market prices. The goal of 'mass customization' – i.e. customized items created at near mass-produced market price points - has been sought since the early 1990s (Pine, 1993). This has now become more feasible in terms of digitisation of production, logistics and supply, based on a series of modular options, although it is still reliant on some standardization of basic design and materials. (Black et al., 2009; Black & Eckert, 2009; Boer et al., 2013; Kent, 2017).

Unmade is a UK based technology company that has developed B2B and B2C software systems for manufacturing that enables online sales of unique items of customised knitwear from a range of styles; the company has recently developed technology for manufacturing customised printed items. Unmade's technology platform achieves a form of mass customisation, where nothing is produced until ordered in advance by customers and batch produced (see Case Study 8, section 4 and Annex 7.3).

The shortening of the design and development process through digital 3D computer-aided fashion design systems that enable virtual prototyping (such as CLO3D and Marvelous Designer) also hold the promise of less wasteful practices in elements of the fashion industry – towards an era when zero physical prototypes need to be created, reducing unnecessary waste in the sampling system and potentially across the system as more accurate personalised fit is enabled. Research by UK business Change of Paradigm is currently underway in digital processes including virtual and holographic reality systems that can support a fully digital design and visualisation service for customers, including realistic movement of garments on avatars, to support a pre-order business model. In the Netherlands, the digital fashion house The Fabricant exemplifies such developments.

In addition to all these, the advent of 3D printing as a more widely accessible technology has enabled unique personalized products to be incorporated into specialised high-performance footwear soles, and also developed into highly effective personalised applications for medical devices. Applications specific to clothing are however at the research and development stage, mostly based on articulated "chain link" or modular structures, with pioneering work undertaken in the Netherlands (e.g. Freedom of Creation, Iris van Herpen), Italy (Francis Bitonti) and the UK (Modeclix).

However, further research and more consumer studies are needed to better understand the environmental benefits of these innovations for personalisation and customisation in terms of their contribution to longer active life of fashion products and reducing volumes of production as well as waste (Maldini et al., 2019).

Digital technologies are also enabling the sharing economy to be extended to fashion via the development of clothes-sharing platforms for rental and reselling that are designed to be accessed on mobile devices. Examples include The Nu Wardrobe (see Case Study 6,

section 4 and Annex 7.3), Lena Fashion Library, Vestiaire Collective and emerging system start-ups ReGain, Reflaunt and My Yorkshire Wardrobe.

The advent of so-called 'industry 4.0' encompassing artificial intelligence (AI), machine learning and robotics has yet to impact substantially on the fashion manufacturing sector, still working largely with manual machine operators using craft skills. Research is however underway and new projects are in development. For example, the UK government's Industrial Strategy has funded two projects in 2018, the Future Fashion Factory and Business of Fashion Textiles and Technology. The new EU funded network DeFINE seeks to accelerate the development of FashionTech businesses (see Annex 7.4). According to Euratex (Interview 2019) digital technologies and AI have the potential to positively impact the automatic sorting of waste textiles for recycling by the end of the next decade.

2.4 Opportunities for fashion SMEs

Creativity, entrepreneurship and job satisfaction are often the key driving forces behind starting a small fashion business. Increasingly, these motivations are also linked to founders' environmental and social values which can be critical in shaping the design and innovation processes towards radically different and more sustainable practices. In the current industry climate, where large players are much slower in embracing sustainable innovations, agile SMEs with strong environmental and social agendas can benefit from competitive advantage in niche markets that are much harder to access for companies that still do 'business as usual'. SMEs supply chains are often shorter, and there is usually a greater degree of control and informed decision making due to smaller scale operations. The order of the listing below reflects the mutual interdependence of opportunities for SMEs such as achieving their vison, creativity, job satisfaction, design-driven innovation and positive social and environmental impacts, as well as their significance as discussed in literature.

Creativity and job satisfaction

The existing literature has tended to focus on the challenges, rather than the opportunities, involved in running small fashion businesses (McRobbie, 1998; 2016; McRobbie et al., 2016; Aakko & Niinimäki, 2018: 356). That said, studies note that personal wellbeing, including work satisfaction, living by one's own values (intrinsic values) and creative trajectory are important motivators for starting a fashion business (McRobbie, 1998; 2016; Cipolla et al., 2017; Thureau, 2017; Aako & Niinimäki, 2018; Gu, 2014; Interview with Aalto University, 2019). Some of the key opportunities and advantages of running small fashion businesses identified include 1) freedom in decision making; 2) ability to control strategic direction; 3) flexibility to experiment and 4) intrinsic motivations related to creativity and entrepreneurial learning (McRobbie, 1998; 2016; Aakko and Niinimäki, 2018:370; Cipolla et al., 2017; Thureau, 2017). These attributes are also reflected in our case studies (see Annex 7.3).

Design-driven innovation

Design is at the core of innovation and this is a key attribute of designer start-ups and fashion micro-businesses. Connor-Crabb (2017: 249) argues that designer-owners of fashion micro-enterprises "have the opportunity to implement design-led initiatives

promoting extended use, through events, workshops and brand messages" - both physical and online. Similar opportunities are offered by new possibilities for digital consumer engagement and e-commerce solutions that are important enablers for new business models (MISTRA Future Fashion, 2015: 12). Emerging research is evaluating the value of creative endeavour and design-led activity in fashion SMEs (Aakko & Niinimaki 2018), with a specific focus on environmental, social, cultural and economic sustainability (FSP 2018-21).

Agility and competitiveness in niche markets

In addition to positive environmental and social implications, the key opportunities associated with sustainable fashion SMEs relate to the fact that the adoption of sustainable practices can provide SMEs with a first mover advantage, responding to increasing demand for responsibly produced, sustainable clothing choices (House of Commons, 2019:16; MISTRA Future Fashion, 2015:11). The ability to engage in positive social interactions with customers and suppliers and to contribute to community is also noted by fashion SMEs as one of the best elements of running your own fashion business (Aako & Niinimäki, 2018; Connor-Crabb, 2017; Interview with Moda Lisboa, 2019; Interview with FASHIONCLASH, 2019). Ethically motivated consumers are said to be increasingly willing to pay more for sustainably produced fashion, this particularly applies to the generations of millennials and GenZ as specific target markets for the future (Business of Fashion & McKinsey, 2019; Accenture & Fashion for Good, 2019). New opportunities are also created by advancing certification systems that shift focus from certifying products (e.g. Organic, Fairtrade) to holistic measuring of business performance against strict social and environmental criteria. Examples include Blue Sign and B Corp™ and several of our case study companies - VEJA, Elvis & Kresse, Ecoalf and MUD Jeans – hold the B-Corp certification. In addition, emerging mobile applications such as Good on You or CoGo enable businesses to target consumers that share their values.

Moreover, parts of the textile sector in Europe are already uniquely positioned to take advantage of the circular economy due to the fact that many of the technical capabilities already exist for fabric recycling, fibre regeneration and maximizing resource efficiency (Euratex, 2017:1). Nevertheless, capitalising on these capabilities will require overcoming key barriers related to textile recovery infrastructure (collection and sorting), fibre-to-fibre recycling (much of which is at R&D stage – but see also Case Study 9 re:newcell) and harmonizing regulations (see Section 2.5 and Table 1).

2.5 Challenges for fashion SMEs (including gaps in support)

As discussed in the literature, and corroborated by our interviews, fashion SMEs face considerable challenges, their significance reflected in the order of the listing below. Competition from high/volume low price corporations, linked to consumer perception of 'good value' is still the key challenge for businesses with high social and environmental commitments because these tend to come at a premium. Consumer awareness is therefore critical and needs to be reflected in changed behaviour and shopping patterns. Further challenges for SMEs, such as lack of funding to enable business development, technical challenges related to rethinking the design phase in terms of sustainable practice, insufficient infrastructure for reuse and recycling and issues linked to micro-

fibre release also need to be addressed. These challenges are of course often mutually interdependent.

Competition from high volume/low price corporations

Leading designers and innovators in fashion and sustainability are still challenged by competitors whose primary focus is on reduced costs and maximizing profits through volume, with little consideration for environmental and social consequences (MISTRA Future Fashion,2017; Cipolla et al., 2017; House of Commons, 2019: 3). The challenges for incumbents (already established fashion businesses) and start-ups are likely to differ (Mamoq, 2018:19). Incumbents need a long-term commitment and investment with dedicated budget, headcount and time, to enable the implementation of sustainable fashion principles because addressing externalities will impact on margins.

In contrast, new entrants (fashion companies new to the market that usually choose to implement sustainability from the outset) are likely to encounter high barriers to entry and scalability related to price competitiveness and brand recognition when they seek to access national and international markets (Ibid). They face particular challenges in finding their own voice in a market geared towards large operations (Cipolla et al., 2017). In addition, enhanced collaboration of small and larger players, knowledge and resource sharing and alignment of values across the supply chain are needed for truly circular material flows (Fischer & Pascucci, 2017: 22). Both incumbents and new entrants are likely to find the need to establish supply-chain transparency a major challenge.

Consumer awareness

Scaling up novel and currently niche business models (e.g. clothing libraries, clothing leasing, repair and other service models) requires consumer awareness (MISTRA Future Fashion, 2015:12). An 'attitude behaviour gap' is apparent whereby sustainability is on consumers' radars, particularly amongst youth, but it has not yet translated into changes in their shopping routines and buying habits (MISTRA Future Fashion, 2015:14; Todeschini et al., 2017:767; Boiten et al., n.d). A key barrier here is visibility of sustainable options – i.e. consumers have the misconception that sustainable clothing options are not widely available (Ibid). There are also issues with managing excessive expectations of niche sustainability-oriented consumers (Todeschini et al, 2017: 767).

Lack of finance and grants

Lack of funding as a key challenge is unsurprising, given that it is not unusual for micro and start-up businesses to operate without any growth in income generation or profit for many years (Centre for Fashion Enterprise, 2008: 26). This results in uneasy cash flow management especially when there is insufficient support from banks (Centre for Fashion Enterprise, 2008; Thureau, 2017; MISTRA Future Fashion, 2015: 12; Accenture, 2018). A study of challenges related to starting sustainable/circular ventures (as identified in the European proportion of the 2600 H&M Foundation 2018 Global Challenge Award applicants) found that 42% state that funding is a challenge (Accenture, 2018:32). This may include both start up grants and repayable finance.

With regards to challenges associated with accessing repayable finance currently key issues relate to: 1) Lack of suitable infrastructure and asset finance - providers are often unwilling to lend to the fashion sector; 2) Limited patient capital; 3) SMEs tending to be

risk-averse, having limited access to capital and lacking skills to make the business case; 4) Overstated risks associated with the circular economy and sustainability more broadly; and 5) Lack of clearly stated support and finance – SMEs finding it difficult to find sources of support and finance for the circular economy "as not communicated clearly" (Accenture, 2018:33). In addition, alternative business models aiming at environmental impact reduction like product service systems (PSS), that combine a product offer with services such as rental, require increased amounts of working capital. As the assets are leased rather than sold, assets remain on the SME's balance sheet, and cash flow accumulates more slowly compared to sales-based businesses (Fischer & Pascucci, 2017:25).

It is important to note that from our case studies, alternative means of funding have successfully supported some business start-ups, through both crowdfunding online platforms or individual personal campaigns (see Elvis & Kresse case study 4, Annex 7.3)

Technical challenges

Key challenges identified by the Textile & Clothing Business Labs project (see Annex 7.4) for emerging small fashion enterprises include access to design tools (often primarily aimed at big brands) and affordability of fabrics (attractive pricing is only available for large orders) (Cipolla et al., 2017). Low quality and durability of textiles on the market hinders adoption and scaling-up business models for extending lifetime of clothing (MISTRA Future Fashion, 2017). Small production batches then affect SME access to new sustainable and innovative materials as minimum volumes are required to make orders viable for producers (Aako & Niinimäki, 2018), who are often SMEs themselves (Interview with Texaid, 2019; Interview with Circle Economy, 2019).

Infrastructure and regulation to support reuse and recycling

Further challenges in transition to circular business models are linked to recycling technology and infrastructure. Economically viable recycling options remain scarce for the low-grade textiles fraction and low-quality materials and blends dominate the end-of-life material flows (Boiten et al., n.d).

Although higher quantities of clothing are now collected due to raised consumer awareness (Interview with Texaid, 2019), still only half of used clothes enters the reuse and recycling collections (European Parliamentary Research Service, 2019). Out of these, only 1% is recycled into new clothes (Ibid), due to issues including material quality and availability of technology for textile to textile (as opposed to e.g. PET to textile) recycling (see also WRAP, 2019). Recycling of blended fibres still poses considerable technical challenges and solutions are mainly in R&D phase. Chemical recycling technologies such as those developed by re:newcell for cotton and viscose (pilot plant opened in 2017) and Worn Again for polyester and cotton blends (currently building its first industrial plant) are among the pioneers in the area. In addition to this, manual sorting puts high demands on human resources. Hand sorting is used by both Swiss based Texaid (est. 1978) and German based I:CO (I:Collect), launched in 2009 by parent company SOEX (est. 1977). I:CO for example sorts every collected piece of clothing according to 350 criteria (I:CO, 2019). Although experimentation with AI to assist with sorting processes is currently under way, commercial introduction is not expected before 2030 (Interview with Texaid, 2019).

Further to the above, there is an intertwined infrastructure and regulatory challenge - as the economic viability of collection, reuse and recycling of used textiles and clothing

depends on both national and international conditions due to the fact that collections are organized on local/regional/national levels but reuse and recycling rely on global infrastructure (MISTRA Future Fashion, 2018 (4)). Increased clarity in classification of textile waste (i.e. when waste becomes waste or can be returned to another use) is also needed (Euratex, 2017; Interview with Euratex 2019). Moreover, a lack of harmonization of requirements and regulations across the EU and globally, poses challenges for both collectors and sorters of used textiles and clothing and causes administrative obstacles.

Systematic alignment of rules would help all stakeholders involved in collection, sorting, reuse and recycling (MISTRA 2018 (4)). Interventions through schemes such as Extended Producer Responsibility (EPR) (introduced in France in 2007), incentives for use of recycled materials and VAT reductions for second-hand goods would provide important enablers for the market (Interview with Texaid, 2019). Addressing these issues will be required to increase textile recovery rates - a key part of meeting the European Commission's Circular Economy package targets to increase recycling of municipal waste to 60% by 2025 and 65% by 2030 - and successfully roll-out separate collection of textiles across EU member states by 2025 (EC, 2019). At the same time, it is also important to note that the current supply of used clothing considerably exceeds the demand (MISTRA Future Fashion, 2018 (4)) and even the most advanced recycling processes require high energy and chemicals use. Decreasing the volumes of production and keeping clothes in use for longer are still the most viable answers to reducing the environmental impact of the industry.

Micro-fibre release

Micro-fibre pollution is another topical issue in the industry and needs to be considered by both small- and large-scale players. According to the Ellen MacArthur Foundation, around half a million tonnes of textile microfibres are released into oceans annually (2017: 3). Although more research and testing are still needed on the variables of micro-fibre release (e.g. in industrial and domestic conditions), the wider impacts of synthetic materials such as polyester, nylon and acrylic should be now considered in the design process. Recent report by the UK House of Commons' Environmental Audit Committee also highlights that the current state of knowledge "should not be used as an excuse for inaction by retailers" (House of Commons, 2019: 35) and urges retailers to test synthetic garments and publish figures. Euratex points to the lack of harmonisation and coordination of test methodology (Interview with Euratex, 2019) and along with partners is currently working on harmonised test methods with results to be released in summer 2019. Further current research is in progress for example through the UK-based industry association The Microfibre Consortium. Methodology for measuring fibre shedding during domestic washing was developed through the MISTRA Future Fashion project (Jönsson et al., 2018), while hands-on solutions such as Guppyfriend Washing Bag are offered by the awareness raising campaign Stop Micro Waste based in Germany.

Table 1 on the following page illustrates some of the recent research literature regarding obstacles and challenges which hinder the wider adoption and scaling-up of business models for extending the active lifetime of clothing

	Challenge/Obstacle	Illustrative Literature
Competition and scale	Competition from high volume/low price corporations	MISTRA Future Fashion (2017); Cipolla et al. (2017); House of Commons (2019)
	Finding own voice in a market geared to large scale operations	Cipolla et al. 2017
	Affordability and availability of materials linked to minimum volumes for orders	Aakko & Niinimäki (2018); Cipolla (2017)
	Aligning values across supply-chain/encouraging sharing knowledge, resources which is likely to require value chain coordination	Todeschini et al., (2017); Fischer & Pascucci, (2017)
Consumer awareness	Attitude behavior gap – awareness not yet matched with action	MISTRA Future Fashion (2015); Todeschini et al. (2017); Boiten et al. (n.d.); Interview with Moda Lisboa, 2019
	Visibility of sustainable options - lack of consumer awareness/knowledge of alternative models	Mistra Future Fashion (2017, 2018); Todeschini et al. (2017); Boiten et al. (n.d.)
	Managing high expectations of niche consumers	Todeschini et al (2017)
Lack of finance	High start-up costs	MISTRA Future Fashion (2017)
	Lack of growth and income generation, uneasy cash flow management	Centre for Fashion Enterprise (2008)
	Lack of funding/sufficient support from banks	Centre for Fashion Enterprise (2008); Thureau (2017); MISTRA Future Fashion (2015); Accenture (2018)
	Risk aversion, lack of business knowledge and awareness of available funding options	Accenture (2018); Interview with Slovak Fashion Council (2019); Interview with M-ODE (2019)
	Increased working capital needed for product service systems	Fischer & Pascucci (2017); Accenture & Fashion for Good (2019); SITRA & Circle Economy (2015)
Technical challenges	Technical challenges related to rethinking the design phase of products and access to design tools	Cipolla et. al. (2017); Todeschini et al. (2017)
	Low quality/durability of textiles on market	MISTRA Future Fashion (2017)

	Challenge/Obstacle	Illustrative Literature
	Commercially viable recycling options for low-grade textiles	Boiten et al. (n.d.); Euratex (2017); Interview with Texaid (2019)
	Scaling up and commercialisation of new recycling technologies such as fibre to fibre processing	WRAP (2019); Interview with Texaid (2019); Ecopreneur.eu (2019)
	High demands on human resources in sorting	MISTRA Future Fashion (2017, 2018), Interview with Texaid (2019)
Infrastructure and regulation for reuse and recycling	Collection infrastructure for reuse and recycling – local, national, regional and global	MISTRA Future Fashion (2018 (4)); Euratex (2017)
	Lack of harmonization of requirements and regulation related to textile waste management and reuse across the EU and globally	MISTRA Future Fashion (2018 (4)), Euratex (2017), Rreuse (2017), Interview with Euratex (2019)
	Lack of clarity in classification of textile waste – end of waste criteria	Euratex (2017), Interview with Euratex (2019)
	Insufficient incentivising through policy tools	MISTRA Future Fashion (2017 (7)), House of Commons (2019); Rreuse (2017), Interview with Texaid (2019)); Ecopreneur.eu (2019); Euratex, FESI, GFA, IAC & SAC (2019)
Microfibre release	Current status of knowledge on variables linked to microfibre shedding (e.g. industrial and domestic conditions) – more research needed	MISTRA Future Fashion (2018); House of Commons (2019); Ecopreneur.eu (2019)
	Lack of harmonization and coordination of test methodology	Euratex (2017); Interview with Euratex (2019)

Table 1: Illustrative literature on challenges for fashion SMEs in adopting sustainable/circular business models

2.6 Incentives/Enablers for Practice & Business Models

Key enablers for the adoption of more sustainable practices and business models identified in the literature review relate to: **internal strategies by businesses** (GFA and Boston Consulting Group, 2018, 2019); **access to finance; knowledge and networks** (Accenture, 2018; Ecopreneur, 2019); **government facilitated support and collaborations** between system actors (House of Commons, 2019; Ecopreneur, 2019); **public policy concerning the infrastructure and regulations** of reuse (Euratex, 2017; Ecopreneur, 2019), and **acceptance of alternative fashion models by consumers** (MISTRA Future Fashion, 2018) facilitated by raising public awareness through media channels.

The order of listing reflects the fact that although the transition starts at company's own commitment to sustainability, it then needs to be further supported through access to funding and networks, government support and policy measures and the contribution of the media to attitude shift in consumption patterns and shopping habits. At the same time, all these factors are mutually interdependent and should not be considered in isolation.

Internal company strategy

The recent PULSE reports (GFA and Boston Consulting Group, 2018 and 2019) identify four main enablers for more sustainable practices: **resources, strategy, communications and traceability**. According to PULSE, the transition to sustainability is divided into three phases: building the foundation, implementing core actions, and expanding to scale. Phase one of the "roadmap" PULSE identifies, starts at the point after a company has decided to move beyond uncoordinated action and makes a clear commitment to sustainability. This is to be followed by setting a clear strategy and goals, identifying a dedicated team and resources, making frequent communications around improving environmental and social performance, both internally and externally and ensuring traceability along the supply chain. These recommendations are however mainly applicable to "incumbents" (Mamoq, 2018: 19), larger players who are switching from traditional operations to more sustainable practices and face challenges proportional to their scale.

However, many smaller companies begin with sustainability agenda at the core of their business model (Aako and Niinimäki, 2018). For these businesses, intrinsic values of their founders-owners such as creative freedom and progressive environmental and social justice beliefs are often the main drivers and enablers (Ibid). It is this strong personal drive that often gives start-ups and SMEs the agility, flexibility and responsiveness to the market that enables them to define and occupy their own niche before their less flexible, larger competitors (Business of Fashion & McKinsey&Co, 2019). Another strategic enabler for alternative business approaches is matching the business model to the product offered (Accenture & Fashion for Good, 2019). Recognizing that "different product types are best suited to particular business models" can be key to success of circular fashion scenarios such as rental, subscription rental or recommerce (Ibid, p. 38).

Voluntary industry agreements on commitments and standards towards social and environmental responsibility (such as e.g. Fashion Industry Charter on Climate Action with an ambition to achieve net zero emission by 2050 (United Nations, 2018)), provided

these are ambitious and universally binding, can also be an important contributor to creating a business environment in which companies of all sizes are rewarded rather than penalised for their environmental and social values (Ecopreneur, 2019).

Finance

Where there is a finance gap, the provision of grants or subsidized loans/patient capital can help businesses develop their transformative business models. As the finance gap may also be due to a lack of 'investment readiness' by SMEs, public sector support is essential for capacity building enabling sustainable fashion businesses to flourish. This support can come from public sector funds, financed by the EU or by national governments

Some of the examples already in operation include the Horizon 2020 Program (funded e.g. the recently completed Trash2Cash project), the LIFE Program (covering e.g. ECAP – the European Clothing Action Plan), the SME support in innovation and environmental issues through EASME (Executive Agency for Small and Medium Enterprises) and the Cohesion Fund that targets mainly countries of the previous Eastern Bloc (See Appendix 7.5 for an overview of available funding opportunities).

The funds can also come from philanthropic sources or social investors. However, a lack of long-term evidence on the profitability of alternative/circular business models as well as "the complexity and operational risk" (Accenture & Fashion for Good, 2019, p. 3) often makes this type of investor reluctant to enter this emerging area. The recent report by Ecopreneur (2019) therefore proposes publicly funded training programs for the finance sector to improve the understanding of both the opportunities and the risks involved in this kind of investment (p. 31). The finance sector needs to embrace the benefits of "valuing natural capital" in a similar way to how this has been recognized in considering the CO2 footprint of investments (Ibid). The case studies developed for this report corroborate these points, particularly the need to educate investors for the new opportunities (see section 4 and Annex 7.4)

Euratex (2017) also calls for public and private funding of textile waste management to lower the cost of textile waste management for SMEs, who comprise the majority of textile manufacturers. This would de-incentivise landfill and incineration of textile waste. Funding is also needed for scaling up the existing R&D and innovation projects, especially in advancing the technologies for sorting and recycling used clothes to fibres comparable to virgin fibres (Euratex, 2017; Ecopreneur, 2019, EPRS).

Economic incentives including circular procurement, Extended Producer Responsibility (EPR), tax shift from labour to resource use and environmental impact, and low VAT for circular products, if implemented in a timely and coordinated way across the EU, could also be key enablers for circular business models (Ecopreneur, 2019).

Knowledge and Networks

Aside from capital, knowledge and networks are also identified as critical enablers of sustainable practices and circular economy (Accenture & Global Challenge Awards, 2018, p. 31). Networking often enables swift access to resources that would otherwise be hard and time consuming to identify through the efforts of individual SMEs – such as suitable collaborators, material suppliers, reliable production opportunities, skilled workers,

tailored distribution options, investors and further funding opportunities. The lack of knowledge amongst businesses and limited opportunity can therefore be addressed though supporting networking opportunities. These can include informal networking to build up relationships. It can also involve more formalized networks and support programs.

One mechanism that has proved successful in creating access to knowledge and networks are **award schemes** like the Global Change Awards, founded in 2015 by H&M Foundation in collaboration with Accenture and the KTH Royal Institute of Technology in Stockholm. Other initiatives include Fashion for Good, established in 2016 in the Netherlands with the support of the C&A Foundation. Fashion for Good is a platform and accelerator supporting technology-focused innovation for sustainability in SMEs.

Greenpeace (2017) argue that policy makers should create an environment that encourages fashion SMEs to set up in city centres through lowering business rates and developing knowledge sharing platforms that enable collaboration between all sizes and types of organisations (p. 48). Similarly, Ecopreneur (2019) proposes Circular fashion hubs in each member stat to enable access to "regional networks, knowledge, capacities and learning processes focusing on circularity and innovation" (p. 31). These should also help SMEs access information on funding opportunities across the EU (Ibid). An example of such an initiative that functions as a social enterprise is the Rediscover Fashion hub in the Rediscovery Centre Dublin, Ireland, part of their National Centre for the Circular Economy that provide resources, skills and training to upcycle clothing and also works with other sectors such as furniture. The scheme is planned to expand to support SMEs and mentor start-ups.

Government facilitated support and policy

Public sector funded business advice and mentoring can be a key enabler, if provided in each country with funding from the EU and national governments. Public support can also be focused on infrastructure for waste management and reuse (Euratex, 2017; GFA, 2017). Rreuse, a network of re-use, repair and recycling social enterprises, have mapped existing VAT reduction incentives in EU countries to demonstrate scenarios that could be replicated on EU level (2017). Ecopreneur (2019) identifies five pillars for policy instruments that could advance the transition to circular fashion across the EU: innovation policies, economic incentives (including circular procurement, EPR, tax shifts and VAT reductions), regulation, trade policies and voluntary actions (p. 27).

The potential benefits of policy instruments were also recognized in the recommendations of the UK Environmental Audit Committee (House of Commons, 2019). In its recent report *Fixing Fashion: clothing consumption and sustainability*, the Committee called for example for an introduction of a charge of one penny per every garment produced, to be re-invested in improving clothing collection and sorting facilities. A UK government facilitated collaboration in an initiative to resolve issues related to microfibre pollution, bringing together fashion retailers, water companies, washing machine manufacturers and textile manufacturers was also proposed (House of Commons, 2019:35).

However, potential benefits of similar interventions ultimately rely on the recognition of their urgency by policy makers. Political will for an active commitment to swift implementation on both national and EU levels is needed. UK government's example of rejecting all 18 recommendations made by its Environmental Audit Committee

(Parliament UK, 2019), postponing consideration of some of these until 2025, shows significant lack of such commitment. 'Business as usual' is thus given priority over innovative and environmentally conscious business models. The implementation of the EU Waste Directive has been affected by similar delays. Separate collection of textiles mandatory in all member states will now come into effect in 2025, instead of the originally proposed 2020 (European Parliamentary Research Service, 2019).

Media and changing consumption patterns

The media play a key role in enabling change of consumer behaviour. Although this has not been addressed in much of the literature (with the exception of Ecopreneur, 2019), both our expert interviews and specifically the case study on Fashion Revolution highlight the significance of raising awareness and educating public discourse on social and environmental issues linked to production and consumption of fashion. Fundamental to the ultimate success of alternative business models, is "the acceptance and use by consumers" (MISTRA Future Fashion, 2018: 8). Through a survey of over 4000 consumers across Germany, Poland, Sweden and the United States, MISTRA Future Fashion (2018 (3)) studied the acceptance of eight alternative fashion business models in rental, sharing and recommerce areas.Apart from personal values and profiles, geographical differences and consumer groups contribute to variations in acceptance (e.g. females and younger generations are more open to new scenarios). The results also showed a strong link to personal/human values of consumers, clustered around two axes: 1. Individuals' openness to change as opposed to more conservative personal characteristics; 2. Individuals' tendency to self-transcendence (i.e. to consider issues beyond selfish concerns) as opposed to self-enhancement motivations (i.e. pursuit of self-interest). Importantly, the report highlights that although often framed in the context of sustainable fashion futures, the actual environmental benefits of these models are still unclear and will require further evaluation (Ibid). (For emerging re-use models, see Case study 6 on NuWardrobe, Ireland, Annex 7.4).

According to the recent *Circular Fashion Advocacy* report (Ecopreneur, 2019), the European Environmental Bureau has a critical potential in driving the discourse on circular practices across the parliament and the media, with significant help from NGOs such as Fashion Revolution and Clean Clothes Campaign (p. 55). In addition, organizations such as Zero Waste Europe, the Break Free From Plastic movement and the Ellen MacArthur Foundation are leaders especially in foregrounding the issues of textile waste in the media (Ibid).

An overview of current and potential policy tools identified in the literature thus far is presented below in Table 2.

	Policy Tools	Literature Source
Economic Instruments	Tax reductions e.g. reduced VAT for reuse, sharing, second-hand, repair, leasing.	MISTRA Future Fashion (2017 (7)); House of Commons (2019); Rreuse (2017); Global Fashion Agenda (2017); Greenpeace (2017); Ecopreneur.eu (2019)
	Support for second-hand in central shopping malls.	MISTRA Future Fashion (2017 (7))
	Encourage fashion SMEs to set up in city centres as well as online through lowering business rates; financial incentives and targeted investment.	Greenpeace (2017)
	Start-up transition funding and government-supported knowledge hubs.	MISTRA Future Fashion (2017 (7)); Ecopreneur.eu (2019)
	Wage subsidies targeted at alternative models.	MISTRA Future Fashion (2017 (7))
	Support R&D in fibre-to-fibre recycling and transition to automation in sorting, to increase attractiveness of recycled fibres in the market and to improve profits from collection of lower grade used textiles	MISTRA Future Fashion (2018, (4)); Euratex (2017); Ecopreneur.eu (2019); WRAP (2019)
Information flows	Improvement of statistics on collected, reused and recycled textiles to enable monitoring of quantity and quality of collections across the EU	MISTRA Future Fashion (2018, (4)):39
	Developing knowledge sharing platforms which enable collaboration between all sizes and types of organisations.	Greenpeace (2017); Ecopreneur.eu (2019); Accenture & Global Challenge Awards (2018)
	Training programmes for the finance sector on specifics of sustainable/circular businesses	Ecopreneur.eu (2019)
	Innovation programmes to facilitate technological precompetitive technological collaboration and implementation	Ecopreneur.eu (2019)

	Policy Tools	Literature Source
Regulations	Clear end-of-waste criteria for textiles	Euratex (2017); Ecopreneur.eu (2019)
	Introduction of minimum standards for transparent practice as well as environmental and social responsibility for collectors and sorters	MISTRA Future Fashion (2018, (4)):39; Ecopreneur.eu (2019)
	Mandatory Extended Producer Responsibility	MISTRA Future Fashion (2018, (4)):39; Greenpeace (2017); Ecopreneur.eu (2019); House of Commons (2019); European Parliamentary Research Service (2019)
	Voluntary Extended Producer Responsibility (EPR) in conjunction with Green Public Procurement	Euratex (2017); Global Fashion Agenda (2017);
	Green Public Procurement/Circular Procurement	Euratex, (2017); Global Fashion Agenda (2017); Ecopreneur.eu (2019); European Parliamentary Research Service (2019)
	Voluntary adoption of Product Environmental Footprints (PEF)	Euratex (2017)
	Voluntary trade policies	Euratex, (2017); Euratex, FESI, GFA, IAC & SAC (2019); Ecopreneur.eu, 2019
	Harmonising regulations and removing obstacles in administration	MISTRA Future Fashion (2018, (4)); Ecopreneur.eu (2019)

Table 2: Key current and potential policy tools identified in the literature

3. MAPPING THE OPPORTUNITIES AND CHALLENGES - EXPERT INTERVIEWS

3.1 Introduction

This section compiles the results from our desk research and 43 expert interviews conducted across 28 EU member states – a minimum of 1 per member state and between 2 and 4 in Belgium, France, Germany, Ireland, Italy, The Netherlands, Sweden and the UK, plus 2 textile organisations operating across the EU (see listing Annex 7.1). Experts were drawn mainly from industry and academia, plus NGOs. Given the limited timeframe the identification of experts was dependent on the team's existing networks and recommendations of contacts. Therefore the research and mapping could not aim to be exhaustive, but indicative.

We provide below an overview of the findings, mapping the current key initiatives, types of players and good practice across the EU member states which have the potential to exemplify, facilitate and incentivise small fashion and textiles companies to become more sustainable and circular. Information is presented in both tabular and visual formats to aid understanding of the relative distribution across EU member states, based on the data gathered, which is limited to the knowledge of the particular interviewees, but triangulated where possible with desk research and the knowledge of the research team.

An overview of key EU (and member state) funding schemes, and public and private schemes supporting sustainable fashion production and consumption is given in section 5 and available in detail at Annex 7.5.

3.2 Database and visual mapping across EU countries

A database comprising over 400 entries maps the relevant industry players, public initiatives, research projects, and networks fostering good practices across the EU, categorized by both country and type of initiative/player, as outlined below. Table 3 below gives examples within the categorisation and the full database is available at Annex 7.2, demonstrating a wide range of areas of activity, across all 28 EU Member States.

These initiatives and players were selected based on their key sustainable/circular practices and track record, meeting a number of specific criteria, including alternative business model, selection or development of sustainable materials, product or process innovations, client/consumer engagement and services, traceability in the supply chain, social benefits, resource and waste management. Recommendations for exemplar brands, and support organisations were also specifically sought from our expert interviewees. The database entries have been categorized according to their primary functions under the headings; *Brands/Designers, Materials/Fibres, Re-use/Sharing, Recycling, Technology, Networks (fashion/textiles or sustainable fashion), Trade Associations, Business Support, NGOs/Campaigns, Consultancy* and *Education* which are further mapped onto the stages of the value chain: *Production, Marketing, Services, Retail* and *End of Use/Life.*

Although the tender specified only the first four stages (Production, Marketing, Services and Retail), we have added the category *End of Use/Life* in order to reflect one of the major differentiators between linear and circular systems, especially where material flows are concerned. Reusing and re-purposing of clothing and textiles to extend the useful life of material resources, as many times as feasible before recycling, is an essential requirement of a circular system for resources, whether classified as part of "natural" or "technical" materials cycles (Ellen MacArthur 2017).

The nature of many initiatives and SMEs is such that many operate across more than one stage of the value chain. Therefore, the full mapping database (Annex 7.2) identifies the main areas of activity for each entry across the five value chain categories identified above, marked with crosses as appropriate.

The database and mapping has been subdivided into three sections arranged by country and visualised geographically:
1. Brands/Designers - all are SMEs (including start-ups)
2. Support Organisations - including Networks (fashion/textiles and sustainable fashion), Trade Associations, Business Support Organisations, NGOs/Campaigns, Consultancies and Education.
3. Materials/Technology/Recycling – including Reuse and Sharing initiatives

1. Brands/Designers/Start-ups that operate using a number of sustainable /circular principles.

As highly representative of the fashion and textile sector, micro and small fashion enterprises are at the forefront of the transition to sustainable and circular production and consumption, and often are the first to experiment with new business models such as clothes sharing and upcycling textile waste. Diagram 1 shows where strong clusters of sustainable fashion brands are situated (such as The Netherlands and the UK), and reflects areas where sustainable fashion products are emerging in commercial markets (such as several countries in Eastern Europe.

2. Support Organisations and Networks that help facilitate transition towards sustainability and circularity in fashion and textiles

In addition to organisations providing general business and promotional support to fashion businesses, including incubators and accelerators (for both fashion and fashion tech), there are now a significant number of key organisations, beyond branded fashion businesses, designers and startups themselves, that are supporting a transition to circularity in fashion and textiles.

These comprise a number of categories as identified in the mapping database (Annex 2) and in the visualization diagram 2: membership-based trade associations, networks for sustainability, and sustainable fashion and/or textiles specifically, circular fashion initiatives/NGOs, consultancy services, plus research and educational centres with a focus on sustainability. Certain NGOs and communication campaigns such as the Ellen MacArthur Foundation, Global Fashion Agenda and Fashion Revolution have been highly significant in the development of international commitments to actions regarding sustainability, transparency and circularity in textiles and fashion (see also Fashion Revolution Case Study 12). To reflect the research and innovation activity designed to

support SMEs and the industry transition to circularity and sustainable practices, key research projects are included in this visualization.

3. Materials, Technology and Recycling.

Much research and development activity has been evident in recent years to accelerate the development of new sustainable fibres and materials for textiles, and many projects are still in progress. This mapping in diagram 3 includes those initiatives that are fast moving towards achieving a commercial scale of activity, often following start-up support. Included are examples of organisations providing the vital infrastructure required to enable pre- and post-consumer textile collection and processing, in order to support greater circularity in flow of textile resources. Here also are key technological innovations for shifting paradigms of production, including innovative waterless dyeing technologies and initiatives on micro fibres that tackle two of the key areas of environmental impact in the textile industry.

	Primary Function	Sub-category	Key Players
Production	Brands/Designers		Nudie Jeans, Stella McCartney VEJA, Vigga, Raeburn
	Manufacturing	Materials/Fibres	Lenzing Tencel + Refibra, Orange Fibre, re:Newcell, Recover
		Clothing, Accessories	Nudie Jeans, MUD Jeans, HNST, Raeburn, Elvis&Kresse
		Footwear	VEJA, Ecoalf
		Textile Recycling	re:newcell, Ecoalf, Texaid, RiFo, Recover
	Technology B2B		Unmade, DyeCoo, SpinDye, Fashion for Good
Marketing	Brands/Designers		Global Fashion Agenda (GFA)
	Campaign		Fashion Revolution, Ellen MacArthur Foundation, GFA
	Technology B2C		Unmade
Services	Share/Rent		Lena Fashion Library, Vigga, NuWardrobe, Vestiaire Collective
	Customised/Bespoke		Unmade, Anna Ruohonen, 40 Colori
	Repair		Nudie Jeans, Houdini, Elvis & Kresse
	Collect		Texaid, I:CO, Jeans to Jeans by HNST, Recover
	Technology B2B		Unmade
Retail	Brands/Designers		H&M, Stella McCartney
	On demand/Made to order		Unmade, Raeburn, Anna Ruohonen

	Primary Function	Sub-category	Key Players
	Take back/collect		H&M/I:CO, Filippa K, M&S/Oxfam, Hels1nk1, Houdini
	Re-sell		Filippa K, MUD Jeans
	Technology B2C		Unmade
End of Use/Life	Re-use/upcycle		Elvis & Kresse, Raeburn, RiFo, REDU
	Repair		MUD Jeans, Nudie Jeans
	Collect		Texaid, I:CO, Recover
	Recycle		Texaid, I:CO, Recover
Support	Business support	Incubator/accelerator	Centre for Fashion Enterprise, Fashion for Good
		Sales/marketing	United Fashion, Moda Lisboa, British Fashion Council
	Trade association		Euratex, Sustainable Apparel Coalition
	Educational institution		Centre for Sustainable Fashion and Centre for Circular Design (UAL), Big Blue Project
	End of Life	Collection logistics and sorting	I:CO, Texaid, Recover
		Recycling/fibres	Texaid, Ecoalf, RiFo
	Networks	Fashion network	United Fashion
		Sustainable fashion network	GFA, Common Objective, Fashion Revolution, Fashion for Good, Textile Exchange

Table 3: Examples of key players across EU member states categorised by primary functions. Note: Some names appear in more than one section, reflecting their range of operations.

The visual mapping illustrates the types and number of initiatives identified in the database country by country in a way that enables immediate comparison, and can be interrogated as a digital file to enable further detail to be extracted. Please find link to document here

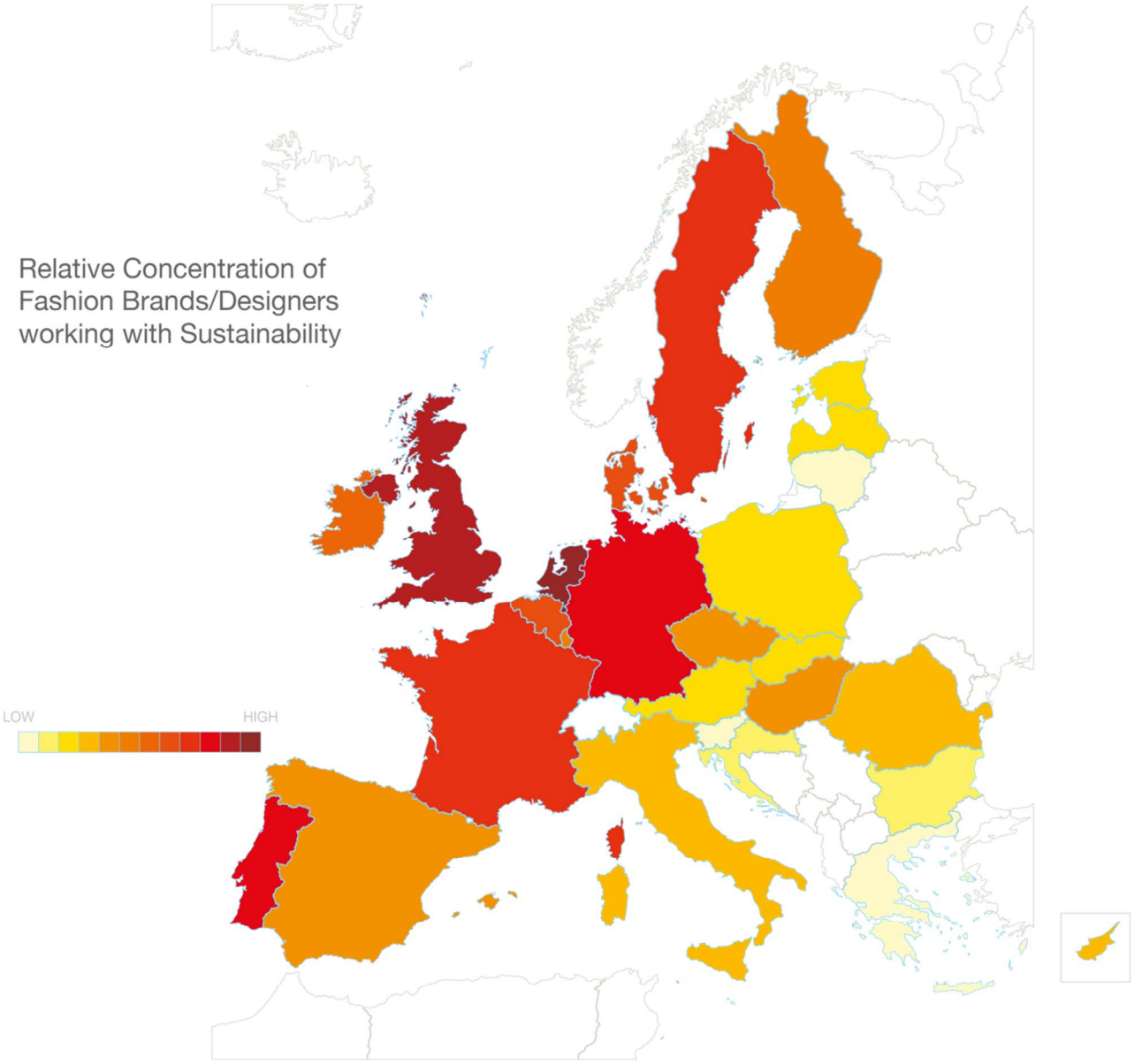


Diagram 1: Mapping of Brands/Designers across EU states, as of May 2019. Designed by DED Associates, UK.

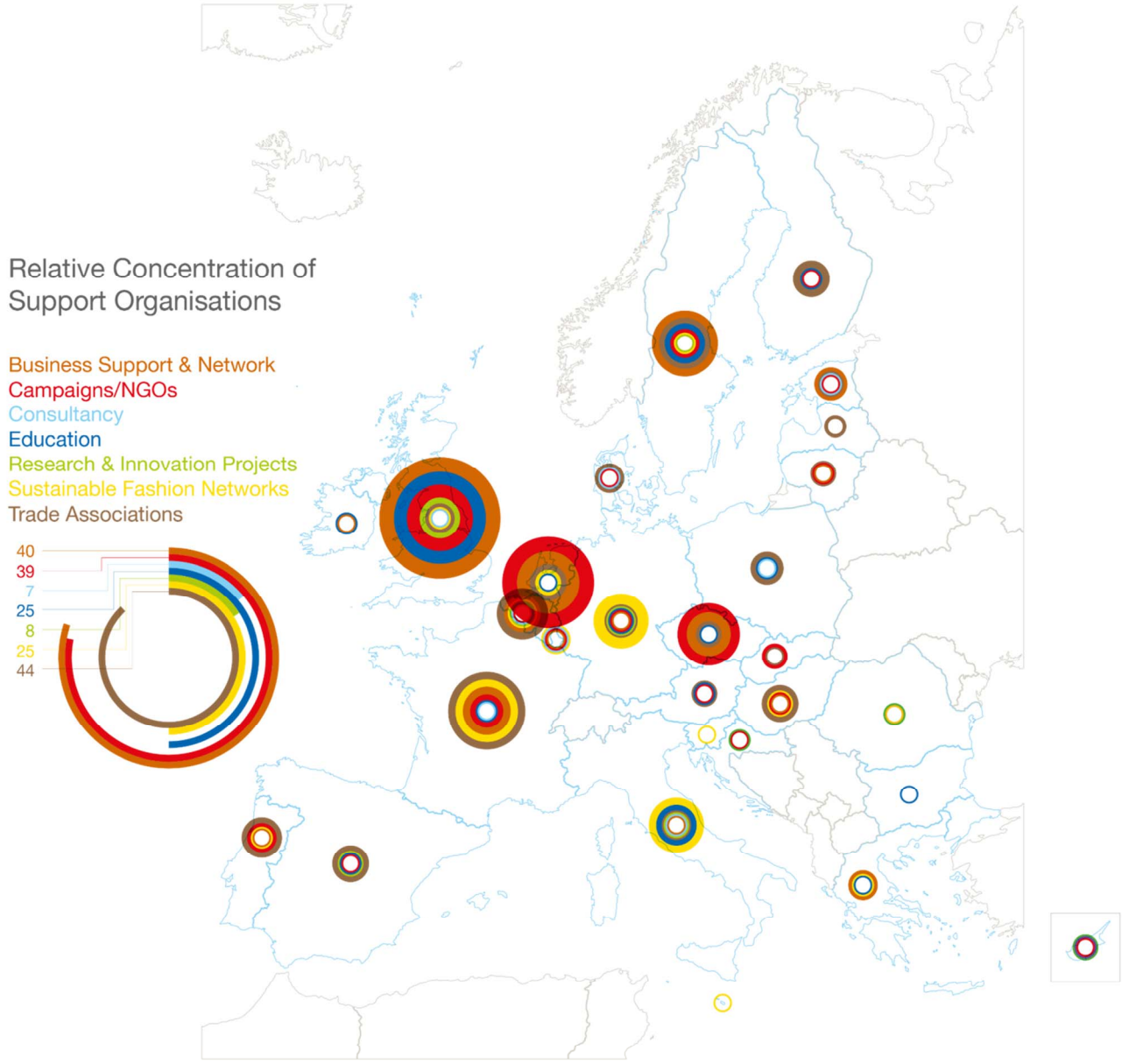


Diagram 2: Mapping Support Organisations across EU states, as of May 2019. Designed by DED Associates, UK.

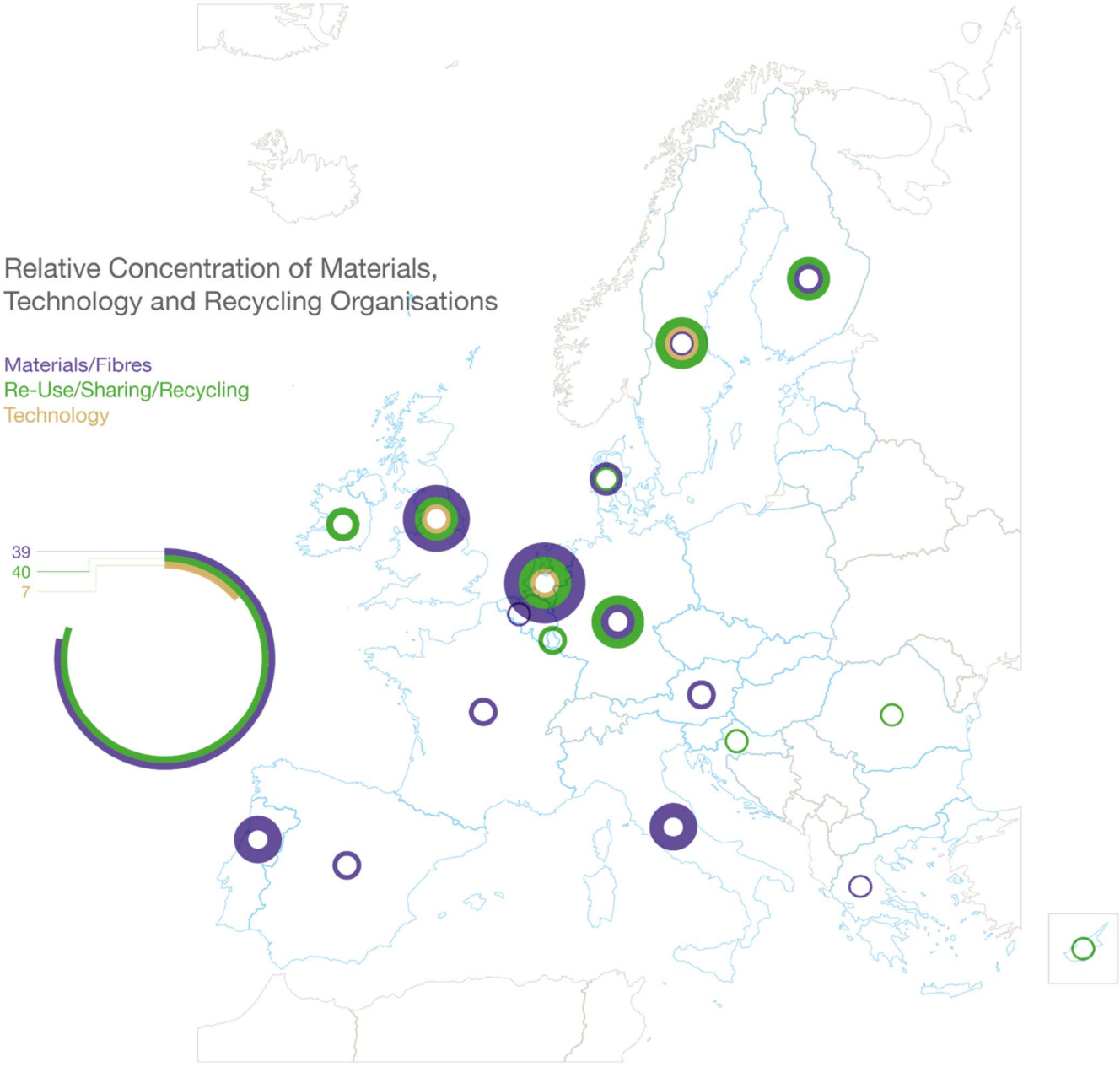


Diagram 3: Mapping Materials, Technology & Recycling Organisations across EU states, as of May 2019. Designed by DED Associates, UK.

3.3 Trends in Sustainable Fashion

The following commentary is drawn from our scoping interviews with 43 experts in 28 countries across the EU, as outlined in section 3.1, and deals with both consumer demand for and availability of sustainable fashion in the various markets. Experts had a wealth of knowledge of the fashion/textiles sector and/or specific expertise on sustainable fashion activity within the particular country but were not explicitly versed in consumer perspectives. The trends information is necessarily limited to the knowledge of the particular interviewees but triangulated with our desk research and the knowledge of the research team. This section therefore does not propose to present robustly comparative data, but relativities across the EU member states, that serves to indicate where the EU is leading and where it may be lagging behind in sustainable fashion.

For a full list of interviews see Annex 7.1.

3.3.1 Consumer demand for sustainable fashion

In Northern Europe interviews identified that demand seems to be more sensitive and proactive towards sustainability issues than in other areas. This seems to be driven mostly by media narratives that are bringing visibility to environmental and social issues. In Central Europe, there is a rise of demand but there is room for expansion. In Southern Europe, there is a growing demand driven by millennials and this is also noted in the market for childrenswear, but there are still significant barriers that are perceived by consumers that might prevent them translating this interest into sustainable buying practices in particular, high prices. In Eastern Europe demand for sustainable fashion seems also to be growing but is at a more developmental stage; the barriers are more exacerbated than in Central Europe, according to the information we gathered from interviewees.

Particular dynamics characterising demand for sustainable fashion have been identified by the experts interviewed in relation to the specific countries below.

Northern Europe:

In **Denmark,** the expert believed the need for transparency is recognised, as are issues of climate change; questions are raised about the origin of raw materials. Vintage fashion is in demand - the cheapest and most understandable option for sustainable fashion. From the interviews conducted, in general, people in **Scandinavian countries** are quite aware of environmental issues and this has been reflected in fashion; there are wide discussions of climate change in the media, also linking this to clothing consumption. However **Swedish** consumers show considerable variation in awareness and behaviour from highly conscious to contradicting sustainability. Clothing rental is not as popular as in other countries e.g. the Filippa K leasing scheme faced challenges. **Ireland** has seen a recent positive shift in awareness of environmental issues including climate change and pollution, from press coverage. In the **UK,** the expert stated that there is a demand in the high fashion sector but in mainstream fashion sustainability is still new. However, recent documentaries have brought visibility to environmental and social issues. The remarkable shift in interest in sustainable fashion does not necessarily translate into sustainable buying practices, as there is some confusion over actions to take. Overall, consumer focus changes with the prevailing media narrative although culture can also shift in response to disasters such as Rana Plaza in 2013.

Central Europe:

Sustainability is a very important factor in daily life in **Austria** - people are very aware and want to have sustainable products and live responsibly, the expert reported. There is a demand for sustainable fashion, and customers are prepared to pay more. People ask for transparency and hand-made items are also sought after. In **Belgium,** demand for sustainable fashion is conditional on price and easy availability and does not translate to purchases. However, there is a shift towards buying more second-hand fashion. The experts interviewed in **France** described a clear segment interested in sustainable fashion ("bobos'), but the legacy of a poor aesthetic image and higher prices is still problematic Therefore, the demand for vintage and second hand (via e-commerce), including childrenswear, is growing because it is more affordable. Childrenswear is a more sensitized area due to parental concerns around toxicity of dyes, and overall demand for traceability is increasing. Most change has occurred in the public sector where procurement legislation requires compliance by SMEs. **Germany** has a diverse market and there is an attitude/behaviour gap regarding sustainable fashion. The expert suggested that designers and consumers need greater levels of education for sustainability. Similarly, in the **Netherlands** consumer awareness is growing through designer and large brand initiatives (e.g. take-back schemes) but there is need for more education – social media may also have potential here. In **Luxembourg,** it was reported that there is strong interest in the transition movement and more awareness of health impacts of food and cosmetics than of sustainable fashion.

Southern Europe:

In **Cyprus**, consumers consider sustainable fashion products overpriced because they are used to fast fashion prices. The demand is average, although there are many second hand and vintage shops. A key part of Cypriot culture is to make own clothes and buy designer clothes - looking good is more important than being ethical, according to the expert. Consumers are interested in local designers especially couture but prefer to support Greek designers. In relation to childrenswear, consumer demand for sustainable practices is higher. The expert in **Greece** reported that millennials are driving the market, showing interest in the impact of their clothes both from a social and environmental point of view. Similarly, in **Italy** demand from millennials is high, with consumers of sportswear more interested in labour conditions. In **Malta**, consumers align sustainable fashion with the slow movement and socio-ethical issues, according to the expert. Consumers in **Portugal** prefer new clothes to second hand and still align sustainable fashion with the early "beige eco-look".

Eastern Europe:

Demand for sustainable fashion in **Croatia** is low as people want to buy cheap and fast. However, the expert explained that after four years of the Fashion Revolution campaign[2] in the country, the message is now being heard. Interest is also growing in the **Czech Republic** since the disastrous collapse of the Rana Plaza complex, and the range of sustainable products available is increasing. There is also growing interest in second-hand clothing. The **Estonian** expert forecasts that demand for sustainable fashion will be

[2] The Fashion Revolution campaign was founded in 2013 following the collapse of the Rana Plaza manufacturing complex in Bangladesh, killing 1134 people due to hazardous working conditions and pressures from unsustainable buying practices.

rising in the coming years due to the recent directive which will require companies to recycle between 20/25% of materials (Circular economy package, EU, 2018). **Hungary** is experiencing a small shift in awareness and education towards sustainable fashion assisted by Fashion Revolution and millennials' sensitivities to the issues. In **Latvia,** the expert believes that there is little demand with more consumer focus on cosmetic brands. Since the 2008 financial crisis, **Lithuania** has seen decreasing demand but young people are now becoming interested. Demand in **Poland** is growing, particularly from millennials. Trends are noted towards circularity and less waste in the wider industry and a return to traditional craftsmanship, according to the expert. The small demand in **Romania** is expected to grow, mainly due to the awareness of the younger generation of reuse and upcycling, reducing waste, and supporting transparency and ethical production values. Demand in **Slovakia** is growing, the experts reported, with the support of the media.; Customers interested in embracing sustainability reflect these choices also in fashion, primarily through upcycled alternatives and natural materials such as organic cotton. In Slovakia, strong support of the childrenswear sector has been enabled by local brands combining certified natural materials (organic cotton; safe dyeing processes) with fun designs. In **Slovenia,** there is limited interest and a very small market. Consumers are driven by price so cannot afford expensive items by the designers that are engaged with sustainability.

3.3.2 Supply of sustainable fashion

From insights gathered from the 43 interviews, it can be observed that small businesses are struggling with the adoption of sustainability practices for different reasons, mainly related to regional/national issues. Analysis of individual cases shows how sustainability and circularity are addressed in the different European areas according to the specific local context. As evinced from the distinctive dynamics associated with the demand for sustainable fashion, similar patterns can also be identified in relation to the supply scenario, with Northern Europe more proactive; Central Europe and Southern Europe being more reactive in response to external demand (i.e. from consumers and in the b2b sector to be part of the global supply chain); and in Eastern Europe there is a growing supply albeit still lagging behind other areas.

Interestingly, it is noted from the interviews that within Southern Europe a varied picture of support for sustainable fashion emerges. The research shows there are clear differences among the Mediterranean countries. In Italy and in Spain the experts presented a structure of associations that better support, even if at an embryonic level, the sustainable endeavours of SMEs compared to Greece and Malta. The experts from Greece and Malta underlined that there is no aid for SMEs who want to start a transition towards sustainability/circularity, despite the efforts of individual examples. Similarly, Eastern Europe experts emphasized how sustainability issues are still far from being addressed by Policy and Trade associations, therefore the provision of sustainable and circular products is either limited or happens by "accident".

Specific dynamics characterising the supply for sustainable fashion have been identified by the expert interviews and can be noted as follows:

Northern Europe:

According to the expert, it is difficult in **Denmark** for SMEs to get started due to lack of suppliers, support and HR issues. Change is clearly foremost in large firms as they tend to have greater visibility. In **Ireland,** designers and start-up fashion brands are aligning themselves with sustainability. In the expert's opinion, sustainability is viewed as creating a new platform for collaboration and sharing knowledge in a sector which has tended to be exclusive and secretive. SMEs in **Sweden** understand that we are now in a critical situation and they need to be involved in sustainability; tools are still not available to help fully capture the whole concept. Sustainable development goals help a little but are still very complex to understand. In the **UK**, the expert felt that interest is high and growing but there is also a heightened sense of confusion - not knowing what/how to change things. Interest is broadening to encompass new systems and services as well as new products.

Central Europe:

Belgium has seen a shift in the last five years according to the expert. Initially, only young innovative designers and start-ups were asking about sustainability but now also mature and more established companies want to learn about it. In **France,** the experts reported that it is mainly the big players rather than SMEs who are now asking themselves questions, particularly on the industrial aspects of sustainability such as recycling. There are only a small number of sustainable fashion designers, and sustainability is not embedded as a long-term strategy but designs are often not considered desirable. **Germany** is a large and diverse market with Berlin described by the expert as a trendsetter, but despite advertising messages on sustainability, fashion is an international industry with little opportunity for fashion start-ups in Germany. A lack of local production also means that SMEs find it hard to approach sustainability. Interest in sustainability and circularity has been growing for several years and has become a key trend. Although the fashion sector is small in **Luxembourg** and 90-95% of fashion is imported into the country, there are 3 or 4 showrooms/concept stores selling sustainable fashion which seems promising. **The Netherlands** has good fashion education and support for sustainability and many designers want to work with upcycling textile waste but also developing advanced new business models. Attention has been paid to advancing rental and re-commerce models via Circle Economy.

Southern Europe:

In **Cyprus,** a key part of Cypriot culture is to make your own clothes and only buy designer clothes, which may be considered as sustainable practice. Shops with yarns and material for handmade clothing and accessories are very common on the island, many have their own workshops, the expert explained. However, more guidance is needed in sustainable practices. From our interview it also emerges that interest in sustainability is also low in **Greece.** The system is still focused on cost and profit margins rather than sustainability alternatives. In contrast, Italy, as a key part of the global value chain, SMEs need to conform to sustainability practices, especially if they deal in the B2B sector where their main customers are larger firms. Otherwise they would be replaced by competitors with more compliant operations. Therefore, sustainability is now a core topic for SMEs in Italy. Like in many other countries, **Portugal's** brands and small designers are split into those doing 'business as usual' and others that are new and looking for different ways to engage with sustainable fashion. In **Spain**, sustainability is still a new

topic and SMEs are struggling with approaching it. The expert however believes that it can be key to being innovative and competitive at the same time.

Eastern Europe:

In **Croatia,** the offering of sustainable fashion is low, the expert reported. Several small fashion brands are interested in sustainability, but individual designer/makers are more engaged and aware. Designers do not know where to source sustainable materials, and loss of craft skills affects their ability to manufacture. Within the **Czech Republic** the range of sustainable fashion products available is growing, however, it is still not clear how long these new brands can survive. Designer linen clothing K.Bana is one example of a sustainable business that often struggles with price points and suppliers, according to the expert. **Estonia** now has a strong community that is pushing towards sustainability, focusing mainly on the concept behind the design and the goodness of the products. In **Hungary**, despite emerging interest, SMEs are predominantly micro-enterprises and they are suffering from other issues linked to survival in the market, so sustainability is not a priority. In **Latvia**, the expert explained that the majority of the actors are manufacturers who are not very sensitive to sustainable development and they struggle to meet the legal requirements of the Working Time Directive. Understanding of sustainable development is limited among SMEs. Manufacturers in **Lithuania**, on the other hand, work for the European market in the B2B sector and so must meet the needs of their customers which makes them highly sensitive to the subject of sustainability. However, there is no government support and so it can be difficult to absorb the additional costs, the expert described. There is a growing interest in sustainability in fashion in **Poland** since big brands like H&M started creating their green reputation after Rana Plaza collapse. There is large contribution from NGOs focused on fair trade, conscious consumerism, circularity and sustainability and the Fashion Revolution movement. Sustainability is not a big topic for SMEs in **Romania**, according to the expert, but work is being done to create awareness by the government and universities to make manufacturers understand that they can reduce costs and bring new input to the company when applying a more sustainable approach.

In **Slovakia the experts reported that** the sustainability agenda is often not explicit, many businesses are 'accidentally' sustainable in terms of volume of production, local production networks and business size. Activity is focused in two areas: upcycling/recycling and sustainable materials. **Slovenia** has a few sustainable designers who sell expensive items mostly abroad as domestic consumers cannot afford them. Like elsewhere, certifications for materials and lack of manufacturing skills and machinery for natural materials increase the costs.

3.4 Opportunities for fashion SMEs (including designers and start-ups)

Identified from the 43 expert interviews conducted, there are specific opportunities that are associated with the different European areas. As seen from the dynamics associated with the supply and demand for sustainable fashion, similar patterns can be also identified, where in Northern Europe fashion SMEs seem to be more responsive towards the opportunities associated with sustainability and circularity than in Central Europe.

SMEs in Southern Europe seem to be less responsive and in Eastern Europe significantly less responsive, reflecting the overall degree of sensitivity and interest in sustainable

fashion and circularity. Amongst the opportunities that have been most commonly mentioned by the experts we find "soft" and "hard" benefits.

In relation to the former, we find marketing benefits (image, reputational capital, visibility etc..), to capitalise on the upsurge of interest in forgotten skills and the value of authenticity (i.e. use of the label "made in"), of being local and particularly of being small, allowing independence and self-expression of the entrepreneur's own ethos and values - as opposed to working in the B2B sector for large corporations. In relation to the latter, we find some tangible benefits in terms of commercial opportunities, financial viability and additional revenues were also mentioned by the experts.

In summary, the key opportunities emerging from the expert interviews are as follows:

- Sustainability provides particular opportunity for start-ups and early stage businesses to do business differently and gain reputational capital.
- Start-ups can be flexible and experimental in testing new ideas and models and SMEs can quickly make changes to their business model.
- Education can develop graduates with increasing sustainability literacy, and this enables opportunities for start-ups to be creative and informed.
- Opportunity for re-shoring of manufacturing through sustainability initiatives, to generate local and small-scale production.
- Clear marketing and promotional opportunities exist at national levels.
- Bridging traditional and new technologies and processes can provide business opportunities.
- Childrenswear provides a good starting point for sustainability initiatives.
- Demand is noted from millennials for sustainable/circular products and systems.

Particular areas have been identified, from the expert interviews, in relation to the opportunities (or lack thereof) in specific countries as discussed below.

Northern Europe

The expert in **Finland** reported that early stage companies and start-ups want to strongly focus on sustainability and do business differently. Opportunity exists for an on-line platform to provide promotion/information on small sustainable fashion companies to make it easier for consumers to access these brands so their values can be reflected through their shopping decisions. Support for this could be public or private sector. In **Ireland** an opportunity is seen to re-establish Ireland as a leader in the craft of dressmaking and tailoring – having lost these skills due to offshoring. According to the expert in **Sweden,** there are opportunities for SMEs to better understand their value chain, using the Transparency Toolkit (tools in general and specifically the EU Product Environmental footprint). Technology companies like e.g. TrusTrace are providing the best solutions for sustainable fashion. SMEs in the **UK** have a great deal of opportunity because the large businesses still mainly do 'business as usual'. In comparison, SMEs can experiment, led by design, and trial ideas to embrace sustainability, providing reputational capital. At the same time, these opportunities also create challenges for viability of the business.

Central Europe

The **Austrian** expert recognises opportunities for local and small-scale production that also bridge from lo-tech to hi-tech – from traditional to new ways of producing fashion, including new materials and software to create a fashion and products hub for 3D printing. In **Belgium,** the expert believes that the demand from millennials and current legislation are seen to provide commercial opportunity to include sustainability, providing a good business case for start-ups that includes revaluing items received from take-back schemes. In the very competitive **French** landscape where design is key, sustainability advantages are mostly on the marketing side, to catch consumer attention and stand apart from competitors. In **Germany**, the expert reported that there are some small political initiatives to support sustainability practices among SMEs but the prevailing import-export model of SMEs limits the possible opportunities. After the collapse of some large fashion businesses in Holland, opportunities are being created in **The Netherlands** (Amsterdam) for designers to work differently, collaborating with the industry on long term solutions and capitalizing on social media messaging to encourage alternative consumption models. An opportunity exists for the small number of SMEs producing in **Luxembourg** to utilise 'Made in Luxembourg' and capitalise on the Fashion Revolution campaign, the expert suggested.

Southern Europe

In **Cyprus** the expert stated that there are very few sustainable SMEs (designers, suppliers, business, retailers) but also identified commercial opportunities in relation to childrenswear (i.e. school uniforms and carnival costumes). Similarly, in **Greece** SMEs lack skills and tools to exploit opportunities for sustainability through technological innovation and respond to new policy directives. It was identified from interviews that many SMEs in **Italy** are part of the global supply chain, B2B suppliers to larger firms, and need to implement sustainable practices in order to be compliant and not to be replaced by competitors. **Maltese** companies are almost all small businesses, allowing processes to focus on the quality of the final product rather than on quantity. The expert described a situation where SMEs can directly control every step of the value chain and this can facilitate the integration of sustainability in the business structure. The tradition of small-scale manufacturing, according to the expert in **Portugal,** provides clear opportunities for factories to engage with sustainable practices for competitive advantage. Interviews determined that the new lifestyles and consumer behaviour of millennials provide **Spain** (and by implication other countries) with opportunity, as these translate into a major interest in sustainability and circular economy ideas.

Eastern Europe

According to the expert no formal initiatives exist in **Bulgaria** to incentivize opportunities for small businesses to integrate sustainability, other than the individual players themselves. Similarly, a small but growing independent designer segment described by the **Czech Republic** interviewee sees opportunity in letting values lead their work (which is not always possible when working in the B2B sector for big corporations). As a producer country, SME competitiveness in **Hungary** is based on lower labour costs, but a recent initiative by Innovatext is stimulating inclusion of sustainable practices. In **Latvia**, sustainable fashion remains a niche market, although some brands have stopped using

fur. For regional brands in **Lithuania,** sustainability is often part of SME strategy as these have to stand out from fast fashion and low-cost competitors with a more premium product. **Poland's** interviewee reported that fashion SMEs have an opportunity to respond to social demands for transparency and drive change due to their smaller scale. Like in many other countries, the there is a growing interest among young designers/graduates in **Slovakia** to set up their own small, design-led enterprises, offering employment opportunities in the relatively small Slovak fashion market., The experts reported that this allows a local focus, encourages customer loyalty but also possibly limits growth.

3.5 Challenges for fashion SMEs including designers and start-ups

Identified from the 43 expert interviews conducted, specific challenges are seen across different European areas. In line with the opportunities and the different levels of responsiveness towards the opportunities, different types of challenges/barriers were also identified by the experts. These prevent fashion SMEs to fully reap the benefits that are associated with sustainability and circularity.

Key challenges faced by all countries mainly refer to:

- the cost of producing sustainable fashion (for sustainable materials, certification, fair labour etc)
- sourcing eco-materials in small enough quantities
- production in competition with larger companies
- remaining competitively priced as there are no economies of scale for small businesses.
- engaging with supply chain transparency
- access to showcase and gaining visibility
- access to finance
- the lack of adequate suppliers of sustainable/alternative materials
- lack of fair trade/fair labour production facilities
- lack of access to necessary skills at a reasonable cost to re-shore clothing production in countries with relatively small fashion sectors
- access to dedicated support networks and sustainability information.
- cultural acceptance of new business models such as rental
- the lack of access to technical solutions
- difficulties re-using textiles for a second life due to its classification as 'waste'

In addition, it is noted that it is more difficult for established business to adopt new sustainable practices than new start-ups. The ambition for re-shoring manufacturing in some European countries may also be impeded by the notable loss of skills for making/manufacturing.

Particular challenges for SMEs engaging with sustainable fashion have been identified by the 43 experts interviewed, in relation to the specific countries below. These challenges were deemed by the experts as rectifiable/amendable by the implementation of dedicated support – either in the form of suitable policy initiatives or as private support.

Northern Europe

The expert from **Denmark** reported that the two major problem areas are additional production costs and access to suppliers that can provide sustainable materials in small quantities. The latter challenge is also repeated in many other countries including Finland and Ireland. In **Finland**, like elsewhere across the EU, a major obstacle is in changing the current system – how to make profit by doing something small, to change the usual logic of business. This is hard for large businesses to achieve; therefore small business can be forerunners and do things differently. A further challenge is production, where small businesses have to compete for production facilities with larger companies and supply chain transparency. In **Sweden,** challenges are noted by the expert for SMEs to engage with transparency, and to communicate their sustainability message effectively with consumers. Simple tools need to be developed to assist SMEs in interpreting 'circular economy'. In the **UK,** the expert believes that it is difficult for fashion SMEs to gain visibility and access relevant showcases for sustainability initiatives, and, importantly, to access finance.

Central Europe

Austria's expert highlighted that SMEs require access to networks and sustainability information, and to sustainable materials, plus there can be high costs for specialist production or technology. The **Belgian** expert noted that it is harder for an established business to adopt sustainability and change their practices and price points than for a start-up to engage with sustainability form the outset. In **France**, the expert noted that a lack of knowledge and education is identified that can inform strategic approaches to sustainability. SMEs wishing to be local and sustainable find access to suppliers and manufacturers challenging. Access to networks is missing in **Germany** as is a suitable infrastructure and there is also a lack of political incentives. Maintaining control of the textile cycle and different phases of the supply chain is challenging for SMEs. Consumers in **Luxembourg** tend to buy clothes elsewhere, the expert noted, therefore sustainable fashion businesses struggle to obtain sales. In addition, the labour costs are high and businesses also require more supportive infrastructure to access relevant skills and services. The **Netherlands** develops a strong fashion talent pool from its fashion academies who require more support and collaboration for visibility of sustainability efforts against large brands, and to retain designers. A lack of access to innovation is also noted by the expert.

Southern Europe

According to the expert in **Cyprus,** there are no suppliers of sustainable materials (due to import costs) or fair-trade factories. The alternative of using local seamstresses incurs high cost for small quantities, compared to using existing (low-wage) contractors. In **Greece,** the expert reported that access to both physical resources (raw materials) and economic resources such as grants and tax incentives is unavailable. The expert in **Italy** described how SMEs have been slow to engage with sustainability due to limited budgets. The industry faces challenges in transitioning from large scale production to smaller, more specialised manufacturing and related difficulties in achieving financial sustainability of small production numbers. In the small island of **Malta**, materials are not local but imported, with consequent additional costs. Fashion SMEs in **Portugal** face competition on scale and price from larger brands. The challenge of balancing higher costs with competitiveness, without compromising quality, is also felt by SMEs in **Spain**.

Eastern Europe

The expert in **Croatia** points out that key challenges faced are the supply of sustainable materials, support from local policies together with consumer education including the value of their heritage of craft skills. In **Bulgaria,** it is difficult to produce garments locally within parameters of sustainability. In the **Czech Republic,** lack of entrepreneurial mindset and access to finance are challenges for start-ups and designers; their small size mitigates against capacity for steady production and economies of scale. In **Hungary**, similar to other countries in the region, all SMEs have to import fabrics which are expensive. The issue with using cheaper fabrics from e.g. China is reliable certification, therefore safety and transparency can be a challenge. More centralised support and information for business towards sustainability is required for **Lithuania** to progress, a requirement also recognised by the experts in **Poland** and **Slovakia.** A better connection at higher education (degree) level between fashion and business education is also considered essential. Like in Hungary, the experts also highlighted that there is no production of new sustainable materials in Slovakia. Sourcing from abroad adds higher costs to other production challenges such as minimum orders, limited manufacturing options for and competition from larger international brands. **Romanian** SMEs are facing challenges of costs to introduce new production technology and training, the expert described. In **Slovenia** the small scale of the sector is challenging, according to the expert, together with loss of skills (in working with hemp and linen) and machinery. Designers keep some costs low by collaborating on sourcing purchases.

4. EXEMPLAR CASE STUDIES

4.1 Selection criteria for case studies

This stage of the research identifies 12 in-depth case studies across the value chain which provide insights that can inspire and guide other SMEs to become more sustainable and circular. These have been identified from the mapping conducted in Section 3 and chosen according to the selection criteria below. Please see table 4 for a longlist from which the 12 case studies have been selected, mapped against the areas identified in table 3.

Selection criteria for the case studies are also based on the following:

- Recommendations triangulated from the Fashion/Sustainability Experts, mapping initiatives database and study team knowledge.
- The degree to which business cases are innovative and illustrative of a range of sustainable/circular business models and practices that are viable and replicable.
- To achieve diversity across the EU member states with particular focus on the top 10 states producing clothing and textiles, and those leading research and initiatives towards a circular economy for textiles and fashion, i.e. from our top 14 countries identified namely: Austria, Belgium, Denmark, Finland, France, Germany, Italy, The Netherlands, Poland, Portugal, Romania, Spain, Sweden and the UK.
- To achieve diversity of products and business models across the cases studies – i.e. a selection of case studies from recycled and innovative textiles production, plus brands producing menswear, womenswear, childrenswear, footwear and accessories. Textile innovations include new fibres that are either on the market or close to readiness (see Orange Fiber, re:newcell).
- To represent a range of levels of maturity i.e. length of time in operation – pioneers plus significant new entrants to the field (See VEJA, Unmade, REDU).
- To represent viable business models that could largely be replicated by others (see NuWardrobe).
- To reflect the four areas of the value chain as specified (production, services, marketing, retail), but we have also identified the area 'End of Use/Life' which is vital to the emergence of circular economy for materials. As outlined in table 5 and Annex 7.3, these also mapped against our more specific categories: Brands/Designers; Materials/Fibres; Reuse/Sharing; Recycling; Technology; Campaigns/NGOs; Business Support, Sustainable Fashion Networks; Trade Associations, and Consultancy.

We also recognise in the report the key role played by some key campaigns and NGOs, such as Fashion Revolution and the Ellen MacArthur Foundation, in raising global awareness of environmental and social issues in the fashion and textiles sector, together with industry organisations including Global Fashion Agenda (GFA) and the Sustainable Apparel Coalition (SAC). However, as the last two are both focused on large businesses, Fashion Revolution has been included in the final selection of case studies.

Type of initiative		Production							Marketing			Services						Retail					End of Use/ Life/Lives				Support organisation				
	Country	Designer/ Brand	Design	Manufacturing				Tech B2B	Designer/Brand	Tech B2C	Campaign	Distribution	Share/rent	customise/bespoke	repair	collect	Tech B2B	Designer/Brands	On Demand	Take-back	Re-sell	Tech B2C	Re-use/Upcycle	Repair	Collection	Recycle	Incubator	Trade Assoc.	Sust. Network	Fashion Network	Sust. Fash Org
Company				Materials	Clothing	Footwear	Recycling																								
1083	FR	x	x		x	x	x			x				x															x	x	
Elvis & Kresse	UK	x	x	xx		x	xx			x				x		x					x						x x				
Houdini	SE	x	x	x	x		xx		x			x	x		x			x		x	x		x	x	x	x					
Jeans to Jeans HNST	BE	x	xx	xx	x		x		x																						
Lena Fashion Library	NE									x	x	xx	xx								xx		x		x						
MUD Jeans	NL	x	x	x	x		xx			x				x	x						x		x	x				x	x	x	
Nudie Jeans	SE	x	x	x	x		x		x			x			x	x		x		x			x	x	x	x					
The Nu Wardrobe	IR				xx	xx						x	xx								xx										
REDU	RO	x	x		x		xx											x					xx								
RIFO	IT	x	x	xx	x		xx			x					x			x									x		x		
Stanley/ Stella	BE	x	x		x			x		x				x					x										x		
Swedish Stockings	SE	x	x	x	x		x			x				x							x		x				x			x	
Unmade	UK		x		x			xx	x	xx				xx			x	x	x			x									

Type of initiative	Country	Production							Marketing			Services						Retail					End of Use/ Life/Lives				Support organisation				
		Designer/ Brand	Design	Manufacturing				Tech B2B	Designer/Brand	Tech B2C	Campaign	Distribution	Share/rent	customise/bespoke	repair	collect	Tech B2B	Designer/Brands	On Demand	Take-back	Re-sell	Tech B2C	Re-use/Upcycle	Repair	Collection	Recycle	Incubator	Trade Assoc.	Sust. Network	Fashion Network	Sust. Fash Org
Company				Materials	Clothing	Footwear	Recycling																								
Vigga	DK	x	x		x				x			x	xx					x													
VEJA	FR	x	x			xx	x		x																						
Materials Fibres																	x								x	x					
re:newcell	SE			xx			xx	xx								x									x	xx					
Ecoalf	SP	x		xx	x		xx																		xx	xx					
Orange Fiber	IT			xx			xx	x																		x					
I:CO	DE															xx	x			xx					xx						
NGO/Campaign																															
Fashion Revolution	UK										xx							x											xx	xx	xx

Table 4: Longlist of case study selection

4.2 Overview of case studies

The final stage of research developed 12 in-depth case studies - 11 SME exemplars and one key campaign organization Fashion Revolution - in order to illustrate the current range of practices and business models working towards sustainability and circularity in the fashion and textiles sector across the EU. The Case Studies have been selected based on the criteria outlined in section 4.1 and including the viability and potential replicability of the business model as exemplars for others, with particular regard to the length of time the enterprise has been in business. Given the limited time frame for research, the selection is also based on pragmatic considerations of availability of interviewees. For this reason, within each SME case study other brands/organisations have been included as comparators, to give a sense of the activity clustered around particular business models, sub-sectors or practices that may use a different assortment of sustainable or circular practices. Four of the businesses selected have been awarded B Corp™ certification which demonstrates their fulfillment of both social equity and environmental best practices validated by an independent body (VEJA, MUD Jeans, Elvis & Kresse and Ecoalf).

One interview per case study was conducted with a founder or senior executive of the company, and two with Fashion Revolution organisation due to their global reach. Of note is the fact that several case study companies have been founded by entrepreneurs as a direct result of their previous fashion industry experience, with a view to creating a more sustainable/circular business model.

The final selection covers 9 countries and ranges from a start-up (Rifò) to more mature businesses (VEJA, Elvis & Kresse); from micro businesses (Rifò, REDU) to a volume manufacturer (Stanley/Stella); it includes social enterprises (REDU, Elvis & Kresse), a campaign organisation (Fashion Revolution), a service business (The Nu Wardrobe) and a software service company (Unmade).

Company/Brand:

1. VEJA(FR)– *footwear, using sustainable materials and regional production*
2. MUD Jeans (NL)- *denim sector –including use of recycled denim materials; offers leasing, take back and repair services*
3. Stanley/Stella (BE)- *B2B basic clothing using sustainable materials*
4. Elvis & Kresse (UK)- *luxury upcycled accessories from waste materials*
5. REDU(RO) - *upcycled clothing from textile waste*
6. The Nu Wardrobe (IR) – *collaborative consumption and clothes reselling*
7. RiFò (IT) – *knitwear from fully recycled materials*

Technology:

8. Unmade (UK) - *fashion on demand software systems*

Materials/Fibres:

9. re:newcell (SE)- *circularity: chemical recycling of cellulose textiles (cotton/viscose)*
10. Ecoalf (SP)– *circularity in clothing using upcycled fabrics from ocean plastics*
11. Orange Fiber (IT) - *bio waste fibres and textiles*

NGO/Campaign:

12. Fashion Revolution (UK) - *consumer facing and industry campaigns, focused on environmental and social justice, transparency.*

The 12 case studies therefore comprise:

- Three companies focused on different aspects of materials circularity for textiles fibres: re:newcell regenerating cellulose fibres from textile waste to textiles; Ecoalf upcycling ocean plastics for new textiles and clothing; Orange Fiber innovating in cellulose fibres and textiles utilising bio waste from juice extraction.
- Six brands including one start-up and two social enterprises across 6 countries, working across the subsectors of upcycled fashion (REDU), accessories (Elvis & Kresse), denim jeans (MUD Jeans), basic clothing including t-shirts (Stanley/Stella), footwear (VEJA), and upcycled knitwear (RiFò), all utilising a wide range of sustainable, recycled and upcycled materials.
- One service business operating a new collaborative consumption business model to extend clothing use (The Nu Wardrobe).
- One technology company developing software for end-to-end digital production systems enabling manufacturing on demand (Unmade).
- One campaign organization, a global movement for social justice, transparency and sustainability in the fashion industry (Fashion Revolution). It functions as both a charity and a not-for-profit community interest company.

All the brands design, source materials and manufacture fashion products, using a wide range of material sources. All except Stanley/Stella retail direct to the consumer. Stanley/Stella is mainly a B2B company selling their products and services to other businesses and is at the top end of the SME category in terms of turnover. The Nu Wardrobe represent an example of the new sharing economy emerging in the fashion sector. Unmade is an innovative software business working across the value chain with brands and manufacturers for customised and small batch production on demand. Re:newcell, Ecoalf and Orange Fiber are all involved in different circular fibre processing systems, and Ecoalf also produce their own brand of clothing.

4.3 Case Studies Summary

The following table summarises the key practices, business models and challenges revealed from the analysis of the 12 case studies outlined above. Each has certain recommendations for policy that are further discussed in section 5.

	Case Study	Country	Business Model	Key Sustainable /Circular Practices	Key Challenges	Key Policy Recommendations
	VEJA	France	Small batch productions of sneakers produced from organic or eco-friendly components.	• Utilises vegan leather in 1 of 4 products. • Aims to use upcycled materials in its products. • Sources organic cotton. • Localised production and assembly in one region of Brazil.	• Sourcing new innovative and sustainable materials given small purchasing volume.	• Support for the establishment of material buying cooperatives to access new and innovative materials. • Subsidised eco-certification and supply chain traceability label for brands. • Forums for responsible brands to encourage knowledge exchange and joint projects. • Development of a responsible fashion label.
	MUD Jeans	The Nether-lands	Manufactures, sells and leases organic or recycled cotton jeans.	• 100% organic or recycled denim. • Manufactured with reduced chemical, low water use, low energy consumption. • Fairtrade • Supply-chain transparency • Lease model for jeans – including repair service and take-back system to recycle jeans.	• Accessing public and private finance to scale business model.	• Funding schemes/economic instruments that support/incentivise leasing model until it reaches volumes which enable economies of scale.

	Case Study	Country	Business Model	Key Sustainable /Circular Practices	Key Challenges	Key Policy Recommendations
	Stanley/ Stella	Belgium	Manufactures knitted basics (e.g. t-shirts; sweatshirts; jackets etc.) predominantly B2B for MNCs.	• Products based on organic cotton (95,4%); polyester (3.6%); sustainable alternatives (Lenzing's Tencel and Modal, 0.7%) and recycled polyester and cotton (0.3%).	• Monitoring and verifying supply-chain practices to increase supply-chain transparency.	• Increasing consumer awareness. • Establishment of a universal code of conduct for the textile industry. • Banning production of low-cost fast fashion items under certain price points (e.g. a t-shirt for less than $2).
	Elvis & Kresse	United Kingdom	Luxury upcycled accessories made from firehoses; parachutes; printing blankets and leather offcuts.	• Rescue and repurpose both industrial and fashion waste materials, upcycling into luxury fashion accessories and homewares • Diverting waste materials from entering landfill, • Consumer engagement activities. • Profit share policy with charities and social causes	• Constantly building new partnerships that take time, especially as the founders will not compromise their business principles	• Higher landfill taxes to discourage dumping of waste • Legislation and tax incentives for businesses re using waste • Encouragement for the fashion industry to reach out and collaborate across sectors and learn from other industries • Pay attention to the voices of the next generation with regard to actions for sustainability

	Case Study	Country	Business Model	Key Sustainable /Circular Practices	Key Challenges	Key Policy Recommendations
	REDU	Romania	Social enterprise producing upcycled clothing, accessories and textiles from scraps and clothing donations.	• Prolong the use-life of textiles through repurposing into new fashion items. • Diverting discarded clothing and textiles from landfill. • Consumer engagement activities.	• Operating in a region where consumer awareness regarding sustainability and circularity is low. • Lack of consumer awareness of true cost of unsustainable fashion.	• Developing policy and regulatory frameworks that incentivises /rewards sustainable and circular practices and products (e.g. economic instruments) and that penalises unsustainable practices (e.g. fines).
	The Nu Wardrobe	Ireland	Collaborative consumption through a clothes sharing platform	• Extending the use-life of unworn clothes. • Every time an item of clothing is borrowed instead of bought new, 25% of the resources used in the production of the new item are offset.	• Early-stage investors lack of understanding of alternative business models like collaborative consumption.	• Economic instruments which incentivise sharing and rental models and de-risk collaborative consumption start-ups. • Instruments targeted at reducing barriers to entry for women to start sustainable fashion ventures. • Creating dedicated forums within the sector to accelerate diffusion of knowledge and best practice.

	Case Study	Country	Business Model	Key Sustainable /Circular Practices	Key Challenges	Key Policy Recommendations
	Rifò	Italy	Upcycling cashmere clothing into new yarns and products.	• Prolonging the use-life of textiles through repurposing into new yarns and fashion items. • Diverting discarded cashmere clothing from landfill. • Produced to order. • Uses traditional production techniques supporting local artisans.	• Negative consumer perceptions of upcycled clothing (e.g. perception of lower quality). • Consumer knowledge gap regarding quality-price ratio. • Complexity of legislation governing textile waste and lack of harmonization of policy across local, national and regional levels.	• Developing policy and regulatory frameworks that incentivises /rewards sustainable and circular practices and products (e.g. economic instruments) rather than implementing bans or fines for unsustainable practices. • Developing regulatory frameworks that favours the free trade of used clothing/textiles and clarifying "end-of-waste" status for discarded clothing and textiles.
Technology	**Unmade**	United Kingdom	Digital manufacturing software solution enabling on-demand production.	• Large volume efficiencies through small batch production and individualisation. • On-demand digital technology-based production delivers substantial savings related to waste compared to speculative high-volume mass production.	• Scaling up operations.	• Setting a carbon tax and setting ambitious targets related to waste management and biodiversity. • Dedicated mentoring schemes for fashion start-ups.

	Case Study	Country	Business Model	Key Sustainable /Circular Practices	Key Challenges	Key Policy Recommendations
Materials / Fibres	**re:newcell**	Sweden	Chemical recycling of cellulose based textiles creating a new biodegradable pulp for new fibres	• Use of waste to produce the equivalent of a virgin material. • Final product does not suffer a downgrade in fibre quality. • Reduced carbon emissions relative to production of virgin fibre. • 90% reduction in water usage compared to virgin fibre.	• Hybrid business overlapping the pulp and textile/fashion industries. • Lack of private sector willingness to invest in alternative fibres.	• Developing financial support for new innovative fibre start-ups. • Develop economic incentives to encourage recovery, sorting, reuse and recycling of pre-loved textiles (building on the EU target for compulsory separation and collection of waste textiles). • Provide capacity building support for fashion/ textile start-ups and SMEs to enable them to navigate the bureaucratic process of grant and tender applications.

	Case Study	Country	Business Model	Key Sustainable /Circular Practices	Key Challenges	Key Policy Recommendations
Materials / Fibres	**Ecoalf**	Spain	Transforming recycled materials into fabrics (most notably upcycling ocean plastics).	• Working with 200 fishing boats to retrieve a ton of waste from the Mediterranean ocean a day which they transform into their eco-yarn. • Extensive research and development (R&D) of recycled and recyclable materials that can be used in the fashion industry (e.g. ocean plastic, recycled Nylon, recycled cotton, recycled wool, and recycled used tyres).	• Negative consumer perceptions of recycled fibres (e.g. perception of lower quality and performance) • Lack of recycling practices and recycling technology innovation when starting out in 2009 compared to other European countries.	• Development of consumer awareness campaigns. • Policy to guarantee appropriate times in the production cycle to support ethical production.
	Orange Fiber	Italy	Producing yarn from citrus industry waste (bio-waste).	• Extract a raw material from a non-rival industrial by-product which has disposal costs associated with it. • Satisfy the growing demand for cellulose fibres for textile use, preserving natural resources, without producing industrial waste.	• Lack of private sector willingness to invest in alternative fibres with low technology readiness level (TRL). • Operating in an industry (cellulose) which has been missing in Italy for about 20 years.	• Developing investor awareness campaign / capacity building to improve their literacy regarding circular and sustainable fashion technologies and innovations. • Developing an international research database of research activities on different materials to encourage collaboration and synergies between actors within the sector.

	Case Study	Country	Business Model	Key Sustainable /Circular Practices	Key Challenges	Key Policy Recommendations
NGO/Campaign	**Fashion Revolution**	United Kingdom / Global	Global campaigning organization with a vision of a fashion industry that gives equal value to people, environment, creativity and profit.	• Fashion Revolution is represented globally in more than 90 countries by a network of voluntary country representatives and country teams.	• Securing sufficient funding for Fashion Revolution teams that support local awareness building and education initiatives across the world. • Political borders are creating barriers and stumbling blocks in terms of progress for the sustainable development agenda.	• Production is often pushed just outside the borders of the EU, to countries where issues with tax barriers and lack of access to information inhibit responsiveness to sustainability developments in the rest of the EU. For these reasons, cross-country connections within Europe as physical, rather than political region should be fostered.

Table 5: Cross Case Analysis of Case Studies

5. DISCUSSION AND RECOMMENDATIONS

5.1 Current provision to support sustainability and circularity in fashion and textiles, with relevance to SMEs

In the years since the UN Framework Convention on Climate Change (UNFCCC 1992), and the more recent 2015 Paris Agreement were established, awareness of the need to find sustainable solutions to the endemically wasteful fashion system has grown significantly. For more than a decade, calls to action have been stimulated by a range of collaborative public and private initiatives based in the EU and USA. Notable are the UK government's Sustainable Clothing Action Plan (2007 now managed by WRAP – Waste Resources Action Programme) Denmark's Global Fashion Agenda (arising from Nordic Initiative Clean and Ethical 2009 ongoing), Sweden's public and industry-funded MISTRA Future Fashion programme (2011-19) and the US-initiated industry/academic organisation Sustainable Apparel Coalition (2011 ongoing). Specifically related to promoting a circular economy, the UK-based Ellen MacArthur Foundation (established in 2010) has produced influential reports in relation to the textile and clothing industry, as have international environmental NGOs Greenpeace and the World Wildlife Fund. The business advocacy group and NGO Ecopreneur (established in 2016) has presented cross-sectoral perspectives regarding the adoption of circular economy principles across the EU, and has recently reported on fashion and textiles specifically (Ecopreneur.eu, 2019). The current European Clothing Action Plan (2016-19) is funded by the EU LIFE programme for environmental action, and specifically tackles the entire life cycle of clothing production, consumption and disposal.

In order to achieve the largest potential impact across the mainstream fashion industry, most sustainability initiatives have necessarily focused on working with major fashion brands and textile manufacturers, some of whom have become key sponsors of sustainability networks and activities, including H&M (supporting MISTRA Future Fashion) and C&A Foundation (supporting Fashion for Good and Fashion Revolution). However as mentioned in section 1, the fashion and textile sector comprises 90% small businesses with under 50 employees, 86% of which are micro businesses with less than 10 employees (Interview with Euratex, 2019). The agility and capacity of fashion SMEs for design and innovation, particularly in testing alternative business models and design for circularity/ sustainability agendas has potential for a transformation of the industry towards sustainable and circular systems. These SME/academic collaborations have only recently begun to attract significant research attention or research funding. Several EU projects relevant to and engaging with fashion and textiles SMEs have recently been funded, including Textiles and Clothing Business Labs (TCBL), WORTH Partnership, WEAR Sustain and the UK-funded Fashioning Sustainable Practices. For an overview of current and recent research projects including fashion and textiles enterprises, Fashion Tech and sustainability/circularity please refer to Annex 7.4.

This report identifies a range of organisations, initiatives and funding schemes (public, private, and collaborative) currently available to support SMEs in fashion and textiles to develop their businesses, however only a limited number focus specifically on stimulating engagement with sustainability and circular business models within the sector. Examples include Centre for Sustainable Fashion and Centre for Circular Design at University of the Arts London, UK and the new Fashion Textiles 2030 project at University of Boras Sweden, following on from the MISTRA Future Fashion project.

Public and Private Funding Schemes across the EU

It is pertinent to find that, apart from one flagship case of Regione Lombardia (Italy), **there are no specific funding schemes to finance the transition to sustainable fashion**. However, there are several funding programmes, especially at EU level, to support research, innovation and demonstration of environmental technologies, manufacturing digital transformation, biomaterials, low-carbon technologies and circular economy initiatives more broadly. Within these programmes fashion-sustainability projects can be proposed seeking support for research and technology development for more environmentally sustainable manufacturing processes and materials for textiles and clothing applications, as well as for training and networking. Across the EU, a significant number of research and development projects and initiatives are in process especially regarding alternative fibres that will help close the loop for textiles resources. Many of these involve collaboration funded both by public and private sources. For example, H&M Foundation have sponsored 5 annual rounds of their Global Change Awards for innovation in sustainability and circularity that attract several thousand entries per year and supports 5 start-ups annually. The C&A Foundation offers a very substantial range of grants to support sustainability in the fashion sector globally, across the value chain, and recently created a specific focus on circularity. Oher private funders of sustainability projects from the US fashion sector include the VF Corporation and Nike who fund the Launch award. Additionally, in the fast-growing specialist area of FashionTech, a number of accelerator and incubator schemes are in place (see database in Annex 7.2), however only one short EU-funded research project, WEARSustain has dealt specifically with sustainability issues in this emerging fashion and technology sector, which requires implementation of a design for sustainability approach in order to prevent the creation of new hybrid waste streams. Support in the area of design and sustainability is noticeably lacking as is support of collaborative practices and networks across SMEs and between SMEs and related sectors.

A detailed overview of funding schemes and opportunities that are relevant to fashion and textiles sector, across the EU and in 19 EU countries, is given in Annex 7.5. Countries specifically included at national level are UK, Ireland, Germany, Norway, Sweden, Spain, Portugal, Italy, France, Belgium (Flanders), Netherlands, Slovenia, Croatia, Lithuania, Estonia, Malta, Poland, Czech Republic, Hungary. As the funding landscape is scattered at EU, national and regional level, it has been challenging to achieve a comprehensive analysis covering all 28 EU Member and Associated countries in the time available. Many funding schemes are generic, in which fashion, textiles and sustainability can be specified, and some funding opportunities are one-off calls or projects proposed within existing schemes and not opportunities regularly scheduled.

Other types of support

Several networks including Global Fashion Agenda, Sustainable Apparel Coalition and Textile Exchange have brought together major industry players to make commitments who have the market power to shift industry practices. However, targets set are still relatively modest and operate within existing business growth strategies. The recent Manifesto for a Circular Economy in Textiles signed by Euratex, FESI (Federation of the

European Sporting Goods Industry), Global Fashion Agenda, International Apparel Coalition and Sustainable Apparel Coalition demands policy incentives for fashion and textiles sectors and its supporting infrastructure to further advance circular practices (Euratex, FESI, GFA, IAC & SAC, 2019).

Many short-term networks and projects have been funded, but longer-term funding is required. Key recent initiatives have been set up with private corporations, notably the C&A Foundation, who funded Fashion for Good and other projects to stimulate new developments. Among the most recent is the Switching Gear pilot network set up to accelerate re-commerce and rental business models. The project is jointly run by Circle Economy and Fashion for Good as a part of the EUR 1.29 million 'Bridging the Gap' initiative set up by C&A Foundation. Founding members include US brand Eileen Fisher, Swedish brand MUD Jeans (see Case Study 2, Annex 7.3) and Reflaunt, a reselling service system start-up for brands, based in London and Singapore.

5.2 Findings from literature and scoping interviews

The literature review, desk research, expert interviews and mapping presented in sections 2 and 3 have summarised the state of the art in the sector, including emerging trends. What becomes evident from the review of the literature related to the opportunities and challenges facing SMEs seeking to implement and scale sustainable/circular business models is that the academic literature is only just emerging – illustrated by the research projects which have recently concluded (e.g. TCBL, MISTRA Future Fashion) and those research projects just starting (FSP, REFREAM, DEFINE and others), outlined in Annex 7.3.

There is increasing recognition within the sector that systemic interventions throughout the lifecycle of garments is pivotal for the transition to a sustainable/circular fashion industry.

Key emerging trends identified relate to:

1. extending clothing lifetimes through better care and "sharing economy" models, including repair, rental and resale
2. the personalisation and customization of clothing and footwear through digitalization to encourage longer use through direct consumer engagement
3. the integration of FashionTech into clothing to enhance multi-functionality and increase usefulness and delight
4. small scale localized production and consumption that offers distinction through its understanding of and proximity to markets and access to locally relevant resources

In addition, the role of the consumer in any transition cannot be underestimated – a paradigm shift in terms of how consumers shop for, use and care for garments is crucial. Consumers are demonstrating growing concern relating to fashion's negative impacts; both consumers and NGOs such as Greenpeace and Fashion Revolution are putting retailers and brands under increased pressure for transparency throughout the value chain.

It is clear that many of the challenges facing fashion SMEs relate to the fact that they are operating in a sector which favours larger actors and rapid growth models (See Table 1).

This impacts their ability to source new sustainable fibres and materials in small quantities at reasonable costs; it also hinders their access to innovative technological solutions and to manufacturing facilities. The financial hurdles associated with accessing capital to fund alternative circular business models (for example PSS models or investing in new technologies) and managing cash flow whilst becoming price competitive in order to compete with mainstream brands cannot be underestimated.

From the scoping interviews with the experts it emerges that there are gaps in the provision of support for SMEs that wish to transition toward sustainability or circularity. However, in Northern Europe there are significantly fewer gaps than in Central and Southern Europe. By contrast, in Eastern Europe gaps in the provision of support for SMEs tend to be much more pronounced. All country experts identify a lack of education in sustainability concepts and suitable professional/advisory bodies to provide mentoring schemes.

Additionally, the experts reported a lack of incentives from governments (such as grants, tax reductions, coherent policies), and lack of dedicated legislation to support sustainability. Making sustainable fashion is often expensive, with higher costs associated with sustainable materials plus re-shoring and localised manufacturing, so legislation could be introduced to financially reward businesses for the use of recycled and sustainable materials, renewable energies, local production and achieving low environmental impact in their operations, all of which could make sustainability more price competitive.

The lack of available information on both sustainable practices and potential partners often results in the continuation of obsolete and unsustainable practices. To overcome the hurdle for SMEs of finding outlets for sustainable fashion, there is need for local, national and regional networking platforms to connect sustainable fashion brands with retailers who would sell their product. Additionally, public information and consumer campaigns by trade associations can promote local/regional providers, raise consumer awareness and facilitate transition to sustainability.

Key Enablers

The research has highlighted existing recommendations for tools and policies that can incentivise and enable the transition to sustainable / circular business models by reducing barriers to entry for SMEs and new ventures (see Table 2).

These key enablers relate to:

- Economic instruments
  - tax incentives, grants and subsidies for sustainable initiatives
  - carbon taxes and penalties for non-sustainable operations
  - appropriate finance and grants, including repayable finance and patient capital
- Information flows
  - improving textiles collection and recycling statistics and reporting
  - creating knowledge sharing platforms and networks connecting sustainable businesses with markets and funding opportunities
  - education for sustainability
  - public information campaigns

- Regulatory instruments
  - creating clear end-of-waste criteria for textiles to enable reuse
  - mandatory EPR Schemes
  - harmonising regulations across EU states and removing administrative barriers
- Technological developments
  - Access to design and manufacturing tools
  - Information on and access to emerging R&D e.g. textile recycling
- Collaboration and mentoring schemes
  - enhanced collaboration of small and larger players
  - alignment of values across the supply chain
  - dedicated mentoring for fashion start-ups

5.3 Analysis and Insights from Case Studies

From the case study interviews, it is clear that whilst there are many positive attributes to adopting sustainable practices (such as individual agency and empowerment, influence and impact) companies embedding sustainability and circularity in their operations face similar key challenges and common issues. These include (1) the **current industry infrastructure**, which often is not adequate for their practices in terms of predisposition to innovation and change; (2) **consumer behaviour**, which often shows a dichotomy between what people want – to be sustainable – and how they behave – buying many items at a low price and changing them frequently, therefore continuing to follow the fast fashion paradigm resulting in overconsumption; (3) **current production processes**, which are not updated to integrate sustainability as they are still based on old conceptions of working practices; and (4) **access to support networks** and knowledge and to **appropriate financing** approaches over different stages of a business.

The geographical, socio-cultural, and political context influences how businesses work, for example there are clear differences between Northern Europe (e.g. Finland, Denmark, Sweden, UK) and Eastern Europe (e.g. Romania, Poland, Estonia) with regard to the infrastructural and industrial level of development that many Eastern European countries are still setting up.

Emerging themes

The following themes emerged from the case studies encompassing: the **vision and ethos** of the businesses towards sustainability (including **resourcefulness** and **experimentation**); the importance of **appropriate financial support** and **incentives,** and support for **technological innovation**; **access to markets**; **access to sustainable/recycled materials**; **access to networks and knowledge** regarding sustainable and circular practices, including **mentoring**; formal **recognition of good practices** within companies working toward circularity and sustainability; increasing **consumer education** regarding sustainability and extending this to all actors in the value chain; incentivising and **enabling the increasing use of recycled materials**; a **paradigm shift** in current cultures of over-production and over-consumption to decrease throughput of fashion items.

<u>Resourcefulness and Experimentation</u>

Case study companies show high levels of resourcefulness aiming to minimise the waste that they create in material and other resource terms (at various stages of production and consumption). Currently, beyond the economic incentive for reducing the value lost through waste, which is often difficult to calculate, there is no other incentive for engaging creatively in extreme resourcefulness. If companies producing waste were penalised for doing so and the penalties used to reward resourcefulness, this would create incentives on both sides (Elvis & Kresse, Rifò, REDU)

Experimentation is key to innovation and those businesses able to engage in an iterative process of conceive, test, and refine - ie to be in constant 'beta' - are able to respond to changes in the market and use a learning over time model. This on-going R&D needs to be supported and the lessons learnt to be shared with others (Rifò, Orange Fiber, Unmade, Elvis & Kresse).

Financial support, incentives and enablers

The financial enablers which helped the organisations to get off the ground are of crucial importance. Both public and private actors have provided initial capital to the businesses, but this is often limited to the initial phase of the company's development, due to the uncertainty linked to investing in innovation. Investment needs to change over time and utilising patient capital, extended over a longer period would support many SMEs. Several case studies report the necessity of the founders utilising their own financial resources as there was no alternative. The lack of case histories as precedents and the uncertainty of performance predictions is a very strong deterrent to investment, requiring vision and trust. This also points to the need for education on sustainability, circularity and related models for the various actors in the supply chain. – (see Ecoalf, re:newcell, Orange Fiber, VEJA, Unmade, Stanley/Stella).

The low level of both awareness and demand for sustainable fashion from the current consumer market deeply influences business development in terms of investment and profits. In this transitional phase, where the market regarding sustainability and circularity is still in development, the policy-making institutions and investors play a leading role. They should support and incentivise the growth of sustainable practices and pioneering start-ups in fashion, in a similar way to the tech industry, through grant funding of disruptive innovation. Institutions must adopt policies which guarantee incentives, tax cuts, or streamlining the more bureaucratic procedures for those who adopt sustainable/circular practices (see Orange Fiber, REDU, Unmade, MUD Jeans, re:newcell).

The dual challenges of development and application of technological innovation are evident in a range of businesses that are developing sustainability practices. It is critical to combine support for product service systems where both technological development and fashion design development are required – these elements are currently often funded separately. (Ecoalf, Orange Fiber, re:newcell, Unmade).

Access to markets

Case study companies are based on slow fashion values, which encourage more appropriate production times (compared to fast fashion cycles), fair wages, localised production, lower carbon emissions and, ideally, zero waste. These businesses are adding

transparency to their production process and educating consumers about sustainability in fashion. But in the contemporary context, without a large distribution, it is difficult for a business to establish itself in the market. Considering this, it is clear that other types of support, which support innovation to rethink distribution and access relevant markets, are also needed.

Access to networks and knowledge

The need to create an international network that brings together the various players in the market, within the supply chain, and that can create synergies to support the growth and development of the sector. Also, case companies report the need to educate the different actors (from the manufacturer to the customers) to switch towards a model which can be a valid alternative to the fast-fashion paradigm (see Orange Fiber, VEJA, Elvis & Kresse, Unmade). This could happen through awareness campaigns which consider sustainability, and circularity, especially targeting the younger generation who have recently demonstrated their interest in and sensitivity to these topics, through actions such as school strikes for climate action, and Extinction Rebellion protests.

Paradigm shift in consumption

There is little space for sustainability in the current production and consumption model. Some companies explain how their practices seem insignificant and isolated in the absence of transformation at a systems and process level. They stress that it makes no sense to use innovative materials, even if they are 100% sustainable, if the processes to realize them do not meet these standards and continue to be based on unsustainable models. A paradigm shift, that is reflected in the implementation of a different demand and consumption model, is crucial for the market (see MUD Jeans, Ecoalf, Rifò, REDU, Unmade).

Enabling the increasing use of recycled materials

There is little interest from or incentive for fashion manufacturers in using recycled materials. Even if the theme has become mainstream, it often translates into simple story-telling actions and does not move on to the next stage of implementation. The investment required into changing the supply of recycled materials must be recognised and supported across the supply chain. Policy can have a fundamental role in driving industries towards this sustainable, and circular, transformation. This could be achieved through incentives and regulation in support of the knowledge, production, and use of recycled materials (see Ecoalf, Elvis & Kresse).

Legislative levers and barriers regarding resources vary across Europe with some countries mandating no waste to landfill policies, whilst others make it difficult for fashion businesses to use waste materials or upcycle materials from other industries. There is a need to extend the levers and remove the barriers that enable or restrict the use of waste, or other second-life materials and harmonise legislation.

Recognition of good practices.

The accountability of large businesses relies on the use of certifications, membership of alliances and accords etc. whereas many of the SMEs interviewed demonstrate that

accountability and trust can be more accurately measured through the personal engagement of the team in the production and consumption cycle of fashion. There is a gap between what is recognised as sustainability in accountability terms and what is demonstrated by these companies – this is an area in need of further investigation, together with incentivisation from legislation appropriate to small businesses. (MUD Jeans, Elvis & Kresse, VEJA, Stanley/Stella)

5.4 Conclusions and Recommendations

Enablers for SMEs to adopt more sustainable and circular economy business models

From the three tasks - literature review and desk research, expert interviews and case studies - the challenges faced by SMEs wishing to adopt more sustainable and/or circular economy business practices have become evident. The below table outlines some of the key issues and challenges identified, and correlates these with the enablers that SMEs and experts suggest to make a concrete impact on transforming the textiles and fashion sector towards a more sustainable and circular economy.

These are categorized for ease of reference into five main areas: issues related to:

1) market,
2) finance,
3) knowledge, networks and resources,
4) operational and supply chain,
5) policy and regulation.

The categories are not absolute, and some issues inevitably cross these categories. Some of the enablers are highly cultural, necessitating a paradigm shift in the way business is conducted in the fashion sector, others are more specific and granular. Some actions are already underway but need to harmonised across the entire EU.

	Challenges/Needs	Incentives/Enablers
Market	Competition with high volume/low cost companies	• Paradigm shift regarding speed, volume and fair price for fashion • Awareness campaigns on environmental, social and personal benefits of slower pace of fashion consumption (directed on young consumers in particular) • Collaboration between brands, suppliers and producers to enhance cohesion of the value chain - innovating together to make sustainable and innovative solutions more widely available • Smaller players to create networks and cooperatives to access materials and better promotion options • Large players to drive change by setting example and creating demand for sustainable materials in the market • Mandatory or industry agreements on minimum price points • Funding schemes/economic instruments to support new model until it reaches volumes that enable economies of scale • Funded competitions and awards to encourage start-ups, but with longer term support and patient funding
	Access and affordability of sustainable and innovative materials – min volume orders	
	Consumer awareness of social and environmental issues linked to the industry	
	Cultural acceptance of recycled fibres new business models such as leasing, rental or reselling	
	Finding own voice and establishing strong position in the market	
	Competitive pricing enabled by economy of scale	
	Support for innovation	

	Challenges/Needs	Incentives/Enablers
Financial	Cost of production - high social and environmental standards (materials, certification, fair labour etc.)	• Paradigm shift from the current model in which low price relies on externalizing true costs of production through offshoring • Incentives and regulations to support those following high social and environmental standards and penalizing those who do not • Subsidized certifications and supply chain traceability labels for brands • Long-term subsidies for alternative business models to mitigate uncertainty that deters traditional investors – e.g. through public and private funding schemes • Publicly funded training programs for the finance sector to enable better understanding of the specifics of sustainable/circular business models • Easy access to training on financing options through professional networks and trade organizations, with options for affordable long-term consultancy and mentoring (e.g. help with grant and tender applications)
	Slow income generation and cash flow uncertainty	
	Funding for alternative business models beyond start up stage	
	Awareness of existing financing options	
Knowledge, Networks and Resources	Access to dedicated support networks and sustainability information, materials research	• Access to subsidised regional knowledge hubs and EU cross-sector knowledge exchange networks • Encourage building specific sustainability/circular fashion business support networks and mentoring schemes (both on regional and EU level) • Improving links between creative and business education at HE institutions • Develop education to build knowledge of design for sustainability and circularity • Encouraging collaboration between large and small players – e.g. piloting innovative start up solutions within larger businesses that can generate revenue for further development of these start-ups and help with building business skills
	Access to showcase opportunities	
	Peer to peer collaboration and knowledge sharing	
	Lack of entrepreneurial mindset and business skills	

	Challenges/Needs	Incentives/Enablers
Operational/Supply chain	Adequate suppliers of sustainable and innovative materials	• Incentives for producers to experiment with and offer sustainable material options • Encouraging alignment of values across the value chain through fostering long-term collaborative innovation that benefits all parties and also improves transparency • Investment in re-skilling of fashion and textile workers through a wider range of vocational and HE education options • Lowering business rates in cities to enable clustering of mutually beneficial operations that link design-supply-and production • Investment in and subsidies of textile waste management • Investment in R&D to advance and scale up technologies for sorting and chemical recycling
	Supply chain transparency	
	Fair trade labour facilities	
	Skilled and affordable manufacture facilities that would enable reshoring clothing production	
	Infrastructure for reuse and recycling	
Policy and Regulations	Lack of harmonization of rules and legislation across the EU and beyond, particularly regarding textile waste management and reuse	• Harmonizing regulations such as end of waste criteria • Removing administrative barriers for start-ups and SMEs • Introduction of mandatory Extended Producer Responsibility schemes to encourage circular thinking across the value chain (while considering lessons from the French ECO-TLC scheme and investing in recycling to ensure sufficient capacity) • Incentives through tax reductions such as 0% VAT on repair services or second-hand items to support reuse, tax shifts from labour to resource use • Introduction of levies such as charges per each garment produced to be re-invested in improving clothing collection and sorting facilities • Mandatory or industry agreements on required % of recycled materials in all new products to enhance economic viability of textile recycling, possibly to be pioneered by the largest players (e.g. H&M)
	Administrative barriers	

	Challenges/Needs	Incentives/Enablers
	Insufficient incentives for environmentally and socially responsible players	• Rewards for innovative design-led integration of waste and deadstock and tax for materials with high CO2 emissions • Voluntary adoption of Product Environmental Footprints (PEF) • EU and member state governments' commitments to Green Public Procurement and Circular Procurements

Table 5: Overview of key findings on challenges and enablers for fashion SMEs in adopting sustainable/circular business models.

The fashion and textile industries remain a vital element of industry and society, providing livelihoods and a major share of GDP globally. However, as is widely acknowledged, the current model of increasing levels of overproduction and overconsumption has contributed significantly to accelerating climate change, depletion of natural resources and loss of biodiversity. A greater sense of urgency is now pervading the industry with a growing number of initiatives, networks, and events targeted at solutions for a more circular and sustainable economy for fashion and textiles.

During the preparation of this report, the findings of the research have been triangulated as each of the three tasks were implemented. The research first identified current opinion and policy recommendations contained in the academic and grey literature. Much of this has only recently emerged, as momentum has built towards concrete actions in the face of the impending environmental crisis that the UN COP 2015 Paris Agreement aims to mitigate. Consequently, key research focused on sustainability and circularity in fashion and textiles industries is either recently completed (MISTRA, TCBL, Resyntex, Trash2Cash, WEAR Sustain) or currently in progress (FSP, WORTH Partnership, REFREAM) as outlined in Annex 7.4. Results from these projects will begin to impact the sector and contribute to change in the immediate future.

The mapping of current organizations and activities either operating as or supporting SMEs towards adopting sustainable and circular business was created from both desk-based research, and interviews with 43 academic and industry experts across 28 EU member states. From this activity we identified a database of over 400 entries, as shown visually in section 3 and given in detail in Annex 7.2. As described in section 3.3 and evident from the diagrams, there are clear regional differences in the levels of current activity, as shown by the relative numbers of SMEs already working with sustainability goals and/or aiming to achieve circularity in the use of textile and clothing resources (diagram1). The Eastern European countries, and also those where the industry is focused more on production for the global industry, show the smallest concentrations of sustainable fashion SMEs and designers/brands. The highest concentrations of SMEs working with sustainability and /or circularity were found from our research to be in the Netherlands and the UK.

Many of the important supporting networks for transformation in the fashion industry, whether major industry-led (GFA and SAC) or campaign-led (Ellen MacArthur and

Fashion Revolution) have emerged in Northern Europe and the US over the last decade, with the UK, Nordic countries and The Netherlands taking a clear lead in Europe (see Diagram 3). As SAC and GFA are working with large global brands, their influence is spreading beyond Europe, and further consortia are being built between EU and international trade associations. For example, in May 2019, a Manifesto for Circular Economy Textiles was released by a consortium comprising Euratex, GFA, SAC, Federation of the European Sporting Goods Industry and International Apparel Federation. Strengths in fashion education for sustainability and circular design are seen in the UK, The Netherlands, Denmark and Sweden, consolidated in a new EU Erasmus funded research project FashionSEEDS currently underway between EU partners UAL (UK), Politecnico di Milano (IT), Design School Kolding (DK) and Estonian School of Arts (EE), due to finish in 2021 (see Annex 7.4).

The aim of true textiles circularity is to transform waste textiles into new textiles and products of equal or higher value. Several case studies demonstrate this: re:newcell aims to facilitate true textile to textile circularity by chemical recycling of cotton textile waste into new fibre of the same quality as virgin fibre. RiFò, MUD Jeans, REDU, Elvis & Kresse and VEJA reuse and upcycle textile or leather waste from the fashion industry into new fashion products. MUD Jeans use between 23% and 40% recycled post-consumer denim from jeans in their new jeans, and RiFò use 100% post-consumer recycled cashmere (a high value material) in their new cashmere knitwear and 100% post-consumer recycled denim made in to yarns for their unique denim knitwear. Three case studies Elvis & Kresse, Ecoalf and Orange Fiber repurpose waste from different industry sectors (fire hose and parachutes, orange waste, plastic waste) into textiles and fashion to transform a useless waste product into a material or product with new value.

However according to our interviewees, there are still clear barriers for true textile recycling that need to be overcome and harmonized at the EU level in order to incentivise the transition to a circular economy where the concept of waste can be truly eliminated.

It is also evident that circular systems alone are not sufficient to solve the current state of overproduction and overconsumption within the fashion and textiles sectors. Consumer education and a paradigm shift in consumption behaviour are required; circularity will only achieve its goals of resource conservation and regeneration if overall throughput from demand and production and fundamentally reduced.

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7.0 APPENDICES

7.1 Annex 1 List of expert interviewees

Country	Organisation
Austria	Linz University of Arts and Design
Belgium	Royal Academy of Fine Arts Antwerp
Belgium	Flanders District of Creativity
Bulgaria	National Academy of Arts
Croatia	Manufaktura Design
Cyprus	Fashion Revolution
Czech Republic	SLOU
Denmark	Global Fashion Agenda
Estonia	Reet Aus Design
Finland	Aalto University
France	Vivarte RSE and ex Vigeo
France	Ethique sur l'Etiquette
France	Eco TLC
France	Big Blue Project
Germany	Hanover University of Applied Sciences and Arts
Germany	Fashion Revolution
Greece	SOFFA
Hungary	Innovatext Co
Ireland	National Centre for Circular Economy
Italy	Universita' Bocconi
Italy	Lotto Zero
Italy	University of Bologna
Latvia	Riga Fashion Week
Lithuania	Latia
Luxembourg	Fashion Revolution
Malta	Fashion Revolution
Netherlands	Fashion for Good
Netherlands	Circle Economy
Netherlands	M-ODE
Netherlands	FASHIONCLASH
Poland	Slow Fix
Portugal	Moda Lisboa
Romania	Katty Fashion
Slovakia	Slovak Fashion Council
Slovenia	Fashion Revolution
Spain	Universidad Politécnica De Valencia
Sweden	TEKO, Swedish Textile and Clothing Industry Association
Sweden	University of Boras
UK	Fashion Revolution
UK	Fashion Revolution
UK	Centre for Sustainable Fashion
EU wide	Euratex
EU wide	Texaid

7.2 Annex 2 Full Database of initiatives and players

Please refer to separate appendices document (COSME_MSO_Report_Annex2)

7.3 Annex 3 Final Case Studies

Please refer to separate appendices document (COSME_MSO_Report_Annex3)

01 VEJA (FR) – *footwear, using sustainable materials and regional production*

02 MUD Jeans (NL) - *denim sector*

03 Stanley/Stella (BE) - *B2B basic clothing using sustainable materials*

04 Elvis & Kresse (UK) - *luxury upcycled accessories from waste materials*

05 REDU (RO) - *upcycled clothing from textile waste*

06 The Nu Wardrobe (IR) – *collaborative consumption and clothes reselling*

07 RiFò (IT) – *knitwear from fully recycled materials*

08 Unmade (UK) - *fashion on demand software systems*

09 re:newcell (SE)- *circularity: chemical recycling of cellulose textiles (cotton)*

10 Ecoalf (SP)– *circularity in clothing using upcycled fabrics from ocean plastics*

11 Orange Fiber (IT) - *bio waste fibres and textiles*

12 Fashion Revolution (UK) - *consumer facing and industry campaigns, focused on environmental and social justice, transparency.*

7.4 Annex 4 Listing of key recent research and enterprise projects relevant to and engaging with SMEs in fashion and textiles

Please refer to separate appendices document (COSME_MSO_Report_Annex4)

7.5 Annex 5 Financial Schemes and Instruments at EU and member state level

Please refer to separate appendices document (COSME_MSO_Report_Annex5)

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ET-02-19-101-EN-N

Publications Office

doi: 10.2873/694021