MARKET STUDY, GAPS & NEEDS ANALYSIS

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INTRODUCTION

The aim of this report is to provide a detailed analysis of the European textile industry and its recovery after the economic upset followed by the covid-19 pandemic in 2020. The document focuses on how to incorporate and promote the uptake of sectoral innovation to improve the resilience of European companies and make them better prepared to face the changes or disruptions in the textile value chain, overcoming the hurdles brought by the pandemic.

Firstly, the study provides a general introduction of the TC sector with details about the European state-of-the-art. A specific paragraph is dedicated to the analysis of how Covid19 affected the sector and to monitor if companies have or not recovered from the economic damages.

The second part of the document is dedicated to the European twin transition. This chapter focuses on the two main topics regarding the green and digital industrial conversion and its connection with the the EU Sustainable Textiles Strategy. Both concepts will be analysed and the strategic option of these economic conversion will be exploited too.

Moreover, for what concerns TC sector, EU recognized the crucial role of this specific industrial sector. Indeed, one of the EU missions is to enhance sustainable textiles and a more efficient EU textile industry. This means improving the green and digital skills of the workforce, but also it requires the implementation of a circular economy for a necessary transition to a low-carbon European economy, as part of the EU Sustainable Textiles Strategy.

The final section collects inputs directly from European Companies and Experts. In this sense, companies have been asked to fill a survey to explore their specific needs and priorities to overcome past and future challenges. The results have been merged with the contributions of experts to have a 360° view to focus on gaps and future challenges. The results of the survey will be analysed and discussed to make some infers and drawing some conclusions.

The final purpose of this Market Study is to verify if the activities foreseen within EuroBoosTEX project are in line with what companies really need and provide them customized solutions. The main goal of the EuroBoosTEX project is to foster a new competitive business model in the European textile sector. The focus is mainly on up-skilling and re-skilling tools in green and digital technologies for textile ecosystem, but also financial assistance to support research and innovation; with the final aim to boost cross-regional and international cooperation in Europe to grasp or create new and fruitful business opportunities.

1. GLOBAL MARKET OVERVIEW

1.1 Textile and clothing market: key facts and figures

The Textile & Clothing industry (TC) plays a leading role in the European manufacturing industry. The sector includes cs. 180.000 companies (of which 99% are SMEs), employing 1.7 mln people and generating in 2021 a turnover of €147 bln (Textiles and man-made fibres represent 56% and clothing 44% of total T&C turnover), an increase of 11% compared to 2020[1].

The importance for social and economic cohesion is increased by the fact that the large number of such SMEs are often concentrated in particular regions, thus contributing greatly to their wealth and cultural heritage. In this sense, the textile ecosystem is not only a pillar of the EU economy, but has a strong territorial component, being organized mainly in cluster and industrial districts.

Sectors included in the ecosystem

The TC sector is a very diverse and heterogeneous industry. The complex value chain starts from the textile fibres manufacturing and production (natural and man-made fibres), goes through the production of knitted and woven fabrics, the finishing activities aimed at providing fabrics the visual, physical, functional and aesthetic properties; the transformation of those fabrics into products through manufacturing processes (clothes, household textiles or technical textiles); up to the retail/application phase[2].

The industry is also intertwined with the agricultural sector when it needs inputs in the form of natural fibres (such as cotton or wool), and with the chemicals industry when it comes to the wide range of man-made fibres such as nylon or polyester. Finally, the sector also embraces other industries, including healthcare, construction, automotive and is closely connected to the creative industries, retail and labelling.
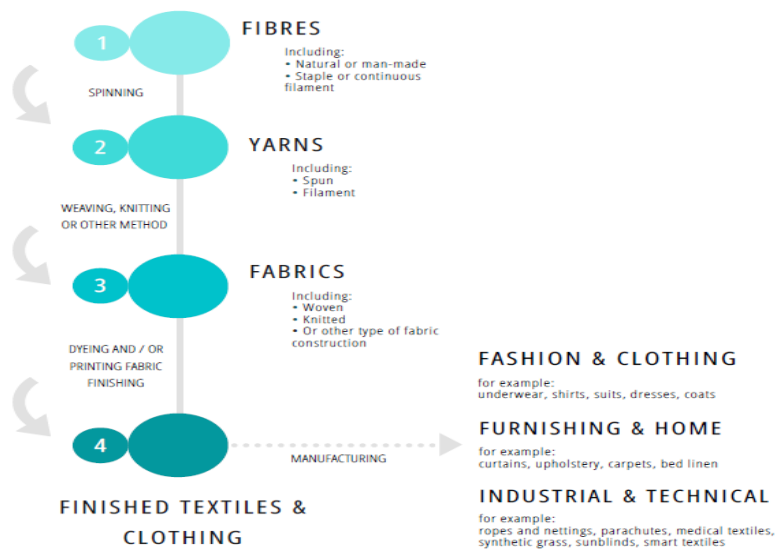

Figure 1 – TC Value chain scheme

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[1] "Textile and clothing industry turnover in the European Union 2010-2021, by segment"; P. Smith, Jul 2022. Statista.

[2] In this paper, the TC is meant to include the following activities: the treatment of raw materials ("Natural fibres": cotton, wool, silk, flax, jute and "Man-made fibres": synthetic fibres, and fibres from inorganic materials ; the production of knitted and woven fabrics; finishing activities (bleaching, printing, dyeing, impregnating, coating, plasticising, etc); the transformation of those fabrics in products (garments, knitted or woven; carpets and other textile floor coverings; home textiles; technical, or 'industrial', textiles).

SMEs are the core of the industry representing more than 99% of the companies. Companies with <50 employees account for more than 90% of the workforce and produce almost 60% of the added value.

The share of young employees is falling and the whole ecosystem (with segmented exception) is facing an ageing trend.

Italy, Germany, France and Spain hold the most prominent positions in the ecosystem across nearly all subsectors. They have the largest number of enterprises and produce the highest values in terms of production and turnover. Moreover, the majority of the EU's main companies operating in the ecosystem are headquartered in these countries. Central and Eastern European are specialised in more labour-intensive activities and generate a smaller share of turnover. Nonetheless, the main EU companies often delocalize certain production facilities in these countries[3].
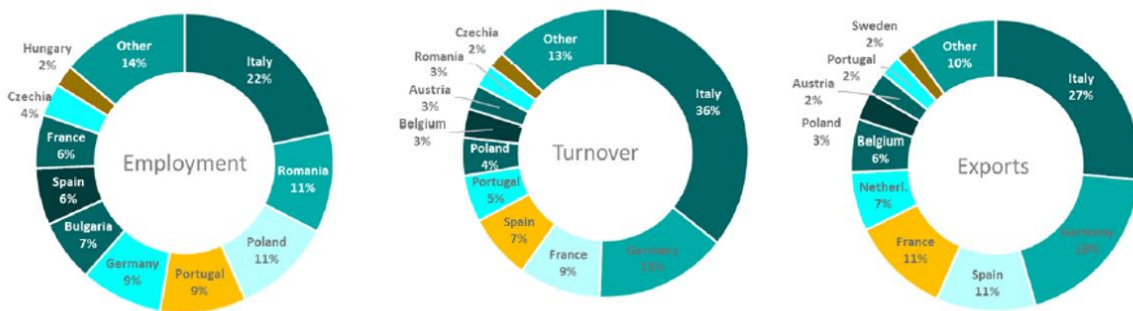

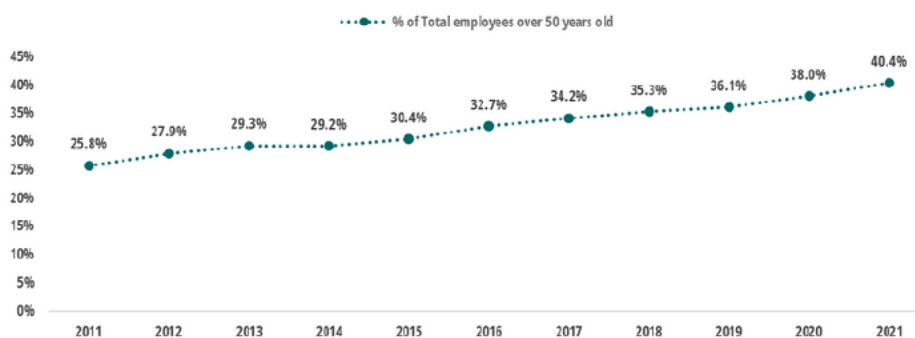*Figure 2 – Employment; Turnover and Export of EU Countries*

Figure 3 - Employees age evolution

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[3] "Data on the EU Textile Ecosystem and its Competitiveness"; EC Final Report, Centre for Industrial Studies, November 2021.

The ecosystem is integrated in a global value chain and depends on export markets. At the same time as it faces strong international competition.

Today the textile sector can be considered the 2nd most globalised sector in the European industrial ecosystem[4]. It is built on globalised supply chain and fierce competition with China, India, USA, Turkey and Vietnam.
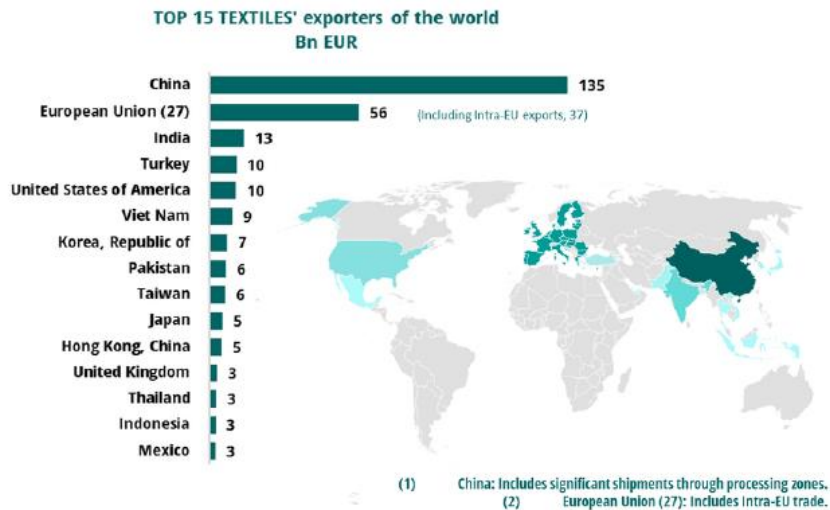

Figure 4 – TOP15 Textiles' exporters

Today, the production of textiles and clothing has one of the most complex global value chains, with more than 60% of products on the internal EU market manufactured outside the EU, often in countries with lower labour and environmental standards.

According to EURATEX 2021 report, the EU main imports are from China, Bangladesh, Turkey, India, Pakistan, Vietnam, United Kingdom, Morocco, Cambodia and Tunisia. The EU imported textile products worth €106 billion from non-EU countries (with a peak of 115 bln in 2020). Nevertheless, always according to EURATEX, the EU textile and clothing sector exported €58 billion worth of products in 2021, making the EU the second largest exporter in the world after China[5].

Europe's answer to this competitive pressure must be to invest even more on quality and innovative products, made in a sustainable manner. As emerging markets evolve, the appetite for better quality, comfort and design will grow. The ability and willingness to purchase technical textiles, which offer solutions to durability and improved performance, will increase. That is where Europe can be successful.

In 2021, the Top10 EU suppliers had an 84% share in total imports from third countries, and the Top10 EU costumers accounted for 68% of the total exports to third countries.

The pandemic has shown EU's supply chain dependence especially for fibres and yarns from Southeast Asia.

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[4] "European Commission Internal Market Report", 2020.
[5] "Textiles and the environment"; EPRS - European Parliamentary Research Service, N. Šajn, May 2022.

T&C main suppliers
Mio EUR
2020 ■ 2021

106 billion EUR T&C EU imports

China · Bangladesh · Turkey · India · Pakistan · Vietnam · United Kingdom · Morocco · Cambodia · Tunisia

T&C main customers
Mio EUR
2020 ■ 2021

58 billion EUR T&C EU exports

Switzerland · United Kingdom · United States · China · Russia · Turkey · Norway · Hong Kong · Morocco · Japan
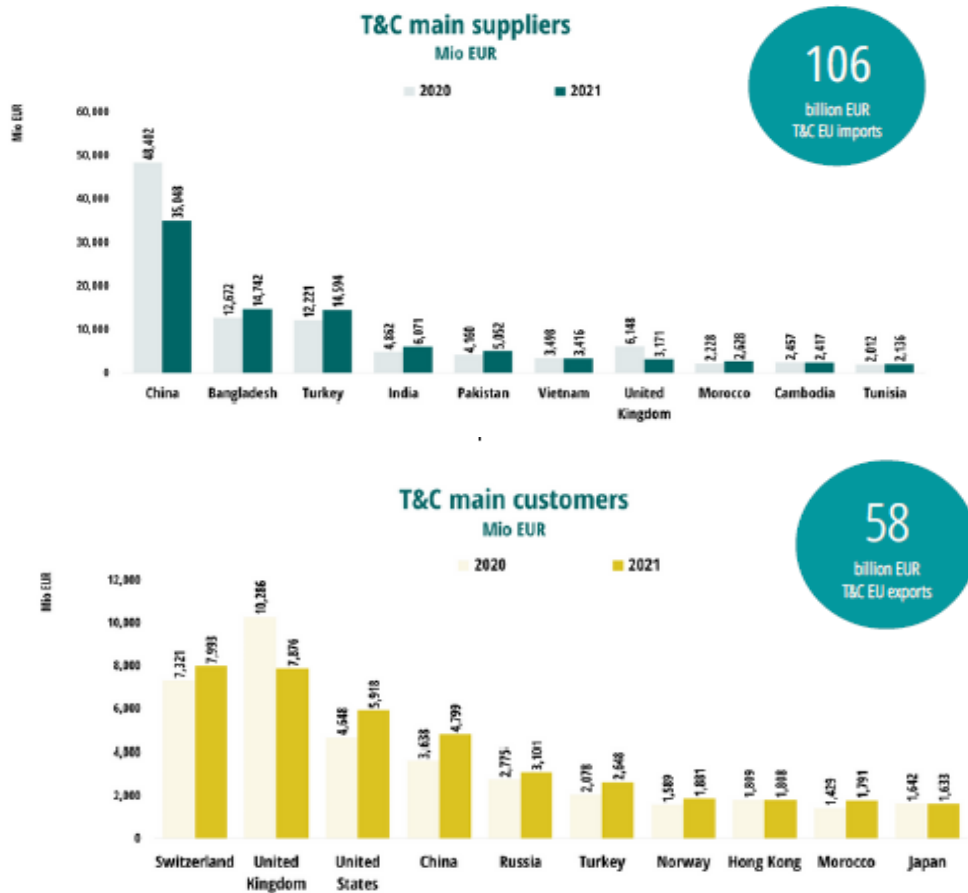
Figure 5 – TC EU imports and exports in 2021

Today, European producers are world leaders in markets for technical/industrial textiles including non-woven (industrial filters, hygiene products, products for the automotive and medical sectors, etc.), as well as for high-quality garments and interior textiles with a high design content.

To guarantee a level playing field, it is important to ensure that imports comply with EU legislation. Furthermore, EU's answer to this competitive market must be addressed on quality and innovative products.

Turnover, prospects and evolutions

Compared with the same period of 2021, economic performances in the TC industry continued to improve significantly in the first half of 2022.

The clothing segment recorded a 10.1% growth in turnover in the 2nd quarter of 2022, while textiles turnover grew by 2.2%. Export performance improved as well, with +8.4% for textiles and 0.7% for clothing. Imports remained more or less stable, with a remarkable shift from China to Bangladesh. This growth in turnover did not result in any significant changes in the employment situation.

All sectors of the economy are being negatively affected by high inflation and persistent uncertainty, notably related to gas supply disruptions and the broader geopolitical repercussions of a long-lasting war. The same factors are expected to continue to weigh on EU activity during the next months[6].
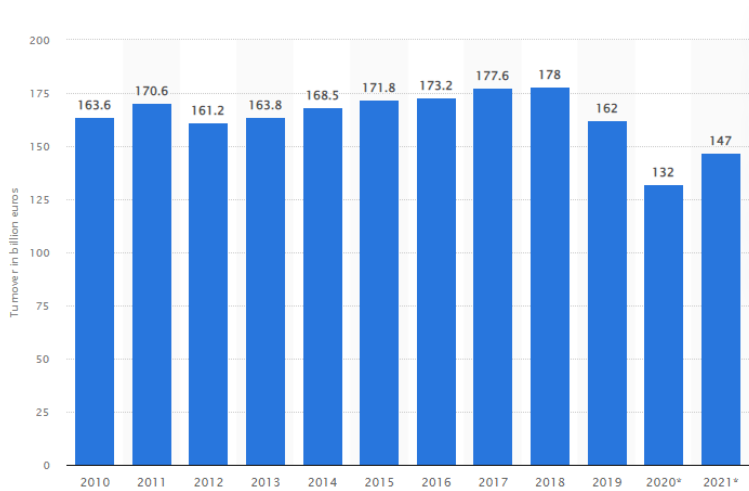

Figure 6 - Annual turnover of textile and clothing manufacturing industry in the European Union from 2010 to 2021
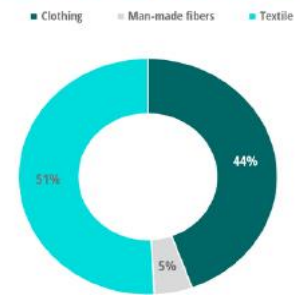

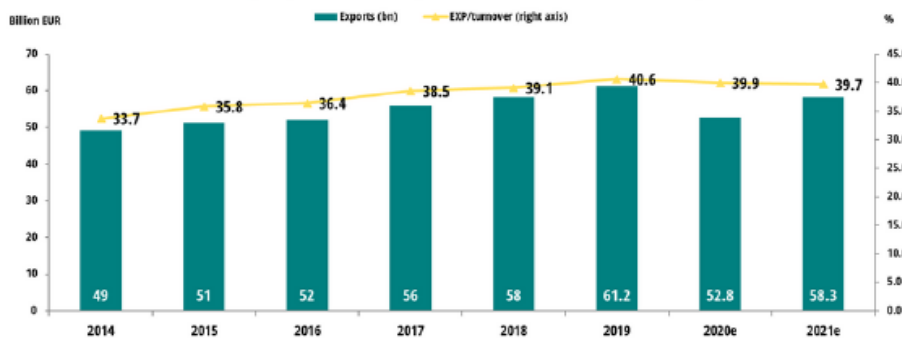Figure 7 - Share of turnover per Sub-Sector

Figure 8 - EU27 yearly evolution of exports to turnover ratio in TC industry

1.2 Impact of Covid19 on TC sector

The EU Textile Strategy highlights the focus investment needed by the European textile industry to contribute to the objective to achieve a green, digital and resilient EU economy and the more recently emerging needs of the industry triggered by COVID-19[7].

The world witnessed how the COVID-19 pandemic disrupted the textile supply chain in an unprecedented way[8]. The increasing global interconnectedness of business, countries and production networks over the last few decades have exponentially increased the economic effects of the pandemic.

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[6] "T&C industry evolution during the second quarter of 2022 and short-term prospects", EURATEX Economic Updatex.

[7] "Impacts of the COVID-19 pandemic on EU industries"; Policy Department for Economic, Scientific and Quality of Life Policies Directorate-General for Internal Policies; 2021.

[8] "COVID- 19's impacts on global value chains, as seen in the apparel industry"; Development Policy Review, J. Castañeda, J. Hauge and C. López- Gómez, 2020.

During the second quarter of 2020, the sales of woven fabrics decreased by 35%, knitted fabrics by 44%. In 2020, the EU turnover for textiles decreased by 9.3% and the clothing industry decreased by 17.7%. Demand for leather is weak and only very particular market segments are doing better (luxury, automotive and furniture). The turnover of the tanning industry decreased by almost 25%. The footwear sector experienced a further decrease in sales due to the second blockade in many Member States. The production of non-woven fabric, which is a key raw material for face masks and medical gowns, was more resilient. In particular, demand for pandemic materials recorded strong growth rates. The most significant growth rate for non-woven in 2020 was observed in medical nonwovens (+118%). In contrast, major declines were recorded in sales of nonwovens for the construction and automotive markets[9].

The total loss of textile production due to the Covid19 crisis has not yet been recovered, but to some extent, the trends is encouraging.

The recovery scenario of the overall sector is following a U-shaped, with increasing uptakes in output figures but possible further pitfalls in employment figures, as well as in the wearing apparel (clothing) subsector, whose performance dependent on trends relative national and international political measures. EU TC continued to show signs of improvement during the 1st quarter of 2022. The textile industry performed relatively well, with Q1 marking the strongest growth since Q2 2021. Seasonally, textile turnover's growth ticked up to 3.6%, compared to the previous quarters. Business activity in the clothing sector expanded by 0.4%, after increasing already by 5.6% in the previous quarter. If compared to pre-pandemic level in Q4 2019, EU turnover was 13% up in textiles, while it was still 1% down in clothing. Similarly, EU27 production continued to improve in the textile industry with a 2.5% increase over the previous Quarter. Production activity in most textile sub-sectors picked-up, compared with the previous quarter: yarns (+3.2%), fabrics (woven: 3.6% and knitted +0.4%) and technical textiles (+1.1%). By contrast, Q1 2022 saw an output decline in the manufacturing of man-made fibres (-2%), nonwovens (-0.2%) as well as in finishing activities (-4.8%)[10].
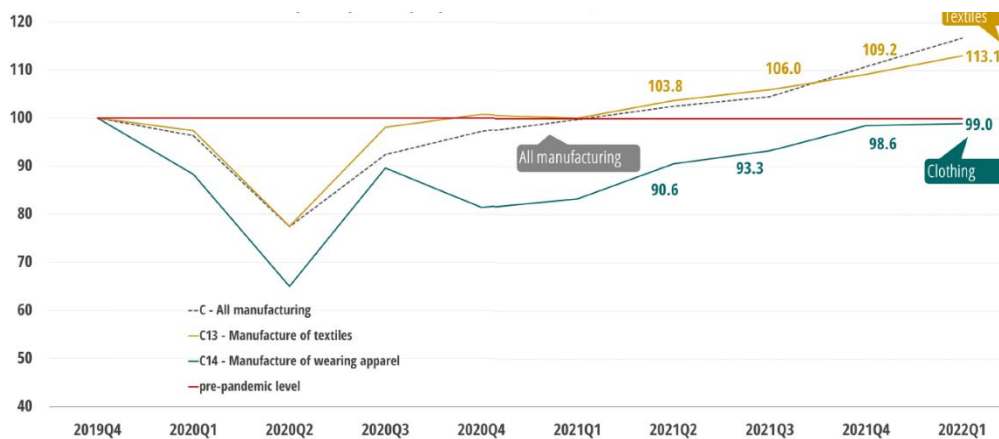

Figure 9 – EU27 TC Turnover

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[9] EDANA, https://www.edana.org/about-us/news/2020-nonwovens-market-insights
[10] "Economic Update TC Industry Evolution during Q1 of 2022 and Short-Term Prospects", Euratex 2022.

(Source: Euratex based on Eurostat data)

PRODUCTION	Annual*, % change based on previous year				Year-to-date*	Quarter**, % change based on previous quarter				
% Evolution	2018	2019	2020	2021	JAN -APR 22/21	2021Q1	2021Q2	2021Q3	2021Q4	2022Q1
All manufacturing	1.5	-0.5	-7.9	8.8	0.7	1.3	0.3	-0.8	0.1	1.8
Man-Made fibres	1.7	-5.2	-13.2	10.9	-4.9	5.0	4.4	-5.6	0.2	-2.0
Textile	-1.5	-3.4	-11.5	9.8	4.2	-1.4	3.6	0.2	0.3	1.5
Clothing	-2.2	-6.1	-24.0	2.7	9.5	-0.3	1.3	3.5	4.5	-0.3

EMPLOYMENT	Annual***, % change based on previous year				Year-to-date***	Quarter***, % change based on previous quarter				
% Evolution	2018	2019	2020	2021	JAN -MAR 22/21	2021Q1	2021Q2	2021Q3	2021Q4	2022Q1
All manufacturing	1.8	0.8	-2.1	-0.5	1.2	-0.2	0.3	0.0	0.4	0.4
Textile	0.4	-0.8	-2.1	-2.3	-0.7	-1.3	0.1	-1.1	1.5	-1.2
Clothing	-1.6	-1.8	-5.3	-3.8	2.3	-2.9	0.1	1.4	0.8	-0.1

TURNOVER	Annual*, % change based on previous year				Year-to-date*	Quarter**, % change based on previous quarter				
% Evolution	2018	2019	2020	2021	JAN -MAR 22/21	2021Q1	2021Q2	2021Q3	2021Q4	2022Q1
All manufacturing	3.5	0.7	-9.7	15.3	17.1	2.7	2.8	1.9	6.0	5.3
Textile	0.8	-2.0	-9.2	12.7	13.1	-0.7	3.7	2.2	3.0	3.6
Clothing	0.5	-2.0	-18.3	10.7	19.6	2.4	8.7	3.0	5.6	0.4

RETAIL SALES	Annual*, % change based on previous year				Year-to-date*	Quarter**, % change based on previous quarter				
% Evolution	2018	2019	2020	2021	JAN -MAR 22/21	2021Q1	2021Q2	2021Q3	2021Q4	2022Q1
T&C, footwear and leather	-0.7	1.2	-24.0	7.4	13.9	1.0	5.0	13.5	0.5	-2.7

Figure 10 – EU27 Economy: short term business statistics

2. CHANGING IN MARKET DYNAMICS

The European twin transition (green and digital) involves opportunities and challenges that Europe will face in the near future. Especially for what concern TC sector, EU recognized the strategic role of this specific economic field. Indeed, EU has the ambition to stand as a leader in sustainable textiles; especially by focusing on innovation, quality and sustainability of the material used. Another aspect to be taken into account is the importance of European competitiveness through a more efficient EU textile industry. This means improving the green and digital skills of the workforce. The main goal is to make growth the EU global market share, pushing the open markets, with the aim of promoting a free and fair competition, where the EU companies will have comparative advantage.

2.1 Digital Transition

In the period between 2015 and 2021, the Digital Economic and Society Index (DESI) grew at a stable rate of about 6% each year. The smallest growth was in the human capital component. Digital public services and digital technology integration grew by 43% and 42% over the same period. Connectivity has grown at a remarkable pace, reaching a growth of 61% since 2015. Growth in Internet use has been 28% since 2015.

The pandemic increased information and communication technology (ICT) penetration and digital adoption. Despite a negative impact, especially during the first wave, the pandemic seemed to be the perfect opportunity to adopt, on both the demand and supply side, IT solutions and undertake a digitalization path.

The primary driver of growth in the coming year for TC sector will continue to be the digital solutions for new models in manufacturing and logistics processes, in the supply chain management and in selling channels.
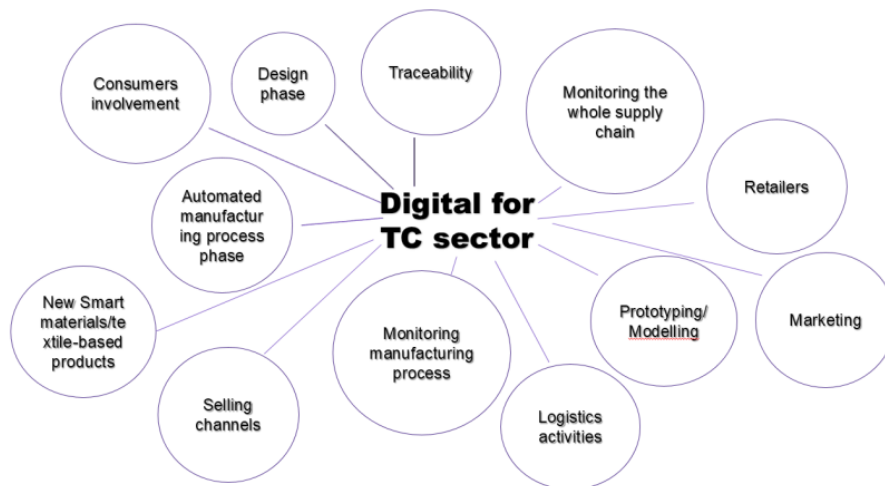
Figure 11 – Opportunities of digital for TC sector

The digital transition in TC means working on advanced technology innovation to make production more precise, as well as more local and sustainable, combining production automation, product technology, big data, AI and machine learning as the main innovative tools. Potential benefits include higher speed, faster delivery times and lower costs, thanks to reduced shipping time and inventory, as well as better waste management and reduced production defects.[11]

The following advanced technological solutions are already entered in the market but they need to be implemented in the next years:

⬊ **Artificial Intelligence** (AI) spending predicts to increase by 33% in the next 5 years. AI and automation are seen as a short-term response to the pandemic, and it is likely that AI will also bring long-term benefits, as companies that would otherwise not have considered adopting AI may invest in these innovative systems to remain competitive[12]. AI is the advanced technology that can help to spread digital showrooms and virtual design in the Fashion system. Instead, augmented reality is helping online shoppers with buying the right look and size by a smart blended reality mirror overlaying clothes on to users. System based on machine learning algorithms are gaining rooms because of their real-time ability to quality check and perform with increased accuracy on defect detection. Also, companies must start taking advantages of online shopping and direct-to-consumer (D2C) sales because allowing companies to build direct relationships with consumers and, collecting and elaborating these data, will enabled businesses to improve their performance.

⬊ **Technology for sustainability** is nowadays particularly relevant for European TC companies, which are looking for materials, fibers and techniques that are sustainable and functional. These materials must be natural or synthetic, as well as renewable or recycled. The biggest challenge should be the shifting to a circular supply chain, involving a recycling model where unused items re-enter in the supply chain to reduce waste. Furthermore, a variety of textile recycling technologies are under development and they typically fall into two broad categories: mechanical recycling technologies (cutting, tearing and needling to remove non-textile components and recover material, fibres or fabrics) and chemical recycling (chemical treatments to dissolve and reduce textiles to their base and extract the useful components). Some advanced manufacturing technologies are already available to make the garment life cycle more sustainable. Other alternatives include

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[11] "Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery", European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, 2021

[12] "Impacts of the COVID-19 pandemic on EU industries"; Policy Department for Economic, Scientific and Quality of Life Policies Directorate-General for Internal Policies; 2021.

eco-friendly textile products, as for example recycled fibers and fibers extracted from agricultural waste products. At the same time, "On-demand design and manufacturing" solutions should be considered: in this case the customized experiences will decide the orders and production will follow.

↘ **Design technologies** for delivering more digital data and presentation material along with the products. 3D design allows adjusting the fashion product design and creating the best fit in real time. Other applications in fashion design - such as Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), but also "Shape memory applications in textile design" – thanks to the use of neural network, can understand colours, textures, style preferences and other aesthetic parameters derived from Fashion trend data from different sources and using an algorithm to create designs based on users' interests.

↘ **Wearable technologies** are personal garments and accessories that incorporate advanced computer and electronic technologies and can therefore connect to the Internet. These products have found numerous applications in sportswear and in the health and wellness sector, driven by the ageing population and the increased focus on health and wellness. It's one of the main applications of the Internet of Thing (IoT). These innovation trends require collaboration, some major TC companies have started collaborative projects with high-tech companies to develop new wearables. This is an important market that boosted competition from two main sources: market leaders interested in these products and high-tech and electronic giants have also plans in this field, but also new start-ups, operating in different fields such as clothing, digital technologies, and IoT.

↘ The use of **blockchain technology** is already changing the apparel industry, offering new ways of implementing transparency in a supply chain. It could mean a chip, or a tag added to a product to store all the relevant data about that product (similarly to the wearable technologies). The main application in TC sector is in the product traceability process and in preventing the sale of counterfeit goods. Textile traceability through blockchain technology seems to have a more ethical and transparent applications for the textile industry. With blockchain, consumers would be more aware of the entire product's value chain, from the origin of the raw materials until the product on sale. This also means the removal of imitation products and a major concern about the environmental impact. In the textile sector, the number of firms dedicated to this sector is increasing, which makes the transparency criteria more important for the user's final purchasing decision. Moreover, transparency and traceability help to build trust both for relations between company and consumers and between companies and their suppliers and/or distributors.

↘ **Nanotechnology** is widely used in the textile industry in order to enhance textile attributes, such as fabric softness, durability and breathability, water repellence, fire retardancy, antimicrobial properties, etc. in fibres, yarns and fabrics. Nanoengineered textiles are enabling the industry to give new functions to textiles and clothes. Existing functionality can be improved using Nanotechnology and it can provide entirely new properties or the combination of different functions in one textile material. Applying nanoparticle coatings to textiles and clothes can generate antimicrobial, UV-blocking, antistatic, flame retardant, water and oil repellent, wrinkle resistant and self-cleaning properties.

Nevertheless, the digital revolution is also providing new solutions and innovations to the industry, as well as interrupting traditional business models. The convergence of ICT and digital technologies, artificial intelligence, virtual, augmented, and mixed reality and 3D/4D printing is set to interrupt the fashion industry. This trend is making fashion interactive, changing consumer habits, and forcing companies to acquire new skills. So, the smart technologies and wearable apparel need good and attractive designs in the future years. Thus, this field represent a concrete business opportunity for European companies.
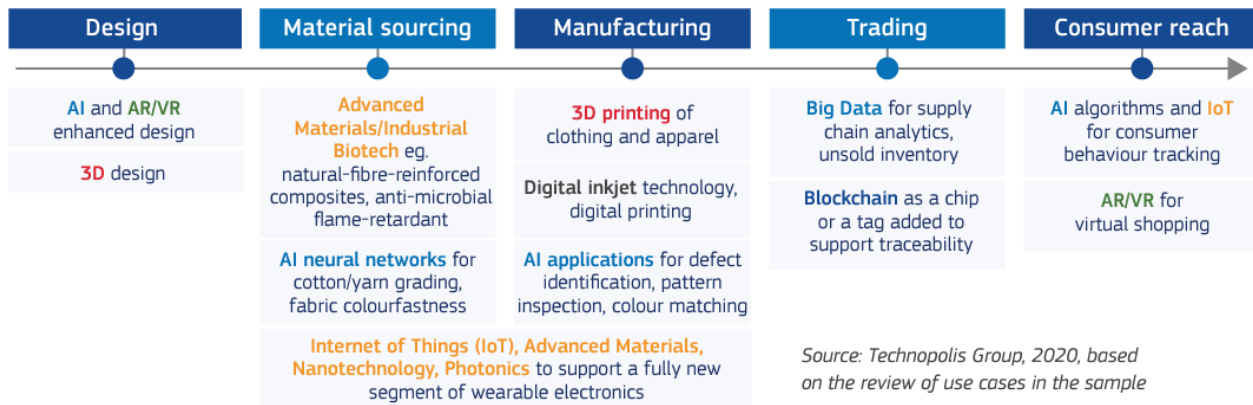

Figure 12 – Use of advanced technologies throughout the textile industry value chain

The interaction of textile with the other fields of engineering is already leading to an increase in demand for new products and applications. Some examples are:

- **High-Performance** fibers are developed with unique properties to protect the body. Protection and survival in hostile environment can be linked to highly innovative and smart textiles. They usually have very high levels of at least one of the following properties: tensile strength, operating temperature, thermal stability at high temperature, flame retardancy or chemical and solvent resistance. These new fibres are a key player in several emerging markets for technical textiles and fibre-reinforced thermoplastic composites. Lightweight, high-strength and high-stiffness composite materials have been identified as a key cross-technology between the textile sector and several large industrial sectors aerospace, biomedical, civil engineering, construction, protective apparel, geotextiles and electronic areas.

- **Functional solutions**: processing fibres and textiles in specific ways to reach a highly purpose-targeted material property and new material functions are now one the main target of the innovative segment of TC sector.

- **Smart materials and products**: Sensing, actuation, power generation or storage, communication and a host of other functions have already been successfully integrated into many textile materials and products. The addition of intelligence to a textile-based product can start at fibre level and also at any subsequent stage of processing, manufacturing or assembly of the final product.

2.2 Green Transition and Circular Economy

The ongoing COVID-19 recovery offers an opportunity to make progress in areas where structural change has been slow. This is the case with the necessary transition to a low-carbon economy to meet climate change targets. Although countries differ in ambitions, circumstances, and policy approaches, they have both the opportunity and the means to pursue this ongoing transition.

In close cooperation with industry and other stakeholders, DG ENV and GROW worked on initiatives to strengthen industrial competitiveness and innovation and to boost the EU market for sustainable and circular textiles.

The European Green Deal and the EU Sustainable Textiles Strategy together with the co-creation of the transition pathway for the textile ecosystem, will contribute to the emergence of the textile sector as global leader in green and circular business models and technologies. The initiative should drive recovery actions and create new opportunities for growth. As the strategy will cover the entire value chain, the focus has to be set in several areas. Priority is for sustainable investments, products and processes design, recycled fibers and better performing sustainable textile, new circular business models focused on resources efficiency and circularity. Relevance has to be assigned also on appropriate regulations, standards and traceability. Finally, education and skills, active labor market policies and social protection programs are also needed to ensure a fair transition.

Aligned with EU policy, many countries have committed to a sustainable recovery from the crisis and have included "green" initiatives in their stimulus packages. Although the green transition represents a substantial opportunity, the ecosystem consists mainly of SMEs, which need concrete support to comply with sustainability requirements. As mentioned, achieving sustainable textile will require new business models and approaches.

Recent reports from European Environment Agency and World Economic Forum identifies new circular economy business models for textile products:

↘ **Longevity and durability.** The first rule of good waste management and the circular economy is preventing waste in the first place. Clothes need to be designed with the circular economy in mind, to make them more durable in terms of physical and emotional durability (e.g. through timeless design), to allow for greater use and cleanliness. This means use of robust, high-quality materials and repairable designs for products, often combined with offering consumers maintenance and repair services. As part of these models, some companies offer long-term warranties that include free repair or replacement of a product, or instructions for repair or recycling. The key is to offer products that are physically durable and timeless in design, so that they are not dependent on the fashion of the moment.

↘ **Access-based models**, also referred to as "product as a service". The customer purchases a service for a limited time while the provider maintains ownership of the product and remains incentivized for the product's ongoing maintenance, durability, upgrade, and treatment at the end of its use. "Product as a service" shifts focus from volume to performance, thus maximizing the usage factor. These business models could increase the number of garments worn by renting, leasing, and sharing clothes. Some brands already offer clothes as a service, other companies offer clothing subscription services, where consumers pay a monthly fee to rent a fixed number of garments at a time, allowing them to change their wardrobe frequently without buying new clothes.

⬊ **Collection and resale of textiles**. In this specific case, companies can collect their own brand of clothes for resale in their shops and e-commerce (mainly) and ensure that they are recycled properly. Alternatively, they can organize the collection of used clothes, regardless of brand, to resell on global second-hand markets. The second-hand market is expected to hit $64B in 2024, overtaking the tradition thrift and donation segment. Resale, vintage fashion, or the second-hand market are not new concepts, however, its hybrid approach with technology certainly is. In the last decade several platforms and online consignments have grown a selective or massive clientele willing to buy, trade, or sell their clothing. In this context, with the ease of e-commerce, peer-to-peer exchanges, or even auction services, the consumer has found a valuable offer of clothing and accessories to buy compared to the full-price market. Additionally, when consuming second-hand, the customers are cultivating a responsible commitment to sustainability and curbing wasteful consumption.

⬊ **Material recycling and reuse** for remanufacturing (reuse of textiles to produce new items, also known as "upcycling") or for recycling textile fibers. It focuses on the end stages of the usage cycle, namely the recovery of embedded materials, energy, and resources from products at the end of use that are no longer functional in their application. Several companies use these business models as a key component of their branding. Smooth C2C e-commerce services make it easy to give a new lease of life to products no longer needed. To support these companies, EPR (Extended Producer Responsibility) schemes can be introduced, which make manufacturers and importers legally responsible for ensuring that used clothing is reused or recycled, with companies organizing their own programs or contributing financially to an accredited collectively responsible organization.

⬊ **Textile waste consortia-platform** for the collection and treatment of pre and/or post consumption textile waste. Consortia may be representative by public authorities or also private companies including textile industry stakeholders, brands, manufactures, innovation. In both cases, actors will have the possibility to close the loop on textile waste giving the possibilities to waste to have a second-life. The consortium guarantees not only an efficient end-of-life product management service, but also solution, consultancy and training. With respect with the latter, **educational activities** are essential to drive companies and final consumers' behavior to correct handling and management textile waste.

Figure 13 – Main technology groups across the textile value chain

Adopting these new business model and shifting to a circular economy the following benefits can be achieved:

- Transform current throwaway economy, eliminating waste and pollution, and circulating resources;
- Tackles climate change and biodiversity loss simultaneously;
- Separate the ability to achieve economic growth from the consumption of natural resources;
- Create jobs, prosperity and resilience while cutting GHG emissions, waste and pollution;
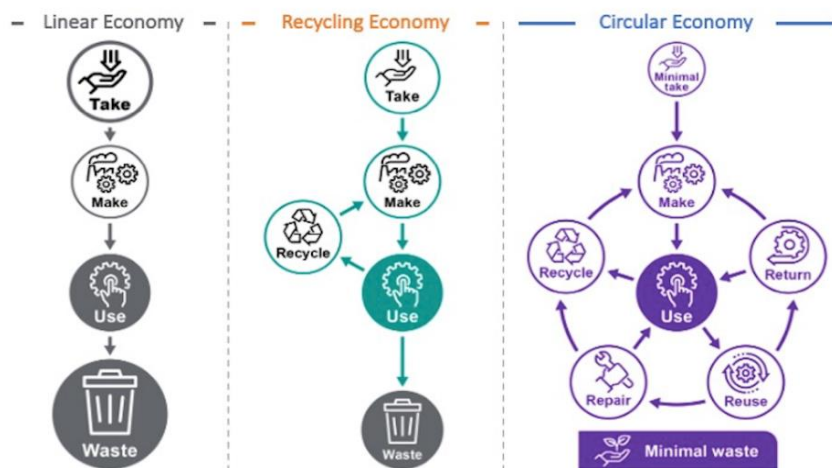- Present a business case for each sector to be more sustainable while increasing competitiveness.

Figure 14 – Transition from linear to circular economy

3. OUTCOMES OF THE EUROBOOSTEX SURVEY

Within the preliminary activities of the EuroBoosTEX project has been lead at TC market analysis with survey distribution through all partnership cluster. The aim of the survey was to collect new inputs about companies needs that the market study was not able to identify yet and to test the specific directions that experts and stakeholders have drafted to become more resilient after pandemic and to drive recovery of TC industry and market.

The survey has been structured in order to categorize needs and gaps of companies (SMEs mainly) and to prioritize the support and the actions taken to overcome past and foreseen challenges. Furthermore, the results have been gathered in an internal workshop among partners' experts to identify strategic directions and solutions.

The survey has been filled by a total of 32 companies (72% of which are SMEs). Major of the companies are from textile sector (82%). Additional areas of activities are namely: Smart Materials, Security, Transport and ICT.

3.1 Gaps and needs

Initially, companies have been asked the major pain points that they are currently facing.
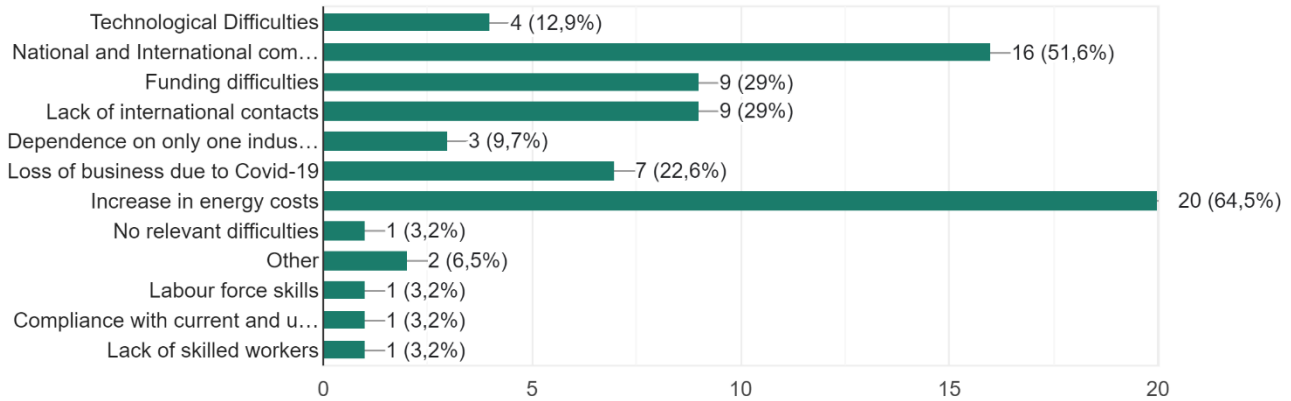
Figure 15 – Current major pain points, from Survey.

In detail: Technological Difficulties; National and International competitors; Funding difficulties; Lack of international contacts; Dependence on only one industry sector; Loss of business due to Covid-19; Increase in energy costs; No relevant difficulties; Other; Labour force skills; Compliance with current and upcoming business legislations; Lack of skilled workers.

Both the survey and the workshop pointed out that the major difficulty for companies in this moment deal with exponential and unplanned **increase of the energy costs**. Companies are facing constant and continuous increases, with consequences that fall also on the costs of raw materials. It is currently impossible to foresee how soon prices will stabilize and return to their initial levels. Experts also underline the lack of target techniques for energy saving.

Overcoming such unpredictable task related to the energy costs, companies are also facing an increasing **national and (mainly) international competition**.

EU companies are **threatened by the entry of new players and new countries** that joined such an attractive market. In this sense, chronic problems have been brought to light: limited supply network, lack of international contacts, exports focused mainly on EU and lack of attractiveness by youth.

All companies aware of the opportunities that the global market can offer, but the most important gap for them is to find the best way to join. The gap is not only related in how to enter, but also in what to do when they are in. Experts highlighted the need to facilitate the **access in new markets and broader contact** to new suppliers and customers. In this sense it is important for companies not to play autonomously, but act as **network and cluster**. Cluster can offer a customized service to facilitate the access of EU companies in these markets, providing also qualified contacts and relevant market information, and report about financial and technical opportunities within European project.

Figure 16 – Experts contribution from joint workshop

A very important gaps underlined by the experts is related to the "image" of the European sector. EU companies increasingly will interact with realities with different culture and a different approach to the sector. The first step, and maybe the most difficult, is to start a pathway to change the mindset and prepare companies to embrace the new concept of textile industry.

Furthermore, experts identified the necessity for companies of **targeted training and upskilling courses**. In respect to the needs, such activities may range from technologies and IT solutions, to green transition and circular economy, passing through scouting of public fund, legislation and standards for new products.

It is important provide companies digital solutions, eco-design skills and circular economy practices to make more resilient, unlock new business opportunities and drive them into a new phase of textile industry.

The needs scouted by the experts moved in this direction too. In order to overcome such obstacles and turn into opportunities, EU companies would need **marketing and financial support** to set up a roadmap and explore the chance offered by the global scenario. This support could enable EU companies also to overcome current challenges namely the entrance to new market sectors, the needs of new advanced manufacturing methods and enhanced costumers requirements.

3.2 Priorities

The previous section helped to gather a series of information about the state-of-the-art for companies and identify their internal needs according to a sector and a value chain that are constantly changing.

The aim of this part is to going deeper and find out companies' priorities regarding near-future challenged. According to the topics over drafted, experts categorize 4 main areas:

Industrial Transition

International production, trade and investments are increasingly organized within the global value chain. With respect to the new international market, it is essential for companies to undertake a concrete industrial conversion path. Too many elements already changed and many more will change too in the medium and long term. The IT solutions will be the core of the new industry and this will help to accelerate and improve work processes and also to shit into a greener and more sustainable production. Companies cannot afford to lag behind and skip the "Digital and Green Revolution". Become a leading and recognized Tech Company and shift into environmental pioneer of textile industry are the core element to become and remain competitive.

Training and Upskilling

This area is closely linked to the previous one. To respond the trend and drivers identified, EU companies must evolve and follow the market evolution. Companies must become more attractive and hiring qualified profiles with targeted knowledge, but this cannot be the only solution. In parallel, priority for companies is also to enhance internal resources. This implies significant investment in training and upskilling initiative. A relevant aspect is the adequacy of the training to the current reality of the sector, mobilizing the various national and international agents of the innovation system (public administration, universities, research centers, business associations and companies), to establish and execute the envisaged strategies, to allow the TC sector competing in the global market. The technical and cultural refresh must involve all the internal resources, with particular focus on management and leader position.

Synergies and Cooperation

In analyzing the European Textile sector, we cannot disregard its main structural feature: the prevalence of SMEs. If this was one the elements that allowed EU companies to become leader the global context, now it can be an obstacle and some corrective measures must be implemented. Companies cannot afford to act independently, no more, not only. A key priority in the globalized market is the synergy between companies. Each company can adequately develop its knowledge, products and/or services with the contribution of the knowledge and services and products of the other companies. To this end, it is very important to replace relationships based solely on empathy and/or the economic advantages of the moment, to partnership and network with supplier, technician and all operators of the value chain in general. Thus, the priority for companies becomes to fit into a structured network being part of clusters and bridge the gaps that internally and independently they would not be able to overcome: access to new markets, innovative solutions, qualified stakeholders, funding opportunities, cross-sectoral collaboration, marketing support.

3.3 Challenges

Finally, it is important to consider the obstacles and the difficulties that companies are experiencing. The sector faced several challenges over the recent years and even tougher challenges are already coming.

The challenging analysis will focus not only in the main areas emerged from companies and experts, but also on how they will tackle it.
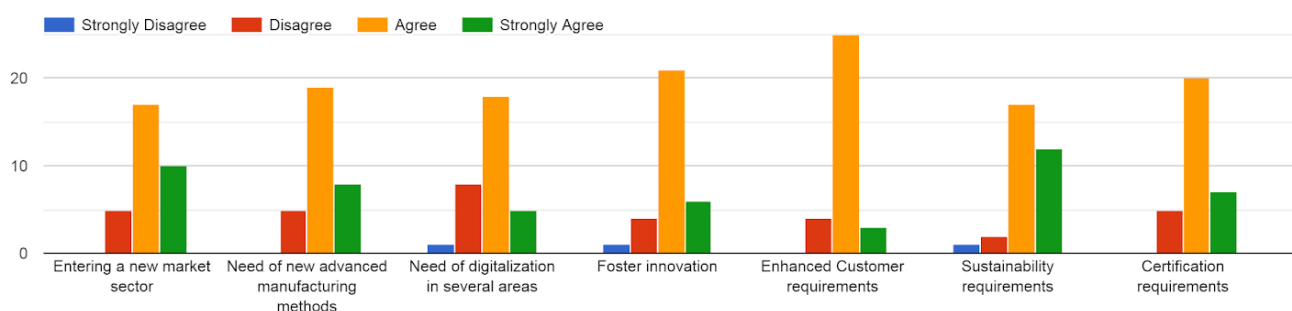

Figure 17 – Which challenges does your company face in the near future?

The outputs from companies underline the same structural challenges with no significant changes between past and future. According to the graph, the areas in which companies will find greatest challenges concerns with the new customer requirements and consequently, with foster innovation. Other challenges deal with the definition of new manufacturing methods, digitalization, green and sustainability requirements.

Internal inputs from companies have been merged with experts experience and new important topics emerged:

Human Resources

Experts underline the lack of qualified human resources to face the upcoming challenge. The topic is also tied to the difficulties in make the sector attractive and engaged skilled technicians. The timing of universities and VET do not always cross with companies requirements and such structural problem of under dimensioned offer of qualified profiles cannot be resolved shortly. Companies try to bypass the problems with internal solutions, but all the sector must put in place a very attractive strategy to embrace new talents.

Legal difficulties and Bureaucracy

The national and international measures deploy considerable resources needed to recover from the pandemic emergency but the tangle of bureaucracy remains an insurmountable wall for companies. The opportunities and the funding provided risk to vanish because of bureaucracy and legal difficulties. Inefficient bureaucracy and legal technical aspects create a high-cost economy and decrease investment in which eventually it may obstruct the economic growth. Constraints really emerged during the recovery measures, but the problem is structural and affect both daily activities and planning investments. SMEs cannot manage internally such effort and legal obstacles risk outweighing the opportunity offered.

Mindset and Vision

Traditional activities and family capitalism made the industry's fortune. In an increasingly globalized world, it is important to be strong in one's own history and moral value, but at the same time it is crucial to be open and ready for changes and continuous improvement if companies want to maintain the position gained in the market. It is important to change the mindset and looking further the short-term measures. Companies must look further daily activates and the local dimension and image where they want to be positioned worldwide in the next 10-30-50 years and act accordingly. Companies are also hesitant because of the variability of the sector and the uncertainty of the ROI, but the ability of good manager is to plan investment and activities overcoming the current economic e geopolitical situation.

Companies consider themselves responsive to challenges and they agree with the solutions proposed. In particular they intend to undertake the following opportunities:
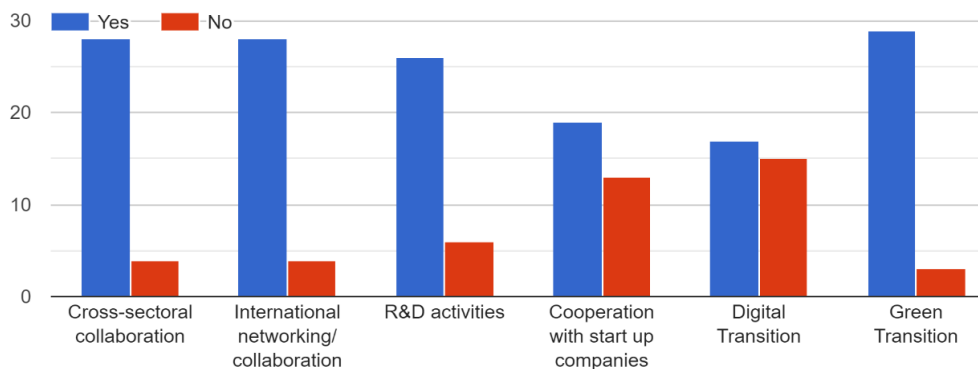

Figure 18 – Does your company consider to tackle those challenges through the following opportunities?

3.4 Support and Connection with EuroBoosTEX activities

The objective of the analysis carried out in the previous sections is to evaluate the needs, the gaps and the problems of European companies.

This analysis helps to have a deep overview of what EU companies are really dealing with and how they intend to tackle them. Major of the companies aware of the action needed, but the trigger point is that they cannot manage internally, but specifics supports are required.

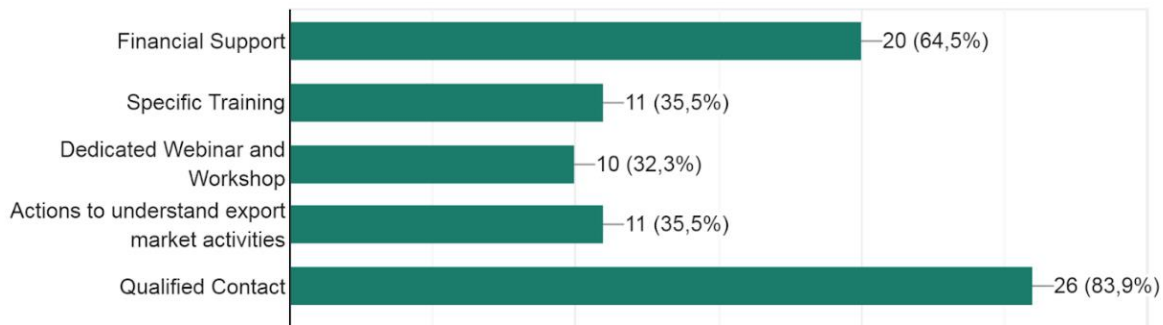Initially, companies expressed the kind of support they would need

Figure 19 – What kind of support would you need?

The survey revealed that the primary support that companies need concern the seeking of **qualified contacts**. Secondly, companies expressed a need **financial support**. A third of companies need also **specific training**, webinar and workshop. In such sense, companies indicate the areas in which they need specific training (and if they need reskilling or upskilling training)
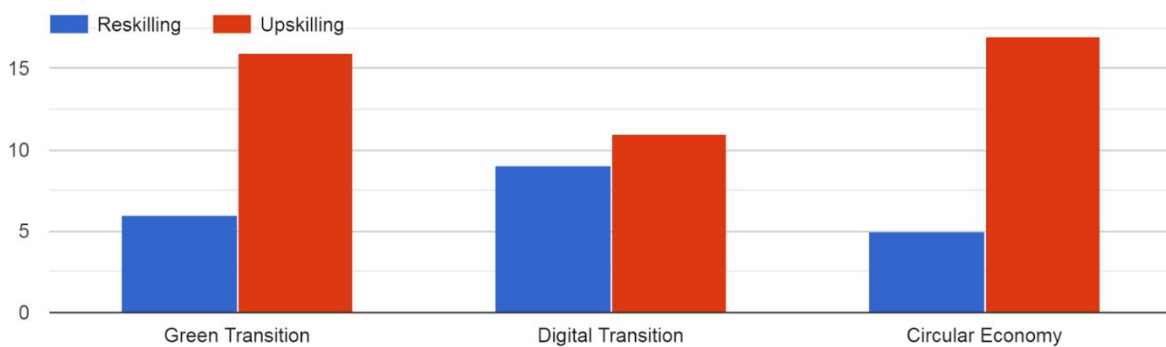

Figure 20 – Areas in which specific training are needed.

The 78% of companies confirmed a general interest in taking part of the virtual o physical activities of EuroBoosTEX project. The following graph details the area in which the project can operate and the related ranking of importance for companies:
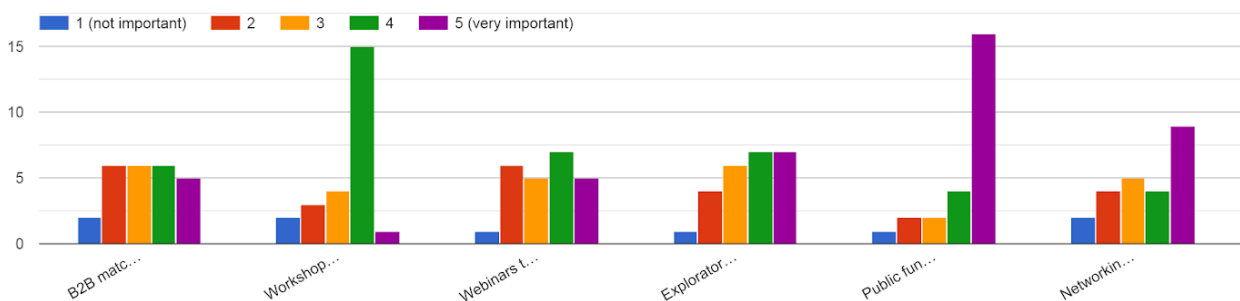

Figure 21 – Kind of support within project activities.
In detail: B2B Matchmaking; Workshops to evaluate synergies between the different sectors and technologies; Webinars to learn about opportunities in the textile/manufacturing sectors; Exploratory missions to learn in-situ about textile technologies; Public funds for innovation investments; Networking with possible investors.

The purpose of listing these options is to cross-reference them with the opportunities provided by the project. The current context offers an opportunity to shape a new framework for textile industry.

EuroBoosTEX can contribute actively to this process, and from the data collected by companies and the contribution provide by the experts, it is evident that there is a high potential in project activities.

In particular, EuroBoosTEX encloses all the topics emerged and will meet the needs of companies through:

Training and Up / re-skilling

In order to respond to the new business models and the market expectations, the project will arrange workshops and webinars targeted on the topics mentioned in the previous chapters. Such forming activities are expected to fill the gaps and companies mismatches of the new textile industry.

Promote Innovation

To build a more sustainable and technological textile ecosystem, it is imperative for companies undertake an industrial conversion strategy. In this respect, the project will face companies' needs to invest in innovation with grants, both for SMEs individually and for consortia) in developing products and/or technologies (applications of the new advance technologies, pilots on innovative products/materials, eco-design and uptake of recycled/recyclable materials) to reduce the exposure to risk in the value chain and remain/increase the competitiveness in the international market.

Internationalization and networking

The participation to the project activities will increase the network opportunities and the sharing of knowledge and capacities. Being part of national and international network will generate new collaboration and possibly generate business agreements. Furthermore, companies will receive support for internationalization and exploration of new market opportunities. Both activities are essential for companies in order to provide them of valuable contacts, market information and increase global market share.

4. CONCLUSIONS

The analysis of the textile sector helped to list the trends that will be useful to guide the path of the Textile industry in the coming years.

The textile sector is a very wide industry and to be meaningful, the strategies should consider the entire value chain, as it is closely interconnected, as well as it is directly linked to other sectors. The sector experienced a series of major transformation over recent decades due to a combination of technological changes, sustainable requirements and the emergence of increasing international competitors.

Many of the technologies for making that transition already exist, but investments and supports are needed to bring the circularity and the digitalization to industrial scale in the European textile sector. What emerged from the market study is the need for companies to be accompanied in such shift. In this sense, the support of cluster will allow in canalize the investments pushing on innovation, diversification and high quality/high end solutions.

Among the determinants of productivity are important factors such as technological innovation, the diffusion of new green technologies, the adoption of better management practices, and the accumulation of skilled human capital (all related aspects that need to be integrated and complementary within the production system). As already mentioned, for SMEs is more difficult to undertake these activities autonomously. In this sense, companies have to be accompanied also in the training actions and in exploitation of the new market opportunities. Furthermore, the adoption of quick recovery measures must be parallel and complementary to the adoption of a long-term strategy. It is important that the entire textile ecosystem moves collectively: this joint approach will facilitate the adoption the measures required, will maximize potential synergies and better results will be achieved.

Since these shifts are already redefining the landscape of European and global textile industry a specific support for companies is imperative. Within EuroBoosTEX activities and assistance it will be possible to develop a forward-looking business model and laying the foundations for a new European textile ecosystem. EuroBoosTEX will adopt the following tools and methodologies to address the gaps emerged:

- Training to know and stay updated about all green and digital technologies for the textile ecosystem;

- Training to exploit and stay updated the new market's opportunities;

- Promoting internationalization activities for European SMEs, mapping international opportunities and provide qualified support to implement a global strategy. This will be achieved mainly through participation in strategic meeting with other companies, Technological Centers and Universities. Also visits to trade fairs and B2B will allow to achieve collaboration and/or business agreements.

- Attend workshops and seminars to enhance companies' skills and competences for the new TC sector;

- EU strategic symbiosis to strengthen the cross-regional/international collaboration to create an interconnected textile alliance/network among companies, research centers and universities to share knowledge, best practices, integrate products-processes-services, generating growing opportunities and being more resilient toward external threats;

- Dedicated financial assistance to support scale innovation and investments with targeted programs for SMEs and Consortia. The financial support will allow companies to embrace the new market requirements, testing pilots products/processes and adopting latest digital and green applications for the textile sector. The aim is to support industrial competitiveness, sustainability and ecosystem innovation and stimulate the EU market for sustainable and technological textiles.

EuroBoosTEX commits to further develop the above proposals in order to implement a customized transition strategy overcoming gaps and mismatches, training workforce, developing new sustainable and technological applications thus opening to new collaborations and business opportunities.

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