CRAFT IT 4 SD

Craft Revitalization Action
for Future-proofing the Transition
to Innovative Technologies
for Sustainable Development

Mapping and descriptions of current business models in selected pilot sites

Deliverable 5.1

VTT Technical Research Centre of Finland

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List of acronyms

Abbreviation/acronym	Description
CCSI	Cultural and Creative Industry and Sectors
CEAP	Circular Economy Action Plan
D	Deliverable in a Work Package
EU	European Union
GDPR	General Data Protection Regulation
LCA	Life Cycle Assessment
SBM	Sustainable Business Model
SME	Small and Medium-sized Enterprise
T	Task in a Work Package
TCLF	Textile, Clothing, Leather and Footwear
WP	Work Package

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Executive summary

The overall objective of the CRAFT-IT4SD project is to harness the potential of European cultural and creative sectors and industries (CCSI) to drive the green transition. The project examines existing and potential sustainable business models in fashion and clothing and develops new ones to support the climate transition.

The present deliverable (D), D5.1, "Mapping and descriptions of current business models in CRAFT-IT4SD pilot sites", is the first deliverable of the CRAFT-IT4SD Working Package (WP) 5, "Business models and pathways to sustainable fashion". Based on the work carried out in WP5 Task (T) 5.1, "Current status", it maps and describes current business fashion business models and future business aspirations in the four CRAFT-IT4SD pilot sites in Denmark, Finland, Romania and Spain with a specific focus on sufficiency-based business models. These business models were chosen as the focus of WP5 as they consider reducing consumption, along with technological innovations and efficiency improvements to enhance sustainability. The models were studied among micro-companies and Small and Medium-sized companies (SMEs), which characterize the fashion sector in Europe.

In addition, the report outlines future aspirations, opportunities and barriers for the sufficiency-based business models. Furthermore, the report describes critical topic areas for carrying out a climate impact assessment in the second task of WP5, T5.2, "Climate impact assessment".

The mapping and descriptions of current business models draw on and extend the literature review carried out on sustainable fashion business models and climate impacts for WP2, "Scientific and methodological foundation: Challenges and opportunities for the CCSI in the sustainable transition," as reported in D2.1, "Method Playbook – Initial" (Clausen et al., 2024). Other key methods for gathering information included additional literature reviews, interviews with companies implementing sufficiency-based business models, interviews with fashion and textile sector associations, and workshops for fashion professionals and CRAFT-IT4SD consortium members.

Based on interviews with fashion companies implementing sufficiency-based business models, the main driver for pursuing sustainable fashion lies in the potential to create multiple positive sustainability impacts for the environment and society, while maintaining economically viable business practices.

However, several barriers currently exist. The current economic situation and associated financial challenges, high taxation, lack of funding, resource constraints of small companies, elevated costs of localized production, and difficulties in scaling the business and production pose major challenges. Additionally, companies struggle to find appropriate marketplaces and communicate the value of their offerings to consumers, partly due to insufficient appreciation for sustainable production and traditional craftsmanship. Furthermore, these companies face significant competition from fast fashion brands, which attract consumers with affordable prices, extensive reach, and rapid trend cycles.

Several ways in which sufficiency-based business models contribute to the sustainability of the sector can be identified. These include reducing textile waste, thereby saving natural resources;

promoting sustainable product development and production processes; encouraging customer engagement, education, and mindful consumption practices; and enhancing sectoral networking and collaborative efforts for sustainability. However, efforts to reduce environmental impacts, such as climate change, face several challenges. These include the availability of sustainability data, collaboration with supply chain partners to obtain data, financial and resource constraints in collecting and assessing data, the complexity of sustainability assessments, and the lack of appropriate measurement tools, all of which hinder the possibilities for improving business sustainability.

The main benefits for customers, as identified by the companies, include the quality and durability of garments, the ability to adhere to sustainable and ecological values while engaging with fashion, the uniqueness of products, customisation possibilities, the cost-effectiveness of second-hand services and fashion rental, and the sense of belonging to a community working towards sustainability.

However, several barriers for customers also exist. These include higher price points due to local and/or customised production, slow transformation of consumer mindsets towards appreciating timeless design and craftsmanship, limited accessibility to more sustainable offerings, limited variety and availability of pieces in small-scale production, maintenance and care requirements for certain artisan products, various circularity skills needed by consumers, and adaptation to longer production schedules and delivery times for pre-order and made-to-measure garments.

To differentiate in the market, companies implementing sufficiency-based strategies often curate their products to create unique customer experiences and build emotional connections. These companies do not view similar businesses as competitors; instead, they advocate for stronger ecosystems and collaborative partnerships to achieve long-term success across the sector. However, to ensure long-term economic success, the ecosystem, particularly small businesses and start-ups, would require improved coordination, broader access to sustainability data, and financial support.

Similar findings emerge from the future-oriented workshops for fashion professionals and consortium members. The benefits of sufficiency-based models include reduced pressure on natural resources, stronger consumer-garment connections, promotion of local production, and enhanced clothing quality and durability. Economic benefits can also be realised through new earning opportunities for both companies and consumers. However, several negative outcomes can also result from these models, such as higher prices, investments needed to shift from traditional business models, consumer resistance to changes, and increased social division due to the higher prices of sustainable options. Furthermore, a shift towards valuing quality over quantity is needed from both businesses and consumers. Additionally, there is a need for increased investments in technologies and sustainable practices, increased financing for sustainable business models, enhanced collaboration and innovation among different actors, and societal support through education, legislation, and new governance models.

Cultural heritage and creative traditions play an important role in sustainability transitions. Based on interviews, workshops, and literature reviews, several factors apply across the different CRAFT-IT4SD locations. These include a focus on design, aesthetics, quality, and durability of products; more efficient use of existing materials; preservation and enhancement of artisan cultures; and the enablement of closer relationships within textile value chains to increase traceability and transparency.

Based on interviews, workshops, and literature reviews conducted in T5.1, several topics were identified as relevant for the climate impact assessment of business models in T5.2. These include the careful selection of comparative cases, the potential of the models for reducing consumption, the impacts of new digital solutions, finding a balance in operational logistics that supports both economic and environmental sustainability, and the consideration of broader sustainability impacts.

Together with the results of T5.2, to be published in D5.2, D5.1 provides the foundation for building sustainable climate transition-enabling business models in the final task of WP5, T5.3. Furthermore, the results of T5.1 support the broader ecosystem mapping in WP7, “Communication, dissemination, ecosystem facilitation and sustainable partnerships”, to be published in D7.3. Additionally, the D5.1 results provide valuable insights for diverse upcoming pilot site activities in WP4, “Pilot coordination, implementation and monitoring” and WP6, “Skills and learning communities across fashion and related CCSI”.

KEYWORDS: Sustainable Climate Transition; Fashion Industry; Sustainable Business Models; Sufficiency-based Business Models

1. Introduction

This chapter outlines the starting point of the work carried out in CRAFT-IT4SD WP5 T5.1, “Current status”. It describes the relationship between the fashion sector, climate transition, and sustainable business models. Additionally, the chapter outlines the report's objectives, details its structure, and explains the connections with other CRAFT-IT4SD WPs.

1.1. Fashion sector, climate transition and sustainable business models

Since the European Green Deal was introduced in 2019 (European Commission, 2019), the Cultural and Creative Sector and Industries (CCSI) have gained increasing recognition for their role in helping Europe achieve its goal of becoming the first climate-neutral continent by 2050 (Vuijlsteke, 2024).

The CCSI includes various sectors, such as fashion design and the broader fashion and clothing industry, which is the focus of this report. This industry is a part of the larger textile sector, which encompasses a diverse and extensive ecosystem. In Europe, this industry is primarily composed of small, family-owned businesses with a rich heritage of tradition and craftsmanship (EURATEX, 2024). Additionally, the industry is deeply integrated into global value chains, for example, in the acquisition of raw materials (UNEP, 2023). In addition to the craftsmanship traditions, new technological advancements are also occurring. This is evident, for example, in the rise of innovative European textile start-ups that are developing and offering new, more sustainable products and technologies (EURATEX, 2024).

The European textile industry comprises nearly 200,000 companies, with 99.7% being micro and small enterprises. Clothing accounts for 67% of these companies. In 2023, the estimated turnover of the European textile industry was €170 billion, with exports valued at €64 billion and imports at €115 billion. Clothing represented 46% of the total turnover of the sector. The textile sector employs 1.3 million workers, with women making up more than 70% of the workforce. (EURATEX 2024). This industry, integrated into global value chains, also significantly contributes to worldwide employment (UNEP, 2023).

While the fashion and clothing sector holds significant economic importance both in Europe and globally, the current modes of production, marketing, and consumption of fashion products have led to numerous adverse sustainability impacts, such as climate change (Thorisdottir et al., 2024). These impacts, along with the need to rethink value creation practices in the sector, are acknowledged in the 2022 EU strategy for sustainable and circular textiles (European Commission, 2022). Recognised as one of the priority industrial sectors at the EU level due to its adverse sustainability impacts, the textile sector strategy was launched to support broader initiatives under the Green Deal, such as the circular economy action plan (CEAP) (European Commission, 2020) and the updated European industrial strategy (European Commission, 2021).

In particular, the fast fashion business model, which has expanded over the last few decades, has been a significant factor contributing to the adverse impacts of the sector. This model has been criticised for its substantial impact on raw materials, water usage, land use, and greenhouse gas emissions (European Environment Agency, 2019; Niinimäki et al., 2020). As other adversely

contributing factors are recognised, the sector's global industrial growth, non-transparent value chains, traditional linear business models, mass production operations, and reduced garment prices (Köhler et al., 2021; Šajn, 2019). In light of these long-standing issues, the fashion industry has been encouraged to innovate its practices and transition towards sustainable operations across all stages of the value chain (Thorisdottir & Johannsdottir, 2019).

For all these reasons, rethinking and better understanding the various sustainability impacts of business models and strategies is now increasingly vital for companies in the sector across Europe. To ensure success and longevity, business strategies must consider both environmental and social aspects. In the green and digital transition, both technical and social innovations are needed (Coscieme et al., 2022). Leveraging Europe's cultural heritage, existing textile industries and new technologies can thus foster sustainable business models in the fashion sector.

In response to sustainability challenges across all industrial sectors in Europe, a circular economy is widely regarded as the key to achieving a sustainable economy (European Commission, 2019). It aims to mitigate the impacts of the linear economic system by ensuring that resources are kept in use for as long as possible.

As a solution to advance the circular economy, sustainable business models (SBMs) have been proposed to replace traditional business models (Markkula et al., 2024). A sustainable business model framework differs from a conventional business model framework by rethinking business strategies and value creation by integrating design, production, supply chains, partnerships, and distribution channels with sustainability aspects (Bocken et al., 2015). This means that sustainable business models address a broader range of stakeholders, adopt a system-level perspective, and incorporate economic, environmental, and social dimensions of sustainability, using a triple-bottom-line approach (people, profit, planet) to measure performance (Bocken & Short, 2021; Evans et al., 2017).

A substantial body of academic literature already exists on sustainable business models (Bocken & Short, 2021; Evans et al., 2017). Today, there is also a wealth of research on various types of sustainable business models within the fashion industry (Bocken & Short, 2021; Coscieme et al., 2022; Mukendi et al., 2020; Thorisdottir et al., 2024).

The growing interest in innovative fashion operations is also reflected in the heightened attention that sustainable business models have gained in recent and ongoing European research projects. For example, the tExtended project, "Knowledge-Based Framework for Extended Textile Circulation" (2022-2026), has investigated business models in the context of textile recycling (Maes et al., 2024). The project has explored the motivators, drivers, enablers, barriers and challenges of future circular ecosystemic business models among the company partners of the project. The Circular X project, "Experimenting with Circular Service Business Models" (2020-2027), with its focus on experimentation with circular service business models, has created a database that includes examples of sustainable business models across different sectors, including fashion (Circular X, 2025). The SOLSTICE project, "Innovative 5R SOLutionS for Textile Integrated Circular Economy" (2024-2027), is developing a business model simulation tool to support textile circularity (SOLSTICE, 2025). The tool includes different circular approaches, such

as refuse, reduce, reuse, repurpose and recycle. These approaches are examples of the so-called R strategies (Reike et al., 2018).[1]

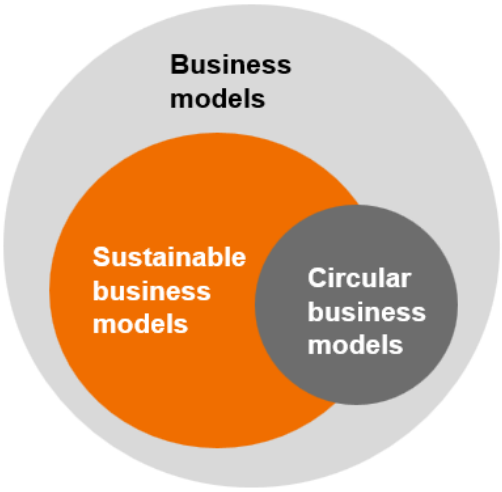
Furthermore, to understand how to create an integrated circular textile value chain, the CISUTAC project, "Circular & Sustainable Textiles & Clothing" (2022-2026), has analysed circular business models within the contexts of textile repair, reuse and recycling systems in Europe and the trends influencing their operation (Gaertner, 2024). The New Cotton Project, "Demonstration and launch of high-performance, biodegradable, regenerated New Cotton textiles to consumer markets through an innovative, circular supply chain using Infinited Fiber technology" (2020-2024), in turn, has examined chemical recycling technology to pilot and scale circular fashion within garment production (Moreira & Niinimäki, 2022). The project has mapped different types of circular business models and tools for developing them. It has also reviewed business model innovation literature, suggesting new ways to define value and measure business success (Moreira & Niinimäki, 2022).

Overall, sustainable business models can offer fashion sector companies insights for transforming their current business strategies and practices to better align with the sector's climate emission reduction targets (Bocken & Short, 2021). These approaches can also have the potential to foster regenerative business practices when they recognise a company's connection to the biosphere, incorporate nature and society into their value proposition, and aim for a net positive impact (Konietzko et al., 2023).

Furthermore, new, more sustainable business models have the potential to support the EU Strategy for Sustainable and Circular Textiles (European Commission, 2022), which aims to create a more sustainable and competitive sector. The strategy emphasises novel, sustainable opportunities for value creation while ensuring profitability and employment, which are notably important for the micro companies and small and medium-sized companies (SMEs) that characterise the sector (European Commission et al., 2019).

However, it is important to note that while the term "circular" is often equated with "sustainable," a circular economy and its associated business models are not inherently sustainable, even if they are labelled as such. In essence, certain circular business models demonstrate greater sustainability compared to others, while some still mimic traditional business methods, as illustrated in Figure 1 below.

[1] The R strategies are frequently employed to advance sustainability and circularity within the economy. Numerous strategies exist; by 2018, the literature had identified over 30 R strategies (Reike et al. 2018).



Adapted from Geissdoerfer et al (2018)

Figure 1. Relationships between business models, sustainable business models and circular business models

This is not to say that some circular business models would be intentionally designed to replicate traditional business practices. While this can sometimes also occur as minor changes to existing practices are easier to implement, several other factors can also hinder the intended environmental and social sustainability benefits of these new models. These can include a lack of resources, expertise, and reliable or comparable quantitative data (Das et al., 2021; Das et al., 2023; Løkke & Madsen, 2023) or financial aspects (Gutiérrez-Torrenova, 2021). As a result, the actual impacts of new alternative business models do not get measured, sometimes resulting in unintended adverse effects (Das et al., 2023; Millward-Hopkins et al., 2023; Sandin et al., 2023).

What is more, sustainable business models can take various forms. A new business model claimed to be more sustainable can focus on reducing production impacts by improving efficiency, reusing materials, or reducing consumer demand (Bocken et al., 2022).

Recent research, however, suggests that while energy efficiency and renewable energy help reduce climate impacts, they are not enough to lower the fashion sector's overall climate footprint (Peters et al., 2021). For example, a study on the UK clothing economy found that meeting climate targets requires recycling, cleaner production, and halving new consumption, and that current fashion business models may not be compatible with these changes (Millward-Hopkins et al., 2023). Efficiency improvements and technological innovations alone may thus fall short of meeting global climate targets unless combined with significant shifts in consumption patterns, implying the need for integrating sufficiency-based approaches to tackle overconsumption and overproduction (IPCC, 2022).

Against this background, the focus of CRAFT-IT4SD WP5 was directed towards sufficiency-based business models. To address the question of consumption reduction, WP5 concentrated on better understanding sufficiency-based business models (Bocken et al., 2022) and their potential to advance the sustainable climate transition.

Sufficiency-based models aim to promote sustainability by reducing material and energy use for goods and services, encouraging consumers to use less (Bocken & Short, 2016). The concept is based on the work of Dyllick and Hockerts (2002) and Young and Tilley (2006), who stress responsible consumer choices like buying ethical products, and Bocket et al. (2014) who highlight the business side, focusing on durable design, extending product life (e.g., second-hand markets), frugal innovation, conscious sales (i.e. sales against 'fast fashion'), and moderating consumption. These approaches align with the EU Waste Framework Directive's (European Commission, 2018) top three waste hierarchy options: avoid, reduce, and reuse, prioritising waste prevention and followed by reuse, recycling, recovery, and disposal in the order of preference. Examples of these business models in the European context have been previously mapped, for example, in the “Support report mapping sustainable fashion opportunities for SMES” report (European Commission et al., 2019). The sufficiency-based business models that have been addressed in CRAFT-IT4SD T5.1 are described in more detail in Chapter 0.

The potential and limitations of these models were explored in the empirical contexts of the four CRAFT-IT4SD pilot sites that are located in Denmark, Finland, Romania and Spain. These sites exemplify diverse aspects of the European fashion and clothing industry and the broader ecosystems, illustrating the sector’s diversity and common characteristics across these different locations. The pilot sites, their characteristics and business models are described in more detail in Chapter 0.

1.2. Objectives of the report

While the overall objective of the CRAFT-IT4SD project is to harness the potential of European cultural and creative sectors and industries (CCSI) to drive the green transition, the present deliverable, D5.1, “Mapping and descriptions of current business models in CRAFT-IT4SD pilot sites”, focuses on understanding current sustainable fashion business models in the four CRAFT-IT4SD project pilot sites in Denmark, Finland, Romania and Spain. In addition, the report outlines future aspirations, opportunities and barriers for sustainable fashion business models, and describes topic areas relevant for conducting a climate impact assessment of selected business models in the second task of the WP5, T5.2, “Climate impact assessment”.

Together with the results of the climate impact assessment, to be published in D5.2, D5.1 also provides the foundation for building sustainable climate transition-enabling business models during the project. This will be done in the final task of WP5, “Business modelling”, with results to be published in D5.3.

1.3. Structure of the report

The report is structured as follows. The next chapter, Chapter 0, focuses on the methodology applied in CRAFT-IT4SD WP5 T5.1 to map and describe current business models in the four CRAFT-IT4SD pilot sites with a focus on sustainable fashion business. The chapter describes the literature reviews, interviews and workshops conducted in this task to better understand the potential, limitations and current state of sustainable fashion business models. It also explains the analytical framework applied to design and report the workshops on the future development aspirations for sustainable fashion business models.

Chapter 0 presents the descriptions of pilot sites with a focus on sustainable fashion business models and reports the findings from the interviews and workshops.

Chapter 0 builds on the previous chapters, presenting the topic areas considered relevant for the climate impact assessment that is carried out in CRAFT-IT4SD WP5 T5.2.

The final chapter, Chapter 0, presents the concluding remarks of this report. It describes how the work of WP5 will continue and how the WP5 T5.1 results support other CRAFT-IT4SD work packages.

1.4. Connections to other CRAFT-IT4SD tasks and work packages

The present deliverable, D5.1, reports the findings of the WP5 T5.1, “Current state”.

The results of T5.1 feed into WP5 T5.2, “Climate impact assessment”, which calculates and reports the climate impacts of selected sufficiency-based fashion business models in D5.2.

The results from T5.1 and T5.2 contribute to WP5 T5.3, "Business modelling," which creates new business models to support sustainable climate transition and reports these findings in D5.3.

D5.1 describes the pilot sites by building on the work from WP4, "Pilot coordination, implementation and monitoring," as detailed in D4.1, “Playbook 01 CCSI for sustainability – Operational handbook for pilots and pilot ecosystem” (Heijnen et al., 2024). It extends these descriptions to include the economic aspects of the fashion industry and sustainable fashion business in the pilot sites. Additionally, D5.1 includes examples of companies experimenting with sufficiency-based business models. These descriptions support the work of WP7 for D7.3. The results from D5.1 will also aid upcoming activities in WP4, such as consumer understanding and empowerment, and the learning community activities in WP6, "Skills and learning communities across fashion and related CCSI".

2. Methodology

This chapter outlines the methodology used in CRAFT-IT4SD WP5 T5.1. It details the research design, and the interviews and workshops conducted.

2.1 Research design

The methodological approach for T5.1 included a qualitative research design. T5.1 consisted of three phases, which are presented in Figure 2 Figure 1below.

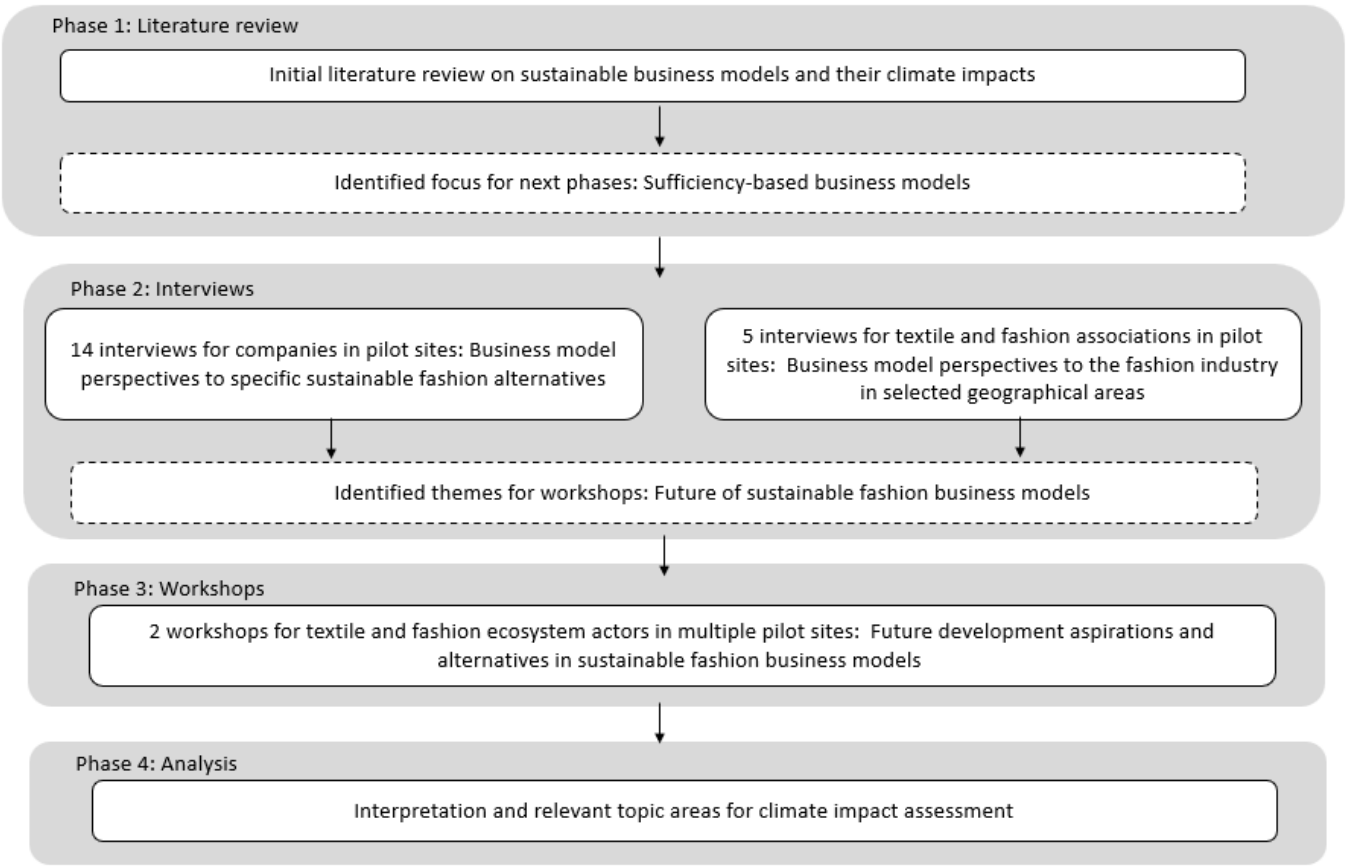


Figure 2. Research design for CRAFT-IT4SD WP5 T5.1

2.2 Literature review

In the first phase, an initial literature review was conducted concerning sustainable business models and business model climate impacts. The literature review included papers on sustainable climate transition-supporting business models in the fashion industry and covered various aspects such as unsustainable business models, sustainable fashion business models, environmental and social impacts, and circular economy principles. In addition, literature on measuring the climate impacts of business models was reviewed preliminarily to understand how much

sustainable business models have been assessed using quantitative environmental impact methodologies, and which business models should be studied further in WP5.

Based on both of these literature reviews, sufficiency-oriented business models were identified and chosen for the focus of the next phases. These models focus on the rethink, reduce and refuse strategies in the circular economy, and have the potential for increased sufficiency (Bocken et al., 2022). The models are summarised in Figure 3 below.

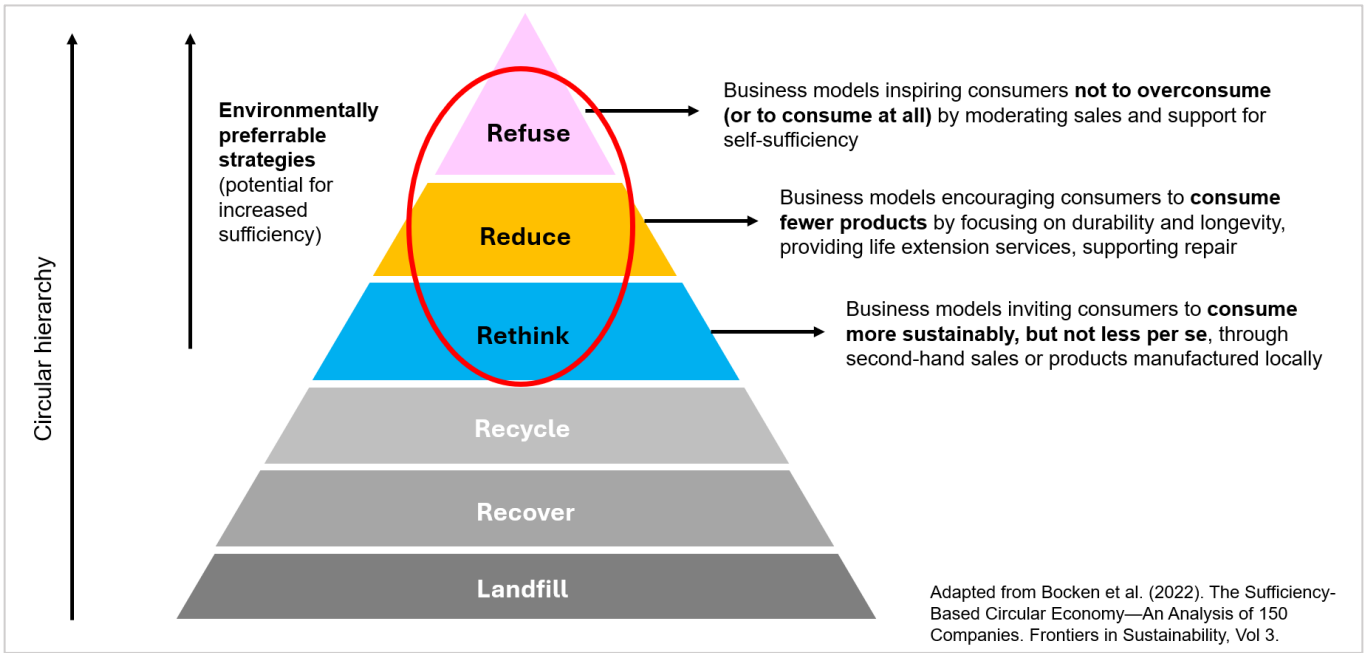


Figure 3. Sufficiency-oriented business models

According to Bocken et. al (2022), the rethink strategy focuses on inviting consumers to consume more sustainably, but not less per se. Business models within this strategy include, for example, second-hand or locally manufactured products. Concerning the reduce strategy, they emphasise that this strategy focuses on encouraging the consumption of fewer products and that it encourages the durability and longevity of products. Business models within the reduce strategy include, for example, life extension services such as rental and repair services. Bocken et. al. (2022) further explain that the refuse strategy invites consumers not to overconsume or consume at all. This can be encouraged by companies through moderating sales or supporting consumer self-sufficiency (Bocken et al., 2022). It should be noted that, in practice, the sufficiency-based business models often overlap, and a company can apply several of these models, simultaneously.
Figure 4, below, illustrates examples of these business models that have been explored in the CRAFT-IT4SD project.

Figure 4. Examples of sufficiency-based business models explored in CRAFT-IT4SD

The preliminary literature review on the measurement of the climate impacts of business models evaluated how extensively business model sustainability impacts have been assessed quantitatively, and what kind of sustainable business models would be the most relevant to study further. Furthermore, the review provided the basis for considering what topic areas would need to be considered when identifying critical topic areas for the climate impact assessment of the WP5 T5.2. In addition, the review was utilised to support the business model case selection for the climate impact assessment in T5.2, done in close collaboration with T5.1. This review will be extended and presented in more detail in the final report of T5.2, D5.2, “Climate impact assessment of current business models in the pilot sites”.

In addition to these literature reviews, an additional review was conducted to gather selected statistical information, describing the current fashion business in the pilot sites and their national contexts. This review was complemented with information gathered from the consortium members representing the pilot sites.

2.3 Interviews

During the second phase of the study, with the help of consortium members, micro companies and SMEs testing sufficiency-based business strategies and business models were identified in the pilot sites for recruitment for interviews.

The companies were approached by email explaining that the interview aimed to gain a better understanding of sustainable fashion business. Those companies that expressed interest in participating, were then sent an official interview invitation, accompanied by the "Privacy Notice for Research", adhering to the EU General Data Protection Regulation (2016/679, "GDPR") and applicable national legislation (including Finnish Data Protection Act 1050/2018), and the ethical and data management guidelines of the CRAFT-IT4SD project as outlined in D4.1 "Playbook 01 - CCSI for sustainability 01 - updated", D1.3 "Data management, ethics and GDPR plan (initial) " and D8.1 "POPD - H - OEI - Requirement No. 1", and approved by the legal department of VTT Technical Research Centre of Finland. At the beginning of the interviews, the interviewees informed the participating company representative(s) that the interviews would be recorded for research purposes and confirmed that the company representative had received and read and understood the privacy notice.

19 interviews were conducted for selected companies and textile and fashion associations in the pilot sites. Most interviewed companies were micro companies and SMEs, with two larger ones supporting sufficiency strategies in the textile sector.

The interviews followed a semi-structured form and were conducted by two to three researchers from VTT Technical Research Centre of Finland via Teams. The interviews took place during the first pilot iteration phase of CRAFT-IT4SD project. The duration of the interviews ranged from 40 to 60 minutes.

Table 1. Summary of interview participants

Organisation	Country	Examined business model	Interview participant(s)
Company A	Finland	Online platform for second-hand fashion	Chief Operating Officer (1)
Company B	Finland	Local production of fashion, made to measure	Chief Executive Officer (1)
Company C	Finland	Local/responsible production of children's clothes	Chief Executive Officer (1)
Company D	Finland	Fashion rental	Chief Executive Officer (1)
Company E	Romania	Textile re-use and redesign	Chief Executive Officer, Designer (2)
Company F	Romania	Local production of fashion, remaking	Chief Executive Officer (1)
Company G	Romania	Local production of fashion	Chief Executive Officer (1)
Company H	Romania	Remaking/upcycling of fashion	Chief Executive Officer (1)
Company I	Denmark	Local production of fashion/zero waste	Chief Executive Officer (1)
Company J	Denmark	Made-to-measure for fashion	Chief Executive Officer (1)
Company K	Denmark	Remaking/upcycling of shoes	Chief Executive Officer (1)
Company L	Spain	3D machinery and software for the textile industry	Engineer (1)
Company M	Spain	Local production of shoes	Sustainability manager (1)
Company N	Spain	Pre-order and local production	Sustainability and marketing manager (1)
Association A	Finland	-	Chief Advisor of Sustainability and Circular Economy (1)
Association B	Romania	-	Managing Director (1)
Association C	Denmark	-	CSR & Sustainability (1)
Association D	Spain	-	Director and Technician, European projects (2)
Association E	Spain	-	Manager of European Programmes, Innovation Project Manager, Director General (3)

Two sets of interview guides were designed for the company and association interviews. The interview guides are presented in Appendix 1.

The interview themes for companies included the following:

- The current business model
- Drivers and barriers for the business model
- The sustainability of the business model
- Customer benefits and barriers
- Differentiation and positioning
- Business ecosystems and networks.

The interview themes for associations included the following:

- The definition and measurement of sustainability
- Challenges and strengths of the local textile and fashion industry
- Novel sustainable fashion business models currently and in the future (with a specific focus on sufficiency-oriented business models)
- Impact and opportunities of legislation
- Contribution of cultural heritage to sustainable fashion.

The interview participant companies and associations were selected based on the following criteria:

- The organisations are based or primarily operate in the pilot sites
- The companies implement a sufficiency-oriented business model or enable elements of sufficiency strategies within the textile sector.

The business models examined in the interview study included the following:

- Made-to-measure
- Local production
- Upcycling/remake
- Second-hand
- Fashion rental
- Zero waste.

2.4 Workshops

The interviews generated themes for the future of sustainable fashion business models, which were utilised in the workshops. Two workshops were held in January 2025 that focused on future development aspirations and alternatives for sustainable business models. Five VTT researchers facilitated the workshops via Teams. The Miro platform was utilised for the work and for visualising the discussion. The workshop participants were textile and fashion ecosystem actors in multiple pilot sites. The workshops had 31 participants (excluding facilitators), of which 15 participated in workshop 1(2), and 16 participated in workshop 2(2). Each workshop lasted 1.5 hours.

The workshops aimed to generate ideas on future development aspirations and alternatives in sustainable fashion business models to 1) understand the positive and negative aspects of these business models; 2) identify potentially conflicting values among different actors in the fashion sector; and 3) identify opportunities for business model redesign to reduce negative impacts and increase positive outcomes. The content and methodology for the workshops were adapted from the Value Mapping Tool for Sustainable Business Modelling by Bocken et al. (2013). Following this methodology, the workshop focused on four perspectives: 1) the environment, 2) the consumers, 3) the network actors 4) society and culture. The structure for the workshops is presented in Figure 5.

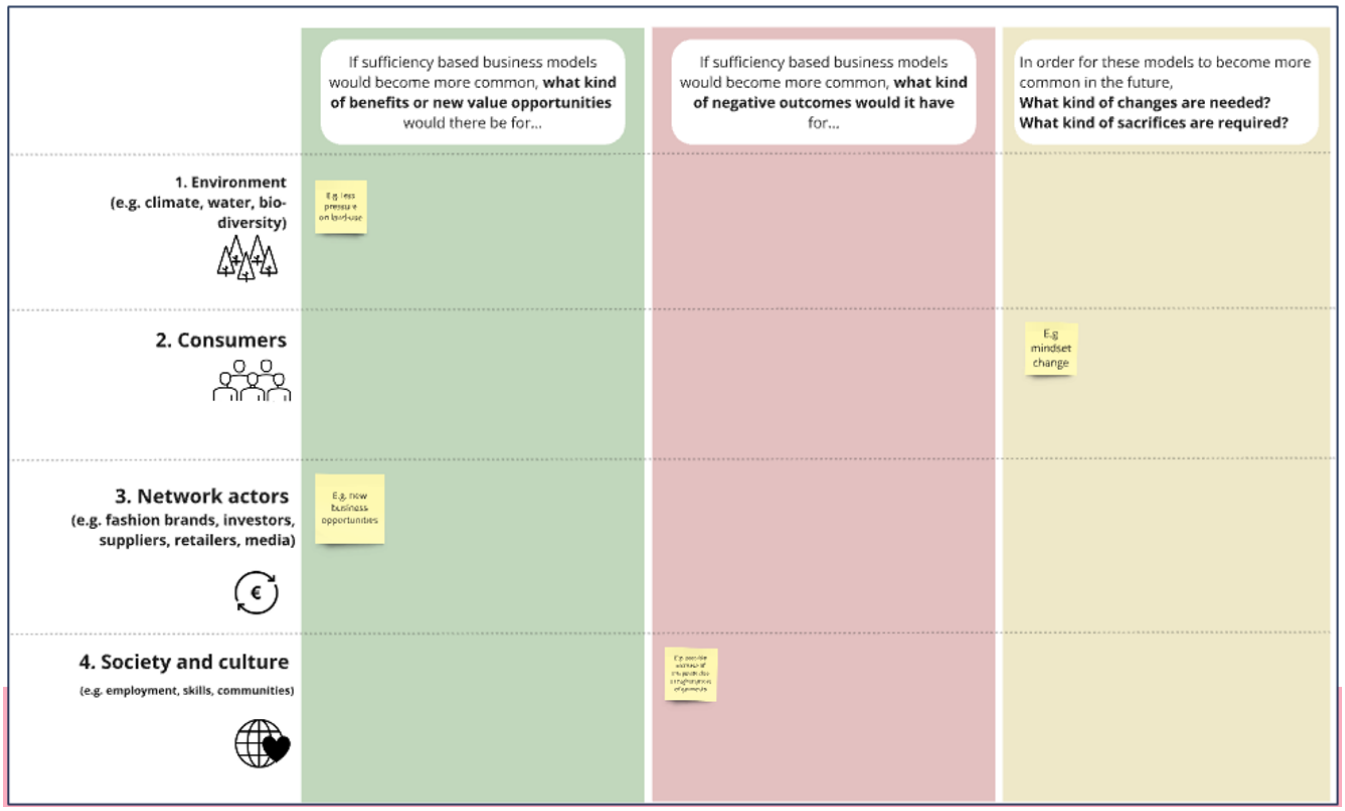


Figure 5. Workshop structure: Future development and sustainable fashion business models

In addition to these workshops, examples of sufficiency-based business models were presented by the consortium members representing the pilot sites in the WP5 workshop organised in the first Plenary Meeting of CRAFT-IT4SD in October 2024.

3. Mapping and exploring sustainable business models in the CRAFT-IT4SD pilot sites

The CRAFT-ITSD project has four pilot sites, located in Denmark, Finland, Romania and Spain. In this chapter, sustainable business models are addressed in the context of these sites.

The chapter begins with a summary of the pilot site descriptions, detailed further in D4.1, "D4.1, "Playbook 01 CCSI for sustainability – Operational handbook for pilots and pilot ecosystem" (Heijnen et al., 2024). This summary, presented in Chapter 3.1, provides an overview of the pilot sites, their national contexts, and the current fashion business in these locations, extending the D4.1 descriptions with a focus on the economic and business aspects of the fashion and clothing industry. Selected statistical information is included to describe the current fashion business in the pilot sites and their national contexts.

The next chapter, Chapter 3.2, describes sustainable business practices and provides examples of sufficiency-oriented fashion businesses within these contexts. It draws on the interviews with the textile sector associations in the pilot site countries and workshops held among fashion professionals and CRAFT-IT4SD consortium members, and further discussions with the CRAFT-IT4SD consortium members. Due to insufficient existing data on companies' implementation, experimentation, or consideration of sufficiency-oriented business models or strategies, these descriptions are qualitative.

Following the pilot site descriptions, the preceding chapters, Chapters 3.3-3.9, present the interview and workshop findings on sustainable fashion business models in the pilot sites. They cover drivers and barriers for the business models, sustainability of the business models, customer perspectives, competitive market, business ecosystems and networks, future aspirations for sustainable fashion business models, and cultural heritage and creative traditions in the sustainability transition.

3.1 Fashion and clothing sector in the pilot sites

The four CRAFT-IT4SD pilot sites are described next in terms of their local characteristics. This is followed by a short description of their national context. These descriptions draw on D4.1, "Playbook 01 CCSI for sustainability – Operational handbook for pilots and pilot ecosystem" (Heijnen et al., 2024), which includes more extensive descriptions of the sites. The descriptions are extended by additional literature reviews to provide information on the number of companies, their sizes and employment.

Denmark. The CRAFT-IT4SD pilot site in Denmark is located in the Central Region of Denmark. According to Heijnen et al. (2024), the Danish pilot site ecosystem comprises a diverse range of companies, including corporations, SMEs, and micro companies, spanning from long-established enterprises to startups. Their report highlights how the ecosystem encompasses cities like Aarhus and Herning, boasting a rich tradition of textile production that dates back to the 17th century. Heijnen et al. (2024) also emphasise that the textile industry in the region continues to thrive, with prominent companies such as Bestseller in Brande and DK Company in Ikast. Alongside these

large fast fashion companies, numerous SMEs work with different types of products at various stages in the value chain, from smaller production sites to design-driven companies offering a broad variety of products and employing different types of craftsmanship (Heijnen et al., 2024).

The Danish fashion and textile industry plays an important role in the Danish economy, generating €11.6 billion in revenue and providing employment for 96,000 people. The industry accounts for six per cent of total Danish goods exports (Schultz et al., 2021). 95% of the Danish fashion and textile sector is made up of micro companies and SMEs (Dansk Mode & Textil, 2024).

Finland. The CRAFT-IT4SD pilot site in Finland is located in Northern Finland, in the Ostrobothnia region. According to Heijnen et al. (2024), the Ostrobothnian ecosystem includes SMEs of traditional craft and textile producers, bringing together expertise from Northern traditional craft professionals and professionals within the local emerging technologies industry. They also note that while the textile sector of the Oulu region is less prominent in the Finnish context, the region's strong technology sector offers excellent opportunities for digital solutions that can support circular economy practices. They list as the ecosystem participants Northern Finnish crafts and textile artists, local fashion, textiles, and design entrepreneurs, as well as regional tech companies in extended reality, printed intelligence, immersive visualisations, and gaming. The Ostrobothnian pilot also emphasises community-led engagement in traditional crafts with the aim of integrating traditional knowledge with innovative methods and materials (Heijnen et al., 2024).

The Finnish Textile and Fashion (2024) reports that SMEs form the majority of the industry. Haukkala et al. (2023) indicate that much of Finnish textile and fashion production is outsourced globally, similar to other European countries. The companies employ 5,500 people and generate over €1.6 billion in revenue (Finnish Textile & Fashion, 2024). Today, Finnish textile and clothing companies mainly focus on headquarters functions, product development, design, and marketing, while manufacturing is handled by partners (Haukkala et al., 2023). Roschier et al. (2023) note that despite this general trend, there remains some manufacturing activity in the country's textile sector. They also emphasise new developments in the sector. For example, several companies and other entities are currently actively involved in developing new textile fibres, textile recycling and technologies that can advance sustainability in the sector (Roschier et al., 2023).

Romania. The CRAFT-IT4SD pilot site in Romania is located in North-East Romania, in the Moldavia region. Heijnen et al. (2024) report that the ecosystem includes clothing companies, universities, SMEs, and high-end fashion brands. The authors also emphasise that the ecosystem thrives on balancing centuries-old craftsmanship traditions and adaptation, with artisans playing a vital role in maintaining traditional techniques, and keeping this cultural heritage vibrant and relevant, while also adapting to modern trends (Heijnen et al., 2024).

Heijnen et al. (2024) also note that despite these assets, the ecosystem faces challenges like declining interest among younger generations and competition from mass-produced textiles. Their report highlights that cultural organisations, government programs, and NGOs focus on training new artisans. Workshops, cultural festivals, and educational programs also play a key role in preserving and transmitting knowledge and techniques (Heijnen et al., 2024).

According to Heijnen et al. (2024), the Moldavian ecosystem for traditional textiles emphasises sustainability through various efforts that combine traditional and new approaches. These include, for example using natural materials and organic dyes, repurposing components from old costumes into new garments, 3D scanning and digital archiving to conserve patterns and motifs,

using additive manufacturing (3D printing) to create replacement parts and custom moulds, and combining traditional techniques with modern technologies to reduce waste and conserve resources (Heijnen et al., 2024)

In a broader national context, the textile, clothing, leather, and footwear (TCLF) industry has a long-standing tradition. The sector is primarily export-oriented. According to the Romanian Industrial Statistical Bulletin 4/2024 (2024), the sector includes over 9,000 companies and employs 133,000 workers, with 33,000 in textile manufacturing, 72,000 in apparel manufacturing, and 28,000 in leather and related product manufacturing; approximately 1,500 of these companies are located in North-East Romania. The same source indicates that while most businesses are SMEs, there are also several large players with significant achievements in terms of workforce size and annual turnover. The total turnover of the sector was around €4 billion (Romanian National Institute of Statistics, 2024).

Spain. The CRAFT-IT4SD pilot site in Spain is located in Catalonia. According to Heijnen et al. (2024), the Catalan region has a strong historical legacy in textiles and fashion. The ecosystem includes micro-companies and SMEs, artisans, governance entities, technology suppliers, educational, research and development entities, and other actors and organisations (Heijnen et al., 2024).

In 2022, approximately 4,000 Catalan textile and apparel companies with over 20 employees, operating in textile and apparel weaving, finishing and manufacturing, employed around 28,000 individuals, generating a turnover of €4,700 million. According to IDESCAT (2022) and the Fashion and Textile Observatory (2022), the detailed figures are as follows: IDESCAT reported 4,464 companies, 26,668 employees, and a turnover of €4,474 million, while the Fashion and Textile Observatory reported 3,716 companies, 30,184 employees, and a turnover of €5,080 million.

The following chapters address in more detail sustainable fashion business and sufficiency-based business models in these four pilot sites. These sections are derived from the interviews with national and local textile sector associations, the business model workshop organised for consortium members at the CRAFT-IT4SD Plenary Meeting in October 2024, and additional information provided by consortium partners presenting the pilot sites.

3.2 Sustainable fashion business in the pilot sites

To understand the current state of sustainable fashion business at the CRAFT-IT4SD pilot sites, fashion and textile association representatives in Denmark, Finland, Romania and Spain were interviewed to describe the region-specific challenges and opportunities in sustainable fashion business, examples of current sustainable fashion business models and the potential of sufficiency-based business models. Additionally, consortium members representing the pilot sites were invited to provide further examples of sufficiency-based business models in their pilot sites.

Denmark. In Denmark, one of the major challenges in the Danish fashion and textile sector is the lack of knowledge and resources to effectively address sustainability issues. Companies have traditionally focused on social sustainability, but environmental aspects, governance, procedures for due diligence, and sustainability data collection are relatively new fields. Another significant challenge is the digitalisation and data management needed to comply with new sustainability

legislation. Collecting accurate data from suppliers and ensuring traceability and transparency is difficult without clear requirements and sufficient knowledge. Additionally, the uncertainty surrounding specific requirements of upcoming legislation slows down the pace of development within sustainability.

There are, however, also several opportunities in terms of sustainability and sustainable business models within the Danish context. One key opportunity is the transition towards circular economy principles by exploring circular business models such as leasing, repair services, and resale. For example, some companies are experimenting with repair kits available online, allowing customers to fix minor issues like missing buttons or zippers. Additionally, resale models are being tested, where customers can return their clothes for vouchers to buy new items, and the returned clothes are cleaned and resold. Another opportunity lies in innovation and collaboration. Danish companies can invest in developing new technologies and materials that are more sustainable. This includes working closely with suppliers to improve production techniques, reduce water usage, and implement closed-loop recycling of chemicals.

In addition, the Danish textile and fashion sector can leverage the strong design tradition in Denmark, known for quality and durability. This can be a foundation for creating long-lasting and aesthetically pleasing products. Additionally, Denmark's advanced digitalisation can support the implementation of digital product passports and textile labelling regulations, making it easier for companies to comply with sustainability requirements.

Sufficiency-based business models are not, however, very common in Denmark. While some companies are experimenting with these models, the scalability and infrastructure challenges make it difficult for them to become widespread. For example, there are initiatives in children's wear where customers pay a small amount each month and receive new clothes as their child grows. However, these models are still in the early stages and face challenges in terms of profitability and logistics.

Examples of micro companies and SMEs applying sufficiency-based approaches are STEM, Week of Wonder, Vaer Upcycled, Elemental Coloring, Leon Louis, and Dagmar Petersen.

Finland. In Finland, sustainability has been rising significantly among companies. This has led to the adoption of various sustainable practices and strategies within the industry. Partly this has been due to the EU Strategy for Sustainable and Circular Textiles (European Commission, 2022). This legislative initiative has provided incentives for Finnish companies to innovate, develop and test new business models. For example, there have been developments in second-hand markets and fashion rentals in the form of online platforms and web stores for second-hand. Lifecycle extension services and repair services have also been gaining traction. For example, one company offers repair services to encourage consumers to fix their garments instead of buying new ones.

Further, in the Finnish context, digital product passports and automation are often seen as future enablers for sustainable business models, providing essential data to improve resource efficiency and support circular practices. Sufficiency-based business models are considered to have more potential in the future as companies strive to reduce overproduction and waste. The strategy of refuse, however, is recognized as challenging for businesses having a business model that is based on bringing new products to market

Examples of Finnish micro companies and SMEs experimenting with or implementing sufficiency-oriented business models include Emmy Clothing, Alpa Design, Mallaamo, Kooma Design, Gugguu, Uhana, and Frendi.

Romania. In Romania, the fashion and textile industry has seen significant development over the years. Initially, Romania had a strong textile industry and talented fashion designers but lacked Romanian brands in retail. To address this, initiatives like the Romanian Fashion Week were established, which have been running for 25 years. This event has a special section for new designers, who are supported by established names in the industry. These young designers have created partnerships with major textile companies, leading to the development of local fashion brands. In addition to this development, the Romanian fashion industry, which is predominantly composed of SMEs, continues to produce items for large international brands.

The Romanian industry has also faced challenges. One of them has been the pressure from fast fashion, which has been good for retail but detrimental to the industry, environment and customers as the prices have dropped due to large volumes and led to overconsumption. Among national brands, efforts have been made to reduce the number of collections produced each year, moving from multiple collections to more timeless designs, like just two main collections and a few extra capsules. There has also been a shift towards recycling and using less environmentally harmful materials and chemicals.

Examples of micro companies and SMEs applying sufficiency-based approaches in Romania are Verlinne, Fereya, Pur Clothing, Empath, Arcstudio Wear, Levisez, Lyf, REDU, and Velements.

Spain. In the Spanish pilot site in Catalonia, the key challenges in sustainable fashion business models include legislative uncertainty, where SMEs face unclear regulations and lack a defined roadmap, posing adaptation risks. Another challenge is balancing competitiveness with sustainability. Additionally, preserving industrial heritage is difficult due to intense pricing competition during internationalization. The legislation and competitiveness-related challenges were also recognized by another industry association in the broader Spanish context.

On the other hand, based on the interviews, the fashion sector in the CRAFT-IT4SD pilot site in Catalonia can pivot towards new practices, production methods and business models as it is a historically strong industry. This, however, requires that alliances be formed between key players and wide collaboration. Also, it would be important to recognise the value of the micro and SMEs that can bring relevant knowledge and an agile pace to the transition, while working together with bigger companies.

Currently, Spanish and Catalan textile companies can have some in-house production facilities, and a portion of the value chain is located inside Spain or within the EU. Based on the textile sector association interviews, this proximity of the supply chain is considered a strength regarding the traceability of the products and the applicability of other sustainable activities, such as the implementation of decarbonization strategies. Another strength is the strong presence of textile sector organizations that ensure the creation of shared value and promote the transition of the sector towards better practices, favouring collective well-being over individual well-being.

Moreover, the sector is currently evaluating different business models such as second-hand, rental, pre-order and repair models. There are companies like Ecoalf and Twothirds that have demonstrated success with the viability of new business models and serve as inspiration for other players in the industry. Other companies like Sitamurt/, Simorra, Original Buff and Boboli are

examples of companies that are in the process of transitioning to new business models that can prolong the value and life of the products while maintaining the local perspective. Other examples of companies experimenting with sufficiency-based business models or strategies include Aldo Martins, Organic Cotton Colors and Duuo Empathy Shoes.

The following chapters will provide more insights into the experiences of companies experimenting with sufficiency-based business models and strategies in the CRAFT-IT4SD pilot sites.

3.3 Drivers and barriers to the business models

To understand the enabling conditions for the business models, the interviewed company representatives were asked about the main drivers for conducting their business. In addition, the factors hindering their operations were discussed. The main drivers and barriers to the business models are summarised in Table 2, followed by a more detailed discussion.

Table 2. Drivers and barriers to the business models

Drivers for the business model	Barriers to the business model
• Personal passion of the founder • Overproduction and waste issues within the textile industry • The possibility of creating a positive impact on the environment • Local operations and production • Creating high-quality products and services • Growing customer awareness and demand • Long-lasting customer relationships • Collaboration with other actors in the value chains • Innovation and technology • EU regulations • Economic viability and external funding	• Current economic situation and financial challenges • High taxation and lack of funding • Difficulty in scaling the business and production • High costs of having the production close by • Regulatory developments and resources • Difficulty in communicating the value of the business model concept to consumers • Lack of appreciation for sustainable production and traditional craftsmanship • Finding the right marketplaces • Creating brand awareness and gaining visibility with limited resources

Drivers

Personal passion. Finding ways to create positive changes in the current textile industry was one of the key drivers for all interviewed companies to implement sufficiency-oriented business models. The personal passion of the company representatives was a central motivator and a starting point for creating a business model that would offer more sustainable ways of doing business. For example, in a company offering remade artisan textile products, the passion stems from upbringing and valuing traditional crafts and using what is already available instead of using finite resources. In the case of a company offering fashion rental, the business stemmed from the founder's own need to have an alternative for “one-time wear” shopping. Many of the company representatives had also had a long experience in working with the fashion industry and were motivated to act as change agents, to transform the industry with their own business models.

Overproduction and waste issues within the textile industry. Moreover, the current sustainability challenges of the textile industry – overproduction and waste issues – offered the interviewed companies a business opportunity. The waste issue was mentioned by all the interviewed companies as the main challenge to be tackled with the business models.

The possibility of creating a positive impact on the environment. The possibility of creating a positive impact on the environment with the business model was also a key driver, producing less was seen as a means to reduce the industry's climate impact. For example, a company operating with a pre-order business model discussed that during the COVID pandemic, people began to see the appeal and need for slow fashion, which does not harm the planet as much as traditional fashion models.

Local operations and production. Local operations and production were seen as key elements in the business models, as they enable a stronger connection between the business and its customers, and with local communities.

Creating high-quality products and services. Investing time and effort in creating high-quality products and services for customers was seen as important. The goal for many of the companies was also to keep the operations nearby, as the sustainability challenges related, for example, to logistics were well acknowledged.

Growing customer awareness and demand. The companies also saw that customer awareness and demand for more sustainable alternatives are growing all the time, and consumers have a stronger readiness to act according to sustainable values. Positive customer feedback was seen as a means of verification of the business model, and the need for more sustainable alternatives.

Long-lasting customer relationships. The companies operating in the B2B setting also highlighted long-lasting customer relationships as a driver and enabler for the business model.

Collaboration with other actors in the value chains. As many of the interviewed companies were small-sized, the role of collaboration with other actors in the value chains was seen as essential. A company offering garments designed for longevity and reuse, for example, highlighted that collaborating with second-hand platforms is a means of adding business also for them, which is why they seek to create partnerships with companies enabling the second cycle for their garments.

Innovation and technology. Innovation and technology were also seen as a driver for the companies, for example, the possibility of using 3D technologies in production enables the reduction of cutting-waste significantly. Utilising technology to drive a service-based business model was seen as important, for example, in the case of companies offering made-to-measure services and second-hand online platforms.

EU regulations. The importance of EU regulations, related particularly to the EU Waste Framework Directive and Digital Product Passport, as introduced in the Ecodesign for Sustainable Products Regulation (ESPR), was also mentioned by the interviewed companies as key enablers for the business models.

Economic viability and external funding. Finally, a central driver and enabler for the business models was the economic viability and external funding. As many of the interviewed companies

are small-sized, having external soft funding for small companies was seen as important to develop the business. This was particularly highlighted by a company offering products remade from old textiles, as external investments enable the company to integrate digital tools into the operations, which, without funding, would be too costly.

Barriers

Current economic situation and financial challenges. Related to the barriers to implementing the business models, the current economic situation and financial challenges in operating within the industry were mentioned by all interviewed companies. The high costs of materials and the pressure to reduce prices were seen as hindering the implementation of the business models. As mentioned by the representative of a company providing design for longevity and reuse, consumers have less to spend, which is why they tend to choose fast fashion brands over domestic quality brands and cut back on the “unnecessary”. ¨

High taxation and lack of funding. Many of the companies were micro or small-scale businesses, which is why the high taxation and lack of funding make it challenging to operate in the current industrial landscape. This was particularly true for the company operating with a second-hand online platform, as second-hand is currently under double taxation. Moreover, a company operating with a pre-order business model also mentioned that small fashion businesses need investors also to develop new services, beyond the linear way of operating and also to demonstrate and calculate the sustainability actions small brands do.

Difficulty in scaling the business and production. Scaling the business and production was also seen as a challenge, as many of the companies are operating with limited resources to produce artisan garments.

High costs of having the production close by. Keeping the production local was a central driver for all the companies, however, this was seen as challenging, as the costs of having the production close by are high.

Regulatory developments and resources. The difficulty of keeping up with the regulatory changes and requirements was also mentioned by several companies. For example, a company operating under a zero-waste production model described the discussions around different regulations as confusing. A company offering remade artisan textile products also mentioned that, as a micro company, it is very difficult to keep up with all the changes happening in the regulatory landscape, and there was even a fear of the legislation ending up shutting down the business.

Difficulty in communicating the value of the business model concept to consumers. Another barrier identified was the difficulty in communicating the value of the business model concept to consumers. Several companies discussed the challenges of explaining the brand message and purpose, and making the consumers understand what they are paying for.

Lack of appreciation for sustainable production and traditional craftsmanship. Some company representatives also felt that the consumers lack appreciation of sustainable production and traditional craftsmanship, which takes more time and effort. Creating garments with a made-to-measure approach, for example, takes a lot of time compared to what consumers are used to in the fast-paced fashion market. In addition, some of the companies discussed the lack of awareness and appreciation of craftsmanship within production, also from the designer's

perspective. Companies operating particularly in the B2B setting highlighted that there is also a need for education and skills development for the existing and future employees within the sector.

Finding the right marketplaces. Finding the right marketplaces was also mentioned as a challenge, and for example, a company offering upcycled textile products found it difficult to reach younger consumers, who normally shop online at the more established international garment marketplaces.

Creating brand awareness and gaining visibility with limited resources. Creating brand awareness and gaining visibility with limited resources was seen as a challenge. Social media channels, such as Instagram, are important for fashion brands. For example, a company operating with a pre-order business model mentioned that if the costs of advertising rise on social media platforms, it will make it difficult for smaller brands to reach out to potential customers.

3.4 Sustainability of the business models

The interview questions revolving around the sustainability of the business model included the model's contribution to the sustainability of the fashion industry, the verification of the sustainability impacts of the business model, and ideas and actions to improve the business model's sustainability in the future. Table 3 below summarises the main topics identified in these themes.

Table 3. Main topics on the sustainability of the business model

	Business model's contribution to sustainability	Verification of the sustainability impacts of the business model	Ideas and actions to improve the business model's sustainability in the future

Main topics	• Reduction of textile waste to save natural resources (e.g. by reusing materials, optimising processes and logistics and extending life cycles)
	• Promotion of sustainable product development and production processes
	• Enhancement of customer engagement, education and mindful consumption
	• Networking and collaborative efforts for sustainability
		• Data availability, collection and value chain partner collaboration
		• Resource constraints and complexity of assessments
		• Financial constraints and the need for external funding
		• Lack of measurement tools
		• Alternative ways to demonstrate their sustainability
		  ○ Advocacy for reducing consumption
		  ○ Focus on selected sustainable solutions
			• Understanding and management of relevant impacts
			• Finding a balance between efficiency in logistics and minimum order quantities
			• Improvements in material use efficiency and traceability
			• Enhancement of networking for sustainability support and collaboration
			• Sustainability awareness promotion
			• Exploring further sustainable practices
			• Improving regulatory sustainability compliance

Business model's contribution to the sustainability of the fashion industry

When asked how their business model contributes to the sustainability of the fashion industry, most of the companies emphasised that improving the sustainability of the fashion industry is among their core raisons d'être. They identified several interlinked ways their business models contribute to this goal, including:

Reduction of textile waste. Several companies brought up the reduction of textile waste as one of their key contributions to the sustainability of the fashion industry. The broader topic of the circular economy was often associated with the different waste reduction efforts the interviewed companies had undertaken.

Waste minimisation by utilising deadstock and other types of leftover materials was mentioned by many of the interviewed companies. For example, one company focused on reducing the need for new materials by creating clothing from discarded items, giving new life to old clothes, and

minimising waste by using leftover pieces creatively for other types of products such as home items, toys, and design objects.

Some of the interviewed companies raised the idea of implementing zero-waste production techniques and developing new, highly technical solutions to textile waste reduction. For example, one company focused on offering advanced technologies such as 3D technologies for virtual prototyping and developing other advanced solutions, such as AI-based tools for quality checking and waste assessment, to ensure more efficient material usage.

Many companies also emphasised the importance of extending the lifecycle of products. For example, an online second-hand store aimed to promote a circular economy by extending the lifecycle of existing products and reducing waste by making the process of selling and buying second-hand items as seamless as possible.

Promotion of sustainable product development and production processes. Many companies had adopted high-quality materials as an essential part of their contributions to the sustainability of the fashion industry. Some of these companies emphasised that their material selection is also based on ethical production principles.

Creating transparency in the production process by opening up the process and its phases to customers was highlighted by several companies as another important aspect in advancing the sustainability of the sector. For example, one company aimed to develop a small-scale production facility in Europe not just to produce smaller quantities more efficiently but also to make the production process more visible and transparent to the broader public.

One company raised the idea of providing collaborative design and manufacturing services, noting that such joint efforts can improve the industry's sustainability.

Enhancement of customer engagement, education and mindful consumption. Almost all the interviewed companies identified encouraging customers to buy fewer, higher-quality items as one of their main contributions to the sustainability of the industry.

Many of the companies described several approaches they had applied to raise awareness about sustainable consumption and production practices. These included workshops, storytelling, production process demonstrations, social media, and personal encounters with customers. For example, a clothing rental service emphasised its contribution to reducing the need to buy clothes by offering a clothing rental service. The company also advised their customers on clothing care to make both rental and privately owned clothes last longer.

Some companies focused on creating more durable products by using high-quality materials, providing care instructions, and promoting the idea of mindful consumption among users. They encouraged owning fewer but higher-quality items that resonate with customers on a personal level. They aimed at offering products that are not only functional but also carry a meaningful story and personal value for the customer. This would allow the customer to form a strong relationship with the product.

One company also pointed out that creating personalised, made-to-measure clothing ensures a better fit for each customer, resulting in a reduced likelihood of returns and increased longevity of the clothing, as customers are more likely to wear and keep longer items that fit well. This

company also maintained that the poor fit of mass-produced clothing is a significant contributor to clothes not being used as long as they otherwise could be.

Networking and collaborative efforts for sustainability. Networking and collaborative efforts were identified by a few companies as ways their businesses currently support the sustainability of the industry. All other companies, while not highlighting this aspect as their primary contribution, recognised these efforts as crucial for advancing the industry's sustainability and acknowledged their importance in improving their sustainability initiatives.

Verification of the sustainability impacts of the business model

Only a few of the interviewed companies had verified or attempted to verify the sustainability impacts of their business models. Many considered sustainability assessments to be out of the reach of companies of their size for various reasons. Some companies had not measured or attempted to measure their sustainability impacts due to a lack of pressing need.

The companies raised several challenges concerning conducting sustainability impact assessments, highlighting the need for better data collection, resource allocation, and collaboration within the industry to improve the possibilities for smaller companies to conduct sustainability impact assessments. They identified the following as the challenges that they, as micro companies and SMEs, face when seeking to conduct sustainability impact assessments:

Data availability, collection and value chain partner collaboration. Many of the interviewees pointed out that smaller companies are likely to struggle when trying to obtain accurate data from partners. One example mentioned was getting supply chain CO2 emission data. Another example was the difficulty in verifying material sustainability due to a lack of data.

Resource constraints and complexity of assessments. Many of the interviewees maintained that small companies find it challenging to measure sustainability due to limited resources and the complexity of tracing the entire supply chain.

Small companies lack the resources to track the origin of materials and must rely on information from other supply chain actors. Consequently, they often have to evaluate their impacts based on general knowledge and try to balance their positive and negative impacts so that the positive business actions outweigh the negative. Their scarce resources often define which sustainability performance improvement measures they can invest in. Striving for total sustainability was also considered an unrealistic goal for any human actor, both in business and private life.

On the other hand, similar challenges were also identified as common among companies of different sizes. As one of the interviewees pointed out, larger companies face similar challenges due to the complexity and scale of their operations. Additionally, the interviewee maintained that larger companies are often accused of greenwashing if they cannot be completely sustainable, even when they would be making genuine efforts to improve their sustainability.

Financial constraints and the need for external funding. The interviewees emphasised that financial limitations prevent smaller companies from conducting thorough sustainability impact assessments. Therefore, external funding was seen as crucial for small companies to afford these assessments.

Lack of measurement tools. Many of the interviewees recognised the lack of readily available and accessible measurement tools as a hindering factor to better understanding their impacts. Some companies had not started measuring their sustainability impacts due to this lack.

Some companies had managed to take some steps in using impact measurement tools. With the support of external funding, one micro company had been developing an impact assessment tool in collaboration with an external partner. The company had, however, experienced challenges in data collection, quality, sharing, and the design and reliability of the assessment tool. For example, when the company would have needed the impacts to be calculated for the organic cotton they used, the calculator only included information for average non-organic cotton. The micro-company also pointed out that with its limited resources, the impact assessment tools would need to be readily reliable. One SME-sized company with more extensive resources had been more successful. The company had managed to partner with an actor experienced in algorithms and platform solutions for data collection and sharing to develop impact assessment tools to meet their needs.

Some of the companies also reflected on the future of impact measurements. Some companies mentioned that they need to prepare to measure their environmental impacts to comply with EU regulations. Additionally, some companies pointed out that B2B customers have already been asking for sustainability impact data, and that in the future, the impact data will act as proof of their sustainability. So far, the lack of data had not been a barrier to collaboration.

Alternative ways to demonstrate their sustainability. To respond to the aforementioned challenges that micro and SME companies can face when seeking to conduct sustainability impact assessments, some companies had developed alternative ways to demonstrate their sustainability. Examples of this included advocacy for reducing consumption and focusing on selected sustainable solutions.

Advocacy for reducing consumption. One often applied way was the promotion of reducing consumption. Companies applying this principle emphasised advocating for reducing the number of items their customers buy and encouraging them to keep purchased items longer. One micro-company, for example, noted that while verifying their sustainability impacts is challenging, they still emphasise to their clients that is better to have a smart, smaller wardrobe with items with which the user has a strong relationship and that are therefore used longer. In this way, by addressing over-consumption and advocating for its reduction, the company can reduce the adverse impacts of the industry.

Focus on selected sustainable solutions. As another alternative, many companies had chosen to use only materials they consider sustainable. For instance, some companies worked exclusively with pure natural materials of high-quality standards, avoiding synthetic materials whenever possible. Additionally, many companies had selected to use readily existing materials instead of new ones to reduce the industry's environmental impacts.

Ideas and actions to improve the business model's sustainability in the future

The interviewed companies identified several ways to improve the sustainability of their business model in the future. These included:

Understanding and management of relevant impacts. The companies identified a need to focus on identifying and addressing the main sustainability impacts of business operations. An online second-hand sales company, for example, brought up the importance of better understanding the main sustainability impacts to focus their limited resources more wisely.

Finding a balance between efficiency in logistics and minimum order quantities. Some companies underscored the need to improve the efficiency of their logistics and minimum order sizes. One company, for example, brought up solving the challenges related to minimum order quantity requirements that limit their use of preferred yarns in their development area. Another company identified balancing climate emissions from shipping, the number of items shipped, and customer waiting times as an area where their sustainability might be improved, if customer waiting times remain acceptable.

Improvements in material use efficiency and traceability. Many companies stressed the importance of material upcycling, product recycling, eco-friendly materials, and traceability of materials and products. For example, a company operating in clothing resale considered it important to find new ways to ensure that all material resources, such as unsold products, are effectively utilised when they are no longer suitable for resale as products. Another company utilising deadstock fabrics emphasised improving the traceability of fabrics to better understand the impacts of the materials they use.

Enhancement of networking for sustainability support and collaboration. Many companies brought up the importance of seeking external support, such as financing and professional coaching, and highlighted the importance of collective efforts and collaboration within the industry. For example, a company focusing on artisanal, unique piece production underscored the importance of seeking help with financing to improve business sustainability and professional coaching to implement sustainable practices and comply with legislative requirements. Another company, already collaborating with textile sector companies, echoed this view by highlighting the importance of collective sustainability efforts and support for smaller actors in the value chain.

Sustainability awareness promotion. All companies stressed the importance of promoting education and awareness in society to encourage better choices in production and consumption. For example, a company focusing on small-scale, unique piece production emphasised collaboration, additional funding, and education to encourage better choices in production and consumption.

Exploring further sustainable practices. Some companies also mentioned the importance of exploring further sustainable practices, such as using more sustainable materials, and exploring new business alternatives such as upcycling and rental models in conjunction with their current sustainable business model.

Improving regulatory sustainability compliance. One interviewee also raised the importance of improving their regulatory sustainability compliance. This company considered it important for them to work towards complying with legislative requirements and trying to find solutions to overcome the resource and financing-related challenges that they will likely face when seeking to comply with new textile sector sustainability regulations.

3.5 Customer perspective – benefits and barriers for customers

The interviewed companies characterised their target customer segments as follows: sustainability-focused customers; customers who care for the environment; fashion and design-oriented customers; community and experience seekers; quality and longevity seekers; customers over 30 years old; business and professional women; customers interested in customisation; and well-educated customers demanding sustainability. In addition, a company operating with a pre-order business model mentioned that the potential customer segment exists also among the people who focus only on the price rather than any other aspect of garments, although this segment is very difficult to reach and convince to choose alternative sustainable business models. For the companies operating in B2B, the clientele can be characterised by customers interested in digital solutions and innovation, and engagement to long-term business relationships.

The interviewed companies discussed several benefits that their customers experience when choosing their offerings. In addition, several barriers were identified. A summary of the identified benefits and barriers for the customers is presented in

Table 4 and discussed in more detail after the table.

Table 4. Summary of customer benefits and barriers identified in the interviewed companies

Customer benefits	Customer barriers
• Quality and durability of garments • Value from the garment beyond its first use phase • Support for repair and life extension • Possibility to act according to sustainable and ecological values • Uniqueness of products • Improved fit and customisation • Cost-effectiveness • Experimentation and variation • Belonging to a community	• High price point resulting from local and/or customised production • Difficulty in changing the customer's perception of value and quality • Slow transformation of consumer mindset to appreciate timeless design and crafts • Accessibility of the offering, particularly for micro-scaled companies • Limited variety and availability of pieces, especially for artisan fashion products made from reused garments • Maintenance and care requirements for certain artisan products (e.g., dry cleaning only) • Circularity or sufficiency skills needed by consumers for business models such as second-hand online services • Adaptation to production schedules for pre-order and made-to-measure garments (e.g., up to six weeks for delivery)

Benefits

Quality and durability of garments, value from the garment beyond its first use phase, and support for repair and life extension. Particularly for business models offering remade artisan textile products and garments designed for longevity and reuse, the benefits include quality and durability. A company designing garments for longevity and reuse, for example, highlighted that the customers can have value from the garments beyond their use phase, as the garments can

be resold to new users. The garments are designed to last several use rounds with high-quality materials, timeless style, comfort and practicality. The repairability of garments was also mentioned by various companies, and many companies offered support for repair as part of the life extension of their garments.

Possibility to act according to sustainable and ecological values. Several companies highlighted the possibility of acting according to sustainable and ecological values while enjoying fashion. A company offering second-hand services brought forward, however, that sustainability is not the main purchasing criterion; it should be integrated within the customer value proposition.

Uniqueness of products. The uniqueness of products, particularly for companies creating artisan products from reused garments, was mentioned as a customer benefit.

Improved fit and customisation. The quality, improved fit, and customisation of garments were central for a company offering made-to-measure clothing.

Cost-effectiveness. Cost-effectiveness was mentioned as a customer benefit by a company offering second-hand services and another one offering fashion rental. For the second-hand, the cheaper price is a clear benefit compared to other options, and in fashion rental, the yearly membership is communicated to be cheaper compared to the average amount women spend on clothing per year. A company operating with a pre-order model also provides a 20% discount for the garments that are pre-ordered, due to the optimised cutting and reduction of waste.

Experimentation and variation. A fashion rental company representative also mentioned experimentation and variation as customer benefits, as the customers do not have to commit to a certain style but can try out several ones.

Belonging to a community. Belonging to a community was also mentioned by several companies as a customer benefit. By engaging with the business models, customers can find like-minded peers and feel a part of a bigger movement towards sustainability. The community was maintained, for example, with exclusive customer shopping events, repair workshops and just by popping into a physical store to meet the staff and other customers.

Barriers

High price point. As for barriers for customers to choose the offering by the interviewed companies, most of the interviewees mentioned the high price point, resulting from local and/or customised production. A company designing garments for longevity and reuse mentioned, that it has been difficult to change the customer's perception of value and quality and make them see what they are paying for.

Difficulty in changing customers' perception of value and quality, and slow transformation of consumer mindset to appreciate timeless design and crafts. The attitudes and awareness of consumers were mentioned by all companies. The interviewees felt that it is difficult and slow to transform the mindset of consumers and make them appreciate timeless design and crafts.

Accessibility of the offering and limited variety, and availability of pieces. Another barrier mentioned was the accessibility of the offerings provided by the companies. As most of the companies are micro-scaled, the offering is not available on the most used retail platforms, and for some, the customers need to come into the physical store to gain access to the garments.

Also, the limited variety and availability of pieces were mentioned, particularly for companies providing artisan fashion products made from reused garments.

Maintenance and care requirements. For some artisan products, the maintenance and care requirements were also mentioned as a barrier, as the design requires dry cleaning only, which might impede some customers from purchasing such garments.

Circularity or sufficiency skills of consumers and adaptation to production schedules. Another significant barrier mentioned was the circularity or sufficiency skills of consumers. For some business models, for example, the second-hand online service, consumers need to become active and adopt a new role as a business actor and view their unused garments as assets to sell. They also need to be a part of the second-hand service process, and make sure, for example, that the garments they sell are suitable for it. In addition, the companies offering pre-order and made-to-measure garments mentioned that consumers need to adapt to the production schedules of the manufacturers, which might take up to six weeks. This can be a major barrier, as consumers have become used to fast delivery times.

3.6 Competitive market

The company interviews showed that sustainable fashion companies operate in a dynamic and complex competitive environment. The interviewed companies focused on differentiating in a fashion market which is influenced by changing consumer behaviour and the current dominance of fast fashion. Table 5 below summarises the main considerations on the competitive market.

Table 5. Main considerations on the competitive market

	Identified competitors	Market position in the future and changes in market dynamics
Main considerations on the competitive market	• Fast fashion is identified as a key competitor, however, it might attract a different customer segment than sustainable fashion. • Differentiation is conducted by e.g. focusing on building customer connections and emotional attachment, in addition to focusing on circular economy strategies. • The sustainable fashion industry is collaborative in nature, and other sustainable fashion alternatives are not widely seen as key competitors. However, the relationship between sustainable alternatives includes complexities.	• Sustainable fashion alternatives are considered to have growth potential, however, big fast fashion brands might continue to dominate the market. • Differentiation of sustainable alternatives is impacted by the sustainability messages of dominating fast fashion brands. • Technology is suggested as a driver and an opportunity for change towards sustainable fashion. • Business models need to be adjusted to the changes in consumer preferences, such as access-based consumption. • Legislation might be an opportunity or a barrier for sustainable fashion. • A cultural shift towards sustainable fashion needs to be encouraged.

Identified competitors

The companies described a variety of competitors, both direct and indirect, that impact their businesses:

Fast fashion companies. Several companies highlighted fast fashion brands as competitors, particularly because of their affordability, broad reach, and fast-paced trends. However, others pointed out that fast fashion tends to attract price- and trend-sensitive consumers rather than sustainability-driven buyers, who are the primary targeted customer segment for sustainable fashion alternatives. Another perspective presented was that recently, due to challenges in the economy, even sustainability-oriented consumers might choose fast fashion options due to price and pressure to save money.

The differentiation strategies for the interviewed companies included, for example, carefully curating their sustainability-oriented product lines and creating a distinctive customer experience. This approach helped build stronger connections with customers and established an emotional attachment to their brands. Another key differentiating strategy was the implementation of specific circular economy principles into the business model. For example, the upcycling and reuse of textiles were implemented to extend the lifecycle of materials.

Consumer behaviour was identified as one of the factors influencing the competitive market in this context. For example, for second-hand companies, consumers' existing habits of buying new clothing were identified as a challenge.

Collaboration within the sector. A recurring theme was the cooperative nature of the sustainable fashion industry. Many companies expressed that other sustainable brands were not competitors but rather allies working toward a shared goal of systemic change. A few companies even rejected the idea of competition within sustainable fashion alternatives, positioning themselves as leaders of a movement rather than traditional businesses. Their main focus was on promoting sustainability and changing the broader fashion system.

However, some interviewed companies highlighted the complexity of the competitive market for sustainable fashion alternatives. For example, fashion rental companies offer the same brands that identify as competitors. Another example was given by a company that differentiates based on biomaterials that are vegan. For this company, the main competitors were other companies that offer vegan fashion products, because veganism was considered the main (and potentially niche) reason why consumers choose the specific offerings.

Market position in the future and changes in market dynamics

The interviewed companies articulated both opportunities and challenges that will shape the sustainable fashion market in the coming years.

Market growth and awareness. The companies identified a growth potential for sustainable fashion alternatives. Many believed that increasing consumer awareness about sustainability would help move the industry from its niche status into mainstream acceptance. However, some expressed concern that big companies, particularly fast fashion brands, might dominate this

growth. Their financial resources and ability to scale could allow them to take control of sustainability narratives, creating challenges for smaller businesses.

The role of fast fashion. Some companies described that fast fashion companies are expected to incorporate sustainability into their messaging, whether through genuine efforts or superficial greenwashing. While this reflects rising consumer demand for responsible fashion, it makes it harder for smaller sustainable brands to differentiate themselves.

Participants also noted that fast fashion's reliance on cheap, short-lived products reinforces a mindset that values affordability and disposability over quality and longevity.

Technology as a driver of change. Some companies highlighted technology as a major opportunity for the future of sustainable fashion. Innovations such as 3D printing, laser cutting, and bio-based materials offer solutions to reduce waste and enable flexible, small-scale production. Advances in textile recycling and sustainable manufacturing technologies were also seen as critical for helping smaller businesses compete and scale more efficiently.

Emerging business models. Several companies predicted significant growth in alternative fashion business models, such as fashion rental, made-to-order, and second-hand. These approaches align with circular consumption principles and appeal to consumers looking for sustainable options. To succeed, companies will need to adapt their business strategies to keep up with changing consumer preferences and embrace novel consumption models such as access-based consumption.

Regulatory and structural challenges. Legislation focused on sustainability was viewed as both an opportunity and a challenge. While stricter regulations can encourage industry-wide adoption of sustainable practices, many companies worry about the burden placed on smaller businesses. Participants emphasised the need for targeted support, such as funding, coaching, and guidance. Many sustainable fashion companies struggled to find time for strategic planning and business model development because of day-to-day operational demands.

Cultural and systemic barriers. The companies articulated concerns about the ongoing dominance of fast fashion, which supports a culture of low-quality, disposable clothing. Some companies described that this trend devalues second-hand garments and discourages consumers from taking care of pre-owned clothing. Encouraging a cultural shift toward quality, durability, and responsible consumption was seen as essential for the long-term success of sustainable fashion.

3.7 Business ecosystems and networks

The interviewed companies emphasised the importance of building strong ecosystems and collaborative partnerships to achieve long-term success. The companies highlighted the complexity of sustainable fashion ecosystems, where partnerships, shared values, and circular economy practices play a central role. To ensure long-term growth, the ecosystem requires improved coordination, access to sustainability data, and financial support, particularly for small businesses and start-ups. The main considerations on business ecosystems and networks are summarised in Table 6 and discussed in more detail after the table.

Table 6. Main considerations on business ecosystems and networks

	Main partners in the business ecosystem	Criteria for partners and nature of relationships	Missing aspects and recommendations for the future ecosystem
Main considerations on business ecosystems and networks	• The main partners and value chain actors are multifold and specific to each company and business model. • The main partners span from local actors to European-level collaborations.	• Partnerships must be mutually supportive and aligned in terms of sustainability and related values. • Partners must share similar customer demographics. • Partnerships might include cross-sector exchanges. • Sustainability evaluation is a challenge, and therefore, establishing trust between partners is critical. • Some companies specifically require their partners to operate within the EU and ensure ethical working conditions throughout their supply chains.	• Centralised coordination and leadership are needed to facilitate collaboration, share knowledge, and promote circular economy initiatives. • Access to sustainability data and resources is challenging, and supportive legislation is needed to ensure improved transparency and material traceability across the value chain. • Financial and resource support is needed, especially for start-ups. • Take-back systems for fashion products need to be built. • A symbiosis between actors is required to optimise material use

Main partners in the business ecosystem

The companies described a wide range of partners that play crucial roles throughout the value chain. These partners and value chain actors were specific to each company, spanning from local actors to European-level collaborations. For example, some interview participants described that partnerships extend to EU-level platforms, including fashion brands, material and product suppliers, and organisations such as the European Technology Platform (ETP), European Fashion Retail Association (EFRA), and EIT Manufacturing.

For many companies, the most important ecosystem or value chain partners included business-model-specific actors such as fashion producers and textile collectors that are essential for sourcing materials for reuse and advancing circular economy practices, clothing brands to provide garments for rental services and fashion retailers and collection networks (e.g., second-hand fashion drop-off bins) for enabling second-hand business models.

Criteria for partners and nature of relationships

Several themes emerged regarding the selection of partners and the dynamics of these relationships:

Mutual benefits and awareness. Partnerships must be mutually supportive and aligned in their mission to promote sustainable fashion practices and raise public awareness.

Shared customer demographics. Some companies collaborated with partners that share similar customer bases, enabling data exchange and joint marketing efforts to reach sustainability-minded consumers.

Cross-sector exchanges. Innovative systems were mentioned, where garments are exchanged for non-fashion items like computers, expanding the concept of exchange beyond the textile industry.

Sustainability-driven values. Partners were expected to demonstrate alignment with sustainability principles, particularly in adopting circular economy approaches.

Sustainability evaluation. Despite shared values, many companies struggled to assess their partners' sustainability practices due to insufficient data and the uneven power dynamics between large and small businesses. Establishing trust is, therefore, a key factor.

Geographical and ethical requirements. Some companies specifically required their partners to operate within the EU and ensure ethical working conditions throughout their supply chains.

Missing aspects and recommendations for the future ecosystem

The interviewed companies highlighted several significant gaps and opportunities to strengthen the sustainable fashion ecosystem:

Centralised coordination and leadership. A recurring theme was the absence of a central coordinating body or industry organisation to facilitate collaboration, share knowledge, and promote circular economy initiatives. There is currently no formal network to support knowledge and resource sharing within the textile and fashion industry. Companies suggested establishing a fashion or textile cluster organisation to centralise information and support cooperation at both local and broader levels. Some companies suggested creating information hubs and organising events to bring together industry actors, experts, and students. Examples included fashion design-focused events and sustainability meetings to foster community engagement and idea exchange.

Some companies mentioned that the lack of a coordinated system makes it difficult to identify missing actors or opportunities for collaboration. A centralised approach could improve visibility and connect actors within the ecosystem.

The suggested focus of the centralised network or community varied according to the business model focus of the interviewed companies. For example, some companies emphasised the need for a formal network or community to support material upcycling initiatives. Such networks could start at a local scale and later expand to broader regions, provided sufficient funding is available. A lack of actors capable of reusing textile production residues currently limits material optimisation opportunities. On the other hand, some companies highlighted the shortage of small, locally-based artisan producers who offer sustainable, handmade products. Consumers are increasingly seeking such alternatives. To address this gap, companies recommended establishing a

dedicated association or communication platform to support collaboration among artisans and cultural creators.

Access to sustainability data and resources. Small businesses face challenges accessing reliable data related to sustainability, which lowers their ability to verify sustainable practices across their value chains. Respondents also pointed to a lack of transparency in materials sourced from secondary actors outside the textile industry, such as suppliers of raw materials.

Companies stressed the need for supportive legislation to ensure improved transparency and material traceability across the value chain. This could also support companies in finding reuse solutions for waste instead of disposing of it. A better collaboration between multinational brands and smaller sustainable businesses could also drive innovation and industry-wide improvements.

Financial and resource support. Participants called for increased financial support, particularly soft funding opportunities, to help start-ups innovate and grow. Additional funding is needed to allow businesses to develop and implement sustainability strategies, as many small companies currently lack the resources to focus on long-term planning.

Take-back systems for fashion products. Some companies recognised the potential of take-back systems for used fashion products, especially for remanufacturing purposes. However, there were concerns that such systems might encourage overconsumption instead of reducing waste.

Promoting a symbiosis between actors. Some companies described a symbiosis between value chain actors to optimise material use. Some companies proposed a close collaboration between recyclers, collectors, and brands to enable the reuse of textile production residues.

3.8 Future aspirations for sustainable fashion business models

Two workshops were organised to explore future aspirations in sustainable fashion business models. The workshops addressed the potential benefits, negative outcomes, and changes and sacrifices needed for sufficiency-based business models to become more common. The workshop methodology is explained in more detail in Chapter 0. The workshop findings are

summarised

Figure 6 and then presented in more detail in the chapters after the figure.

Figure 6. Summary of the benefits, negative outcomes and changes needed relating to the increase of sufficiency-based business models

Benefits and value opportunities emerging from sufficiency-based business models

The benefits and value opportunities emerging from sufficiency-based business models identified in the contexts of environment, consumers, network actors, and society and culture are addressed next. Figure 7 below summarises the main benefits and value opportunities that emerged from the workshops.

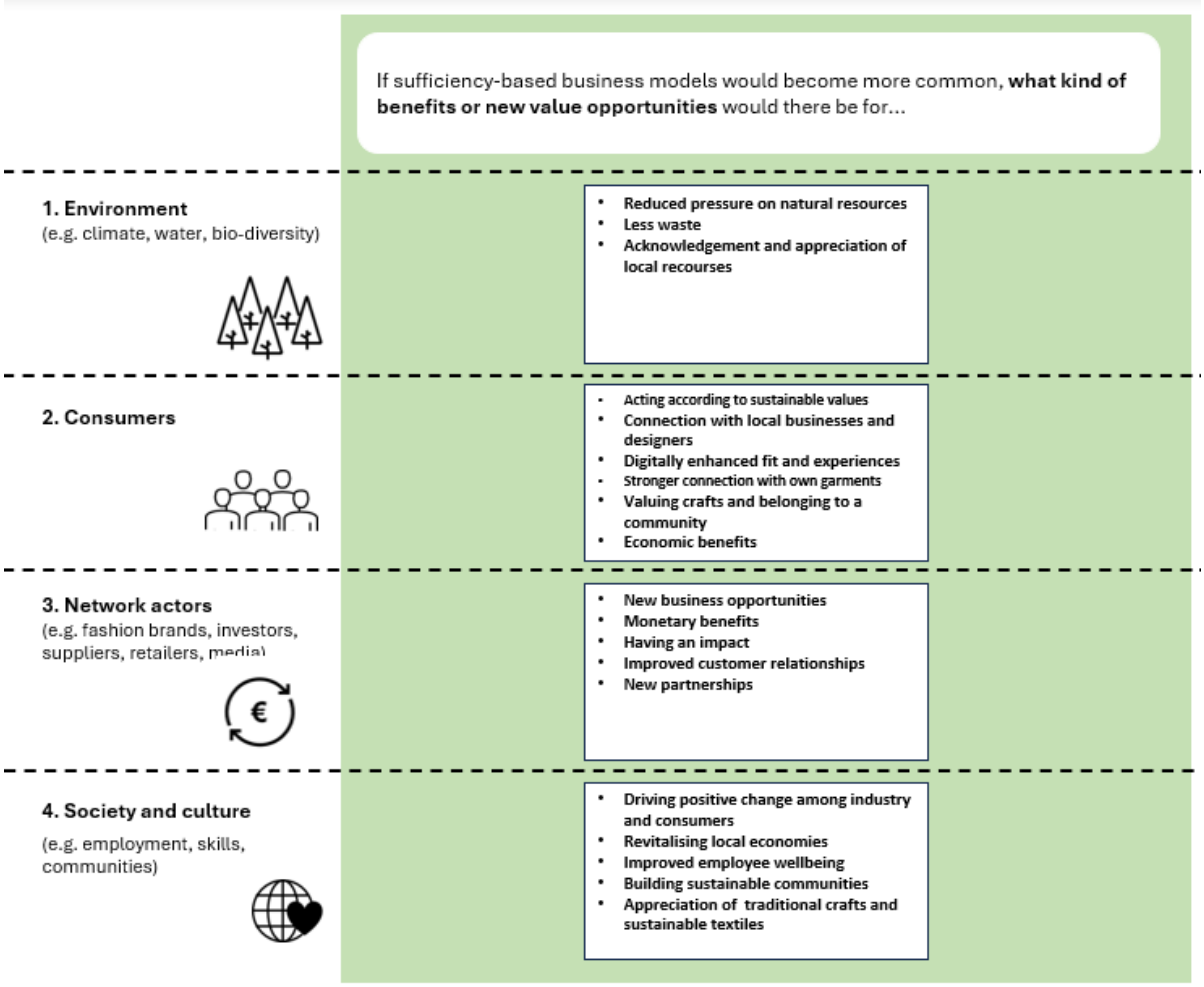


Figure 7. Benefits and value opportunities emerging from sufficiency-based business models

Environment. For the environment, the benefits and new value opportunities of sufficiency-oriented business models include the following:

- **Reduced pressure on natural resources.** The workshop participants discussed that generally, the sufficiency-oriented business models would reduce the use of natural resources, for example, the models utilising existing (recycled) materials. This would result in the reduction of water usage and chemical impact. In addition, the carbon footprint would be lower, as there would be fewer transportation needs in the case of local production.
- **Less waste.** Utilising existing materials would reduce overproduction and waste, for example, in the made-to-measure business models. In addition, the workshop participants pointed out that existing waste from other supply chains can be used, thus enabling the creative use of, for example, bio-based materials.
- **Acknowledgement and appreciation of local resources.** The workshop participants described that the sufficiency-oriented business models would enable “a planet in balance”, with improved biodiversity. This would be possible due to the recognition and appreciation of local landscapes, and with designs that encourage a stronger and integrated relationship with nature.

Consumers. For consumers, the benefits and new value opportunities of sufficiency-oriented business models include the following:

- **Acting according to sustainable values.** The workshop participants discussed that the models would enable a stronger sense of belonging and connectedness to garments and nature for the consumers due to local resources. The models would provide a possibility to act according to more sustainable values and to take responsibility for environmental issues. In addition, consumers would gain access to a more "guilt-free" fashion, which would result in reduced anxiety over climate change.
- **Connection with local businesses and designers.** The participants pointed out that the more localised business models would enable the consumers a stronger connection with the designers and have the possibility also to influence the businesses, by, for example, participating in the co-design of the garments with the designers. Some workshop participants concluded that having a local production would also give consumers access to better quality and durable clothing, which would result in purchasing less.
- **Digitally enhanced fit and experiences.** The digital possibilities of the business models were discussed from the consumer point of view. Having more digitised tools would enable improved customisation and personalisation possibilities for garments. For example, virtual try-on services and digitally enabled co-creation of garments would provide new online interactive experiences and improved fit of garments. Some participants added that having a digital layer would also provide consumers with a means of enjoying fashion beyond physical consumption.
- **Stronger connection with own garments.** The workshop participants felt that the models would enable re-inventing the relationship between the user and the garment, as there would be a story behind the creation of the clothing, instead of a "fast mindset". The sufficiency-oriented business models would enable a stronger connectedness with the clothing, as users would value the wardrobe more and the memories behind it.
- **Valuing crafts and belonging to a community.** The models would also encourage consumers to find pleasure in crafts and engaging in free time activities such as repairing garments. Consumers would have the opportunity to learn new skills for prolonging the life of garments and find like-minded communities that share the same values. Some workshop participants pointed out that the sufficiency-oriented business models would support consumers in valuing time rather than products.
- **Economic benefits.** The workshop participants discussed that the sufficiency-oriented business models, particularly focused on reuse, would make it possible for consumers also to engage in new earning opportunities through reselling and sharing. In addition, consumers would save money through reduced consumption and investing in long-lasting garments in the long run and save space due to the reduced amount of clothing.

Network actors. For the network actors, the benefits and new value opportunities of sufficiency-oriented business models include the following:

- **New business opportunities.** The workshop participants discussed that the sufficiency-oriented business models would provide possibilities to differentiate from fast fashion and create opportunities for more sustainable ways of doing business. This was seen particularly true from the perspective of "born-green" micro companies and SMEs, for example, repair shops. In addition, there would be possibilities for an increased DIY industry and upskilling.
- **Monetary benefits.** The sufficiency-oriented business models were seen to bring new additional lines of revenue for existing businesses, as they would enable making money

beyond the sale of a garment, from different types of services. In addition, the digital layer of the models would enable savings from optimised production, which would be more efficient and enable more ethical production models. It was pointed out in the workshop discussion that the improved matching of supply and demand would enable savings in materials, production, retail and storage. The workshop participants also discussed that by acting more sustainably and according to the EU regulations, the business models would avoid penalties and attract increased research and development investments in sustainability-based opportunities. Rewarding instruments from the EU were seen to be beneficial in attracting more business models to implement sufficiency orientation.

- **Impact.** The workshop participants pointed out that being part of implementing more sustainable business models would also increase the normalisation of sustainable industry practice in general. Introducing more sustainable models would result in a snowball effect of sufficiency-oriented models.
- **Stronger customer relationships.** The workshop participants also discussed that with the sufficiency-oriented business models, a stronger and more emotional connection with customers would be enabled. There would be increased trust by consumers and a longer-term relationship, and the business models would know their customers better and for example, improve their forecasting of customer needs with data.
- **New partnerships.** Having a sufficiency-oriented business model would enable the creation of a new value network with like-minded actors and the possibility of having a fairer value distribution among different actors. The new ecosystems could increase trust and make the supply chain easier, in terms of, for example, logistics, material identification, asset tracking and quality control. The digitalisation aspect would provide novel value chains, comprising also digital expertise and data platforms.

Society and culture. For society and culture, the benefits and new value opportunities of sufficiency-oriented business models include the following:

- **Driving positive change among industry and consumers.** The workshop participants discussed that the sufficiency-oriented business models would raise the awareness of the environmental impact of the fashion industry and result in an overall reduction of overconsumption. The models would make it possible to lower the societal pressure of needing to be “on trend”. Some participants pointed out that by releasing social resources from the need to consume, there would be more space to address other key challenges faced by society.
- **Revitalising local economies.** The sufficiency-oriented business models would enable the re-creation of employment in the textile sector within Europe. The workshop participants discussed that the models enable various small-scale employment opportunities and support entrepreneurship. In addition, new forms of employment would be made possible, as there would be an increased need for experts in repair, resale and recycling, also around the digital and regulatory domains. This would also provide an opportunity for innovation.
- **Improved employee wellbeing.** Some of the workshop participants brought forward that the localised business models would increase employee wellbeing, as there would be more transparency in employment and fairer wages, due to more control over the workers' rights. This would also result in reduced exploitation of communities outside the European value chain.

- **Building sustainable communities.** The sufficiency-oriented business models were seen to strengthen the communities mobilised for sustainability. The models would also encourage the creation of new communities around do-it-yourself (DIY) and fashion exchange.
- **Appreciation of traditional crafts and sustainable textiles.** The workshop participants discussed the cultural aspects of sufficiency-oriented business models and saw that they would enable the appreciation of fashion as a form of culture. This would enable seeing sustainable textiles as part of cultural heritage and making it possible for a stronger feeling of cultural belonging.

The possible negative outcomes emerging from sufficiency-based business models

The possible negative outcomes emerging from sufficiency-based business models identified in the contexts of environment, consumers, network actors, and society and culture are addressed next. Figure 8 summarises the main negative outcomes that emerged from the workshops.

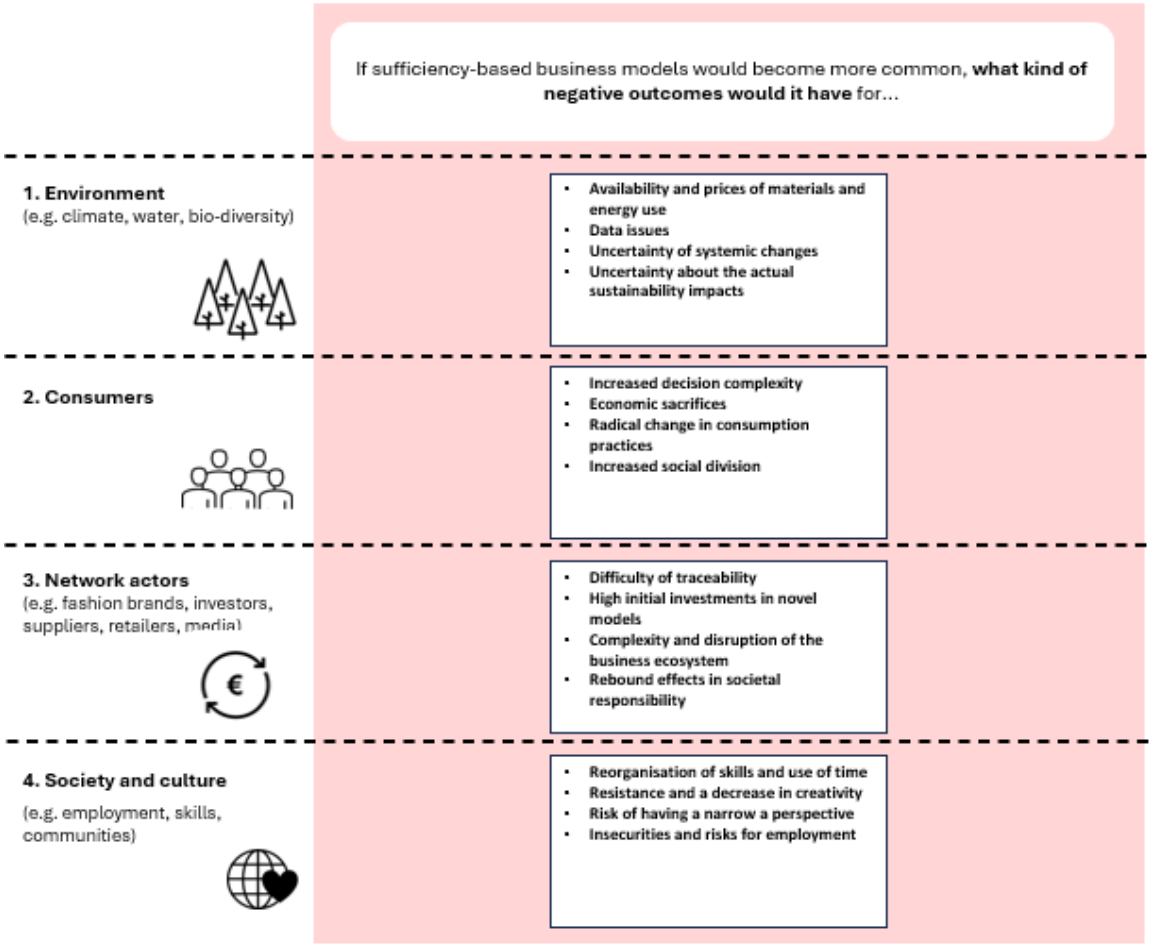


Figure 8. Negative outcomes emerging from sufficiency-based business models

Environment. For the environment, the negative outcomes of sufficiency-oriented business models included the following:

- **Availability and prices of materials and energy use**. The workshop participants described that sustainable materials have higher prices than other materials. Some materials might have limited availability, such as the packaging materials needed in the fashion industry. Additionally, sufficiency-oriented models require the use of energy and chemicals in production.
- **Data issues**. The use of data will potentially increase in sufficiency-oriented models, and therefore, data privacy becomes critical and requires management. The use of data also leads to increased data waste.
- **Uncertainty of systemic changes**. The workshop participants noted that for sufficiency-oriented business models to achieve strong sustainability, they should substitute unsustainable models, instead of only existing alongside them. However, this requires major systemic changes. Additionally, systemic changes in the market are required, as the competitiveness of big fashion players in the market may decrease in the short term, and they may also face profit losses.
- **Uncertainty about the actual sustainability impacts**. Some workshop participants mentioned that there is uncertainty about the genuine sustainability impacts of sufficiency-based business models. For example, fashion rental models may encourage an increase in consumption, as they promote trying out new styles and changing clothes without commitment in the form of ownership. Some workshop participants also mentioned that despite the rise of novel sufficiency-oriented models, there is a risk of continuing the status quo in the fashion industry, without significant changes. Additionally, novel business models may create a false mandate of using natural resources.

Consumers. For the consumers, the negative outcomes of sufficiency-oriented business models included the following:

- **Increased decision complexity**. The workshop participants described that sufficiency-oriented business models require more complex decisions from the consumers. The availability of these options in the market is currently low compared to traditional models, e.g. fast fashion, which makes it difficult for consumers to find suitable sustainable alternatives. Additionally, it is difficult for consumers to understand the sustainability impacts of different alternatives and to identify which alternatives in the market are sustainable and which are not.
- **Economic sacrifices.** The sufficiency-oriented models often have higher prices than, e.g. fast fashion options, and consequently, choosing sufficiency-oriented models requires economic sacrifices from the consumers.
- **Radical changes in consumption practices.** For the sufficiency-oriented models to become more common, consumers are required to adopt novel consumption practices for fashion. For example, consumers must invest more time and energy into clothing maintenance. These types of radical changes might cause opposition among consumers or even increase consumption levels. Additionally, choosing sufficiency-oriented options may lead to a false sense of security in terms of sustainability efforts, as the consumers might think that they are acting responsibly merely by choosing a sufficiency-oriented model and ignore other sustainability-related efforts.

- **Increased social division.** The workshop participants described that the higher costs of sufficiency-oriented models may lead to greater social hierarchy among consumers, as only a limited group of consumers can choose sustainable options.

Network actors. For the network actors, the negative outcomes of sufficiency-oriented business models included the following:

- **Difficulty of traceability.** The workshop participants noted that product traceability is critical to sufficiency-oriented business models, however, it is difficult, complex and requires investments from suppliers and brands.
- **High initial investments in novel models.** Critical and high investments are needed from companies to move from traditional models to sufficiency-based models, e.g. regarding training, life cycle assessment (LCA) calculations, creating a take-back system, production systems and creating facilities for upcycling.
- **Complexity and disruption of the business ecosystem.** The novel sufficiency-oriented business models require significant disruptions in value chains and changes in the market positions of actors. Therefore, the collaboration between actors is more complex and uncertain than in traditional models and might even result in conflicts.
- **Rebound effects in societal responsibility.** The market disruptions related to sufficiency-oriented business models might lead to job losses and diversity-related challenges. For example, it should be acknowledged that the fashion industry is highly associated with women's entrepreneurship. Additionally, an increase in commercial businesses that focus on sufficiency might lead to a decrease in non-profit actors, for example, charity shops, which depend on donations.

Society and culture. For society and culture, the negative outcomes of sufficiency-oriented business models included the following:

- **Reorganisation of skills and use of time.** Implementing sufficiency-oriented business models requires upgrading the skills and competencies of professionals and consumers. For example, consumers need skills and knowledge on how to take care of their clothes. Additionally, more time is needed to implement self-sufficiency, e.g. repairing.
- **Resistance and a decrease in creativity.** Some workshop participants described that the sufficiency-oriented models might face high resistance among consumers due to increased complexity and the radical changes that are required. Some workshop participants also mentioned that implementing sufficiency-oriented models could lead to superficiality and decreased creativity in the long term.
- **Risk of having a narrow perspective.** The workshop participants discussed the potentially too narrow perspective of sufficiency-oriented business models. For example, focusing too much on the local perspective might lead the global challenges to remain unseen. Respectively, focusing too much on the challenges of the fashion industry might lead to a situation where the challenges and impacts of other domains remain unseen.
- **Insecurities and risks for employment.** The workshop participants noted that the increased risks for businesses related to implementing sufficiency-oriented business models might lead to risks and uncertainties concerning employment in the fashion industry. Employment may also face disruptions that are related to, e.g. increased costs of digitalisation and less work in logistics.

Changes and sacrifices concerning sufficiency-based business models

The changes and sacrifices needed for sufficiency-based business models to become more common in the contexts of environment, consumers, network actors, and society and culture are addressed next. Figure 9 below summarises the main changes and sacrifices that emerged from the workshops.

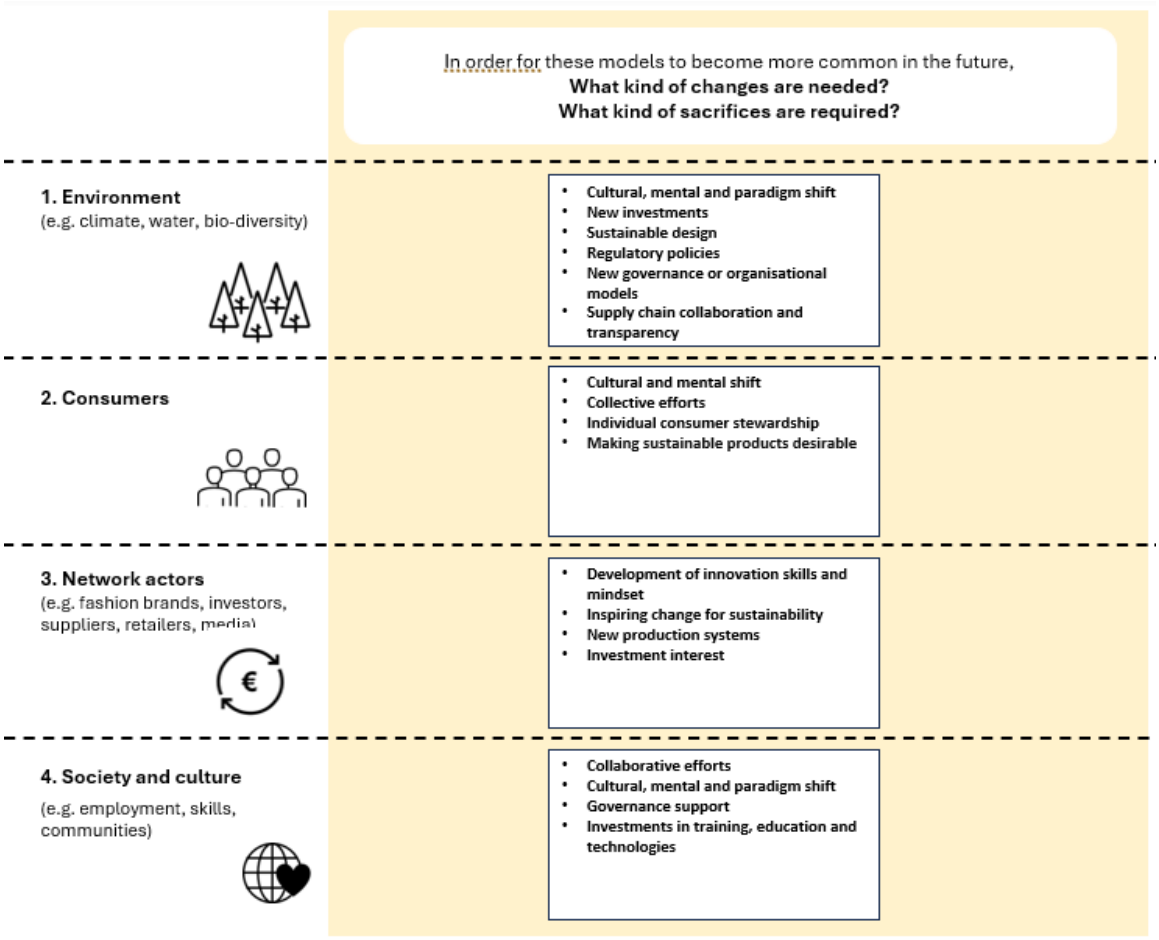


Figure 9. Changes and sacrifices concerning sufficiency-based business models

Environment. For the environment, the changes and sacrifices needed for sufficiency-oriented business to become more common included the following:

- **Cultural, mental and paradigm shift.** Sufficiency-oriented business models require a new mindset, one that builds on a better awareness of overconsumption. A move towards slower fashion is needed and should be accepted, with people willing to get less dopamine from shopping as it is practised today, which prioritises quantity over quality. There is also a need to rethink natural resource use: how natural resources are utilised, valued, and reused. Concerning this, businesses and other actors need to rethink how value is defined. To support these environmentally beneficial changes, society needs incentives geared towards reducing consumption.
- **New investments**. For sufficiency-oriented businesses to succeed, there is a substantial need for funding to support sustainable initiatives. New investments would be needed to

support re-skilling, re-locating, training, and upskilling workers in new technologies and sustainable practices. Additionally, investments would be needed in technological solutions and materials.

- **Sustainable design**. Sufficiency-oriented business models would also necessitate resetting design practices. This would imply shifting design practices to focus on reducing consumption and promoting sustainability by minimising excess.
- **Regulatory policies**. Sufficiency-oriented businesses would benefit from governance that respects existing legislation and avoids reopening debates. Governance would also need to implement incentives to encourage sustainable practices
- **New governance or organisational models**. Implementing new organisational forms (e.g., social enterprises) would also be necessary. Additionally, it is important to shift the focus from individual actions to community-level and collective efforts
- **Supply chain collaboration and transparency**. Sufficiency-oriented businesses would benefit from various industries sharing leftover materials. Furthermore, increasing transparency and adopting more sustainable practices across value chains would be necessary.

Consumers. For the consumers, the changes and sacrifices needed for sufficiency-oriented businesses to become more common included the following:

- **Cultural and mental shift**. Sufficiency-oriented businesses would require consumers to move away from a “more is more” attitude. They would need to sacrifice their need to refresh wardrobes less often and own fewer items. Consumers might also need to change their perceptions of what is considered aesthetically pleasing. The other changes identified were not described as sacrifices but as necessary adjustments. These included emphasising authenticity and individuality over conforming to others, learning to take better care of existing clothes, and investing in crafts, quality, and durability in clothing. Moreover, consumers would need to make more informed decisions about clothing choices and their impacts. Encouraging innovative thinkers and different approaches, along with structural support, would be needed to facilitate this cultural and mental shift."
- **Collective efforts**. For sufficiency-oriented businesses to become more common, it is necessary to promote learning across different generations. Collective efforts are also needed to increase awareness of how clothes are made, teach how to care for clothes and recognise quality.
- **Individual consumer stewardship**. Sufficiency-oriented businesses would benefit from individuals who would influence and educate others through their own choices. Consumers would also need to adopt a custodian approach to the environment.
- **Making sustainable choices and products desirable**. Sufficiency-oriented businesses would benefit if sustainable options were made available for everyone in convenient locations (e.g., shopping centres, supermarkets) and were more affordable for everyone. Making sustainable products more desirable would also require improving communication, availability, and the attractiveness of sustainable products.

Network actors. For the network actors, the changes and sacrifices needed for sufficiency-oriented business to become more common included the following:

- **Development of innovation skills and mindset.** Embracing collaboration, thinking outside the box, and drawing inspiration from other industries (e.g., gaming, music, and

other creative industries) would be necessary to boost sufficiency-oriented businesses. This would also include developing teams with diverse skills, such as empathic tech teams. Overall, adopting a new, holistic approach to innovation and creating readiness to take big, risky investments would be required from network actors. This might also involve financial sacrifices, for example, when investing in digital teams and media to build new ecosystems.

- **Inspiring change for sustainability.** Network actors need to better promote the positive aspects of sustainability and initiatives that raise consumer awareness. This implies going beyond greenwashing by committing to genuine responsibility and engagement. Network actors also need to start converting customers to users through services that extend product lifetimes. Additionally, they need to create more engaging and personalised customer experiences.
- **New production systems.** Network actors would need to allow for more flexibility in production amounts. They would also need to increase and strengthen their collaborations with artisans and freelancers. Overall, for sufficiency-oriented businesses to flourish, closer collaboration between actors would be needed. Network actors would need to adjust their operations to focus on quality over quantity: producing fewer but higher-quality products at higher prices. In addition, it would be essential to ensure fair sharing of responsibilities, profits, costs, and risks in value chains. The changes among network actors would also require a shift from individual to collective operational logic, where different actors collaborate towards mutual goals. Cooperative models would need to be examined more by network actors. Large global corporations might need to sacrifice their position, as empowering micro-companies could require limiting the global industrial dominance of large corporations.
- **Investment interest.** A better and shared understanding of why sustainable business ideas aren't resonating with investors is needed. While the benefits of sufficiency-based business models for the environment and society seem plentiful, these opportunities do not translate into investment cases. The reasons behind this need to be more widely known and shared among different actors across society
- **Society and culture.** For society and culture, the changes and sacrifices needed for sufficiency-oriented business to become more common included the following:
- **Collaborative efforts.** Sufficiency-oriented businesses would benefit from activities that foster community, such as establishing repair shops and networks. Society would also need to make more efforts to ensure safe and healthy working environments and fair wages for all. A highly collaborative quadruple helix should support this transformation, successfully synchronising efforts across academia, industry, government, and civil society.
- **Cultural, mental, and paradigm shift.** Sufficiency-oriented businesses require shifting values and mindsets towards sustainability while recognising the link between fashion, clothing and identity. They also need to place more value on artisanal and traditional artistry and methods. Additionally, sufficiency-oriented fashion businesses would benefit from acknowledging fashion as a significant industry deserving of attention, study, and investment. Furthermore, the whole society and culture would need to adopt a different approach to growth, innovation, and scalability.
- **Governance support.** Society would need to ensure that EU and national governments support green and digital transitions. Additionally, society should recognise the value of providing financial support to sufficiency-based businesses and back these financial

initiatives. Legislation should also promote open collaboration, equal access to technologies, and respect for local environments and communities.

- **Investments in training, education, and technologies.** For sufficiency-oriented businesses to become more common, upgrading knowledge and developing new skills for sustainability is essential. This includes enhancing vocational training in traditional skills (e.g., sewing and pattern making), materials, and techniques. Additionally, society needs to ensure that campaigns are run to educate consumers. Cultural change could also be promoted through green education for community builders. Finally, society should be willing to invest in sustainability, such as in recycling methods.

3.9 Cultural heritage and creative traditions in the sustainability transition

To understand the role of cultural heritage and creative traditions in the CRAFT-IT4SD pilot sites in enabling the green transition of the textile industry, the fashion and textile association representatives in Denmark, Finland, Romania and Spain were asked to describe the country-specific characteristics that support the sustainability of the sector. The main points are summarised in Table 7 below.

Table 7. Characteristics of cultural heritage in supporting sustainability transition

Country	Characteristics supporting sustainability
Denmark	History of design tradition, focus on aesthetics, quality, durability, slow production, mini production facilities, focus on end-user, curiosity towards customers, preserving and enhancing design tradition
Finland	History of utilising existing materials, creating new products from old garments, not throwing anything away, connecting cultural heritage to sustainability, learning from national dresses
Romania	Strong artisan culture, valued by all generations, learning from history, valuing nature, cultural heritage in fashion collections, creativity, adoption of technological innovations
Spain	Artisan heritage, strong industrial heritage, close relationship with textile value chain, lower risks, higher traceability, transparent communication, environmental and social sustainability practices, decarbonisation strategies, textile recycling, eco-design practices, focus on sustainability in design and textile education

The Danish industry representative emphasised the history of the country's design tradition, which is manifested by a strong focus on aesthetics, quality, and durability. Additionally, the tradition of slow production, facilitated by mini-production facilities, was noted. The Danish designers also focus on the end-user of garments and show curiosity towards customers. The interviewee emphasized the importance of preserving and enhancing the Danish design tradition.

The Finnish association representative discussed the strong history of utilising existing materials to create new textile products, for example, creating rugs from old garments, and not throwing anything away. The interviewee highlighted that the cultural heritage aspect should be connected more to the sustainability discourse and pointed out that a lot could be learned from, for example, the design, materials and visual representation of national dresses, which have been used for a very long time.

For the Spanish region, the interviewees identified the artisan heritage, which is complemented by the strong industrial heritage. The industrial heritage promotes a close relationship with the textile value chain (e.g. between suppliers and fashion brands), resulting in several benefits: lower risks and higher traceability; more transparent communication to consumers; emphasis on environmental and social sustainability practices; implementation of decarbonisation strategies; and easier facilitation of material development and piloting new machinery. Additionally, having extensive experience in textile recycling within the country supports the promotion of sustainability and eco-design practices. Furthermore, design and textile education have been focusing strongly on sustainability to enhance the green transition within the sector.

In Romania, the interviewee noted the presence of a strong artisan culture, which is appreciated by both older and younger generations as a means of returning to traditional roots. The practice of learning from history and valuing nature originates from less developed areas of the country, particularly villages that are thousands of years old. Larger designer brands have recognised and incorporated the country's cultural heritage into their fashion collections. Additionally, the interviewee highlighted creativity and the adoption of technological innovations as cultural strengths.

4. Relevant topic areas for climate impact assessment

Based on interviews, workshops, and literature reviews conducted in T5.1, several topics were identified as relevant for the climate impact assessment of T5.2 and requiring further studies. In T5.2, drawing on the LCA methodologies, selected sufficiency-based business models are analysed concerning their climate impacts. The relevant topic areas identified in T5.1 for that purpose include:

- **Selection of comparative cases**. The type of business model that would be replaced by the new sufficiency-based business model and the relevant model for comparing potential climate benefits need to be analysed carefully.
- **Potential for consumption reduction**. It is important to analyse whether the sufficiency-based model reduces consumption, specifically the consumption of virgin materials.
- **Impacts of new digital solutions**. The climate impacts of new digital solutions need to be considered if they are used in sufficiency-based business models.
- **Balancing operational logistics**. Order sizes, rental logistics, take-back model logistics, and online resale logistics all influence climate impacts, profitability, and customer satisfaction. Therefore, achieving a balance between these factors is essential.
- **Broader sustainability impacts**. While CRAFT-IT4D T5.2 focuses on understanding climate impacts, it is also important to address other sustainability impact categories, rebound effects, and trade-offs in some manner. This can be done, for example, in qualitative terms. This approach would ensure that target audiences understand the possibilities of both positive and negative impacts, not just concerning climate, helping to consider and possibly avoid unintended adverse consequences.

Building upon the climate impact assessment findings of these case studies and the topics listed above, future-oriented scenarios describing potential development paths towards more sustainable business models are prepared.

In addition to the above-listed topic areas, several other topics were identified requiring further studies. To start with, access to data and the reliability of data were identified as relevant topics. Currently, data accessibility and reliability pose challenges for companies of all sizes, and the audience interpreting the results should be equally aware of this challenge. It should therefore be explained in the impact assessment that when reliable primary data is not available, for example from suppliers, what kinds of assumptions have been used, how the results can change if the data changes, and what kind of challenges this poses to assessing potential climate impacts of a specific business model.

Moreover, in addition to the climate impacts, the economic aspects of sufficiency-based business models require further studies. The revenue logic and profitability of the model need to be addressed, as climate impact reductions, even when quantified, are not enough to build a business case. Like the climate impact assessment, assessing the economic side of the business models includes multiple variables, such as access to relevant and reliable data.

Furthermore, despite the sufficiency-based business models revolve around the enhancement of more sustainable consumption practices, the relationship of these models with the EU's circular

economy goals and, in particular, waste reduction priorities, merits further attention. For example, it is essential to address whether the sufficiency-based business model depends on textile waste resulting from over-consumption of resources and/or wasteful production, as this can pose both risks and opportunities for sufficiency-based fashion businesses.

Finally, the scalability of the sufficiency-based business model also requires further studies. The potential and implications of scaling up sufficiency-based business models should be addressed, considering both their potential to reduce climate impacts, provide economic sustainability, and enhance social sustainability.

5. Concluding remarks

Sufficiency-based business models potentially offer one approach to redesign business practices to meet global climate targets. They hold the potential to reduce consumption. However, a more quantitative understanding of the environmental impact reduction potential of these models is still needed to better understand their potential. In addition, the social and economic aspects of these models require further attention, both in qualitative and quantitative terms. Finally, these aspects need to be examined, considering also the potential of cultural heritage and new digital tools in the climate transition.

The present deliverable, D5.1, is the first deliverable of CRAFT-IT4SD WP5. It has described current sustainable business fashion business models and future business aspirations in the four CRAFT-IT4SD pilot sites in Denmark, Finland, Romania and Spain with a particular focus on sufficiency-based business models. In addition, the report has described critical topic areas for carrying out a climate impact assessment among selected sufficiency-based business models.

The results of D5.1 will support the execution of the second task of WP5, T5.2, “Climate impact assessment”, where the climate impacts of selected sufficiency-based business models are calculated by applying LCA methodologies. T5.2 will build on the preliminary literature review conducted in T5.1 on the measurement of the climate impacts of business models and extend the review in D5.2.

The D5.1 results also support the final task of WP5, T5.3, “Business modelling”, which focuses on building sustainable climate transition enabling business models. The work carried out in T5.1 will continue in T5.3 with a further business model literature review, interviews and workshops. T5.3 will examine selected sufficiency-based business models in further detail in the context of digitalisation. As a result, T5.3 will provide in D5.3 descriptions of new business models for sustainable fashion, addressing their potential for value creation and the obstacles associated with these models, including economic aspects.

Additionally, the D5.1 results lend support to the ecosystem mapping of WP7, “Communication, dissemination, ecosystem facilitation and sustainable partnerships”, to be published in D7.3. Finally, they also lend support for consumer understanding and empowerment and other types of pilot site actions in WP4, “Pilot coordination, implementation and monitoring” and disseminating knowledge on sustainable climate transition-enabling business model and related practices in WP6, “Skills and learning communities across fashion and related CCSI”.

APPENDIX: Interview guides

Interview guide for companies

Business model in general, background information

- What is your (i.e., the interviewee) role in the company?
- What is the business idea of the company? What products and/or services do you offer?
- What is your geographical area of operation?

Drivers and barriers to the business model

- What are the main enablers and drivers for the company to implement a sustainable business model?
    - Are there some enablers that are currently missing?
    - What are the main opportunities for your business model in the future?
- What are the main challenges and barriers to implementing a sustainable business model?
    - How are you tackling these?
    - How could these barriers be removed?

Sustainability of the business model

- How does your business model contribute to the sustainability of the fashion industry?
- Have you verified the sustainability impacts of your business model?
    - If yes, was the verification/validation done (methods, who executed the verification, which parts of the business model were verified, etc.)?
    - If yes, what were the results?
    - If not, why not?
- How could the sustainability of your business model be improved in the future?

Customers: benefits and barriers

- How would you describe the role of customers/consumers in your business?
- What are the customer segments that you are targeting? Why?
- What are the benefits for customers related to your offering?
    - What drives and motivates customers?
- What are the barriers for customers?
- How do you persuade customers to choose your offering?

Differentiation and positioning

- Who do you consider to be your competitors in the fashion market?
- How do you differ from your competitors?
- What is similar in your offering compared to other actors in the market?
- How do you see your market position in the fashion market in the future?
    - What changes do you think are likely to happen in market dynamics?

Business ecosystems and networks

- Who are your main partners or the most important partners in your business ecosystem (or value chain)?
    - How do these partners contribute to the sustainability of the business model?

- How have you established relations with your current partners?
- What criteria do you have for the actors that you involve in your ecosystem/value chain?
    - Which sustainability criteria do you apply?
- Are there some actors currently missing in the ecosystem?
- How could the sustainability of the ecosystem/value chain be improved in the future?

Interview guide for textile and fashion associations

- Please describe your organisation and your role(s) in it
- What is your organisation's role in enhancing sustainability in the local textile and fashion sector?
- How is sustainability determined and measured in the local textile and fashion sector?
- What are the key challenges of the local textile and fashion sector in terms of sustainability?
    - How could these be solved/turned into opportunities?
- What are the strengths of the local textile and fashion sector in terms of sustainability?
- What kind of novel sustainable business models are there currently in the local textile and fashion sector?
- From your perspective, what are the most promising sustainable business models in the future?
    - Why?
    - What would it take to create them?
        - What kind of actions are needed
        - What kind of actors are needed
        - Nature of collaboration
- How is the local textile and fashion sector preparing for recent and upcoming EU legislation?
    - Ecodesign for Sustainable Products Regulation, including Digital Product Passport (DPP)
    - Sustainability reporting directive and standards (CSRD, ESRS) and corporate sustainability due diligence (CSDDD)
    - EU strategy for sustainable and circular textiles
- In your view, how could the local cultural heritage and creative traditions contribute to the sustainability transition in textile and fashion? (Specific cultural features in your country enabling green transition)
- In the academic literature, there has been a lot of interest in sufficiency-based business models that build on refusing, reducing and rethinking strategies.
    - What do you think, how common are these types of sustainable business models or strategies among the local fashion and textile companies?
    - Can you name any local companies that use these strategies?
        - Refuse:
        - Reduce:
        - Rethink:
    - Can you name any examples from your region?

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