



Berytech
powering potential

DEVELOPMENT OF A STRATEGY, A ROADMAP AND POLICY RECOMMENDATIONS TO SET SUSTAINABLE TEXTILE AND CLOTHING INDUSTRY

LEBANON

August 2023





Policy Paper Consultant



Project Partners



This publication has been produced with the financial assistance of the European Union under the ENI CBC Mediterranean Sea Basin Programme. The contents of this document are the sole responsibility of Berytech and the STAND Up! partnership and can under no circumstances be regarded as reflecting the position of the European Union or the Programme management structures.

About the Project

STAND Up! is a project funded by the European Union under the ENI CBC Med Programme focusing on the support to eco-innovative entrepreneurs and enterprises within the textile and clothing sector.

There is a pressing need for transition to an environmentally and socially responsible circular model in the textile sector, a traditional key industry in the Mediterranean with an undoubted cross-border nature. The very word “textile” seems Mediterranean like: clothes cross the sea basin from textile manufacturing to clothing production and from consumption to re-use and recycle. The solution to accelerate this transition is innovative entrepreneurship, which, in addition to its positive environmental benefits, will generate employment in the region.

This transformation is the underlying idea behind STAND UP! which intends to support textile entrepreneurs and eco-innovative ventures in 5 countries and help them seize the business opportunities that the green evolution will generate. To achieve this ambitious goal, the project will undertake many actions in training, financial grants, market stimulation, technology transfer, IPR protection, etc. As a result, the SMEs of the textile and clothing sector will be more competitive and, at aggregate level, the value chain will be strengthened, and new Mediterranean cross-border linkages established.

The Stand Up! program will be implemented by 6 partners, distributed among several countries in the Mediterranean basin: Egypt, Italy, Lebanon, Spain, Tunisia:

- MedWaves, the UNEP/MAP Regional Activity Centre for SCP (Lead partner, ES)
- Textile Industry Confederation, TEXFOR (ES)
- Berytech Foundation (LE)
- SEKEM Development Foundation (EG)
- Textile Technical Centre (TU)
- Prato Textile Museum Foundation (IT)
- Tunis International Center for Environmental Technologies (TU)

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About the Activity

Berytech is the Lebanese partner of the ENI CBC Med funded STAND Up! project, a project that aims to enhance scalable, replicable, and inclusive circular economy textile ventures in the Mediterranean by developing an ecosystem of business support, innovation, and technology transfer that will lead to sustainable job creation for youth and women. The project is implemented in Egypt, Italy, Lebanon, Tunisia, and Spain by national partners.

Under the “Policy influence and eco-system stimulation to support eco-innovative textile and clothing ventures” activity, In collaboration with Jadwa Consult, Berytech conducted a policy paper to develop a national strategy with policy recommendations to enable and encourage the development of sustainable textile and clothing for Lebanon. The goal is to guide and influence policy and sector governance changes in support of circular entrepreneurs. This project is simultaneously implemented in 2 of the partner countries: Egypt and Tunisia.

Objectives:

The purpose of this paper is to provide an understanding of the textile and clothing sector and recommendations for improving local ecosystems. In addition, this paper will foster the development of textile start-ups with environmental and social goals in order to promote sustainable production and consumption patterns in this industry in the Mediterranean region.

The policy paper has, as main objectives:

1. Mapping the stakeholders of the textile, fashion and clothing sector in Lebanon.
2. Getting to know the state of art of Circular Economy and decarbonization legislation and initiatives affecting the development of circular textiles in Lebanon.
3. Identifying the main challenges and opportunities that are facing circular textiles

businesses and start-ups and their ecosystem to develop their ventures.

4. Emphasizing the need to promote transformations on the governmental and political level in the Mediterranean area to support the entrepreneurial network in adopting environmental and social improvements in the textile and clothing sector.

Executive Summary

The textile and clothing industry is a global industry that involves the production of yarn, fabric, and finished textile products. It is a complex and interconnected industry, with a wide range of stakeholders. The textile industry is a major economic driver, providing jobs and income for millions of people around the world. It's also a major contributor to the global economy, accounting for about 2% of global GDP¹.

Notwithstanding its importance, this industry is a major contributor to environmental pollution and climate change. Nevertheless, stakeholders are now aware of this drastic impact on the planet and are working to find ways to make the industry more sustainable through the adoption of the Circular economy, an innovative and sustainable approach that aims at redefining the traditional linear economic model of "take-make-dispose" by promoting resource efficiency, waste reduction, and the regeneration of materials and resources. It offers a holistic framework to address the challenges of resource scarcity, environmental degradation, and economic inefficiency.

The above-mentioned global trends are, to a large extent, applicable to Lebanon's Textile and Clothing sector. With its 873 players, the Lebanese textile sector is split into four main categories of stakeholders: manufacturers, traders, government and non-governmental institutes. Manufacturers who represent 53% (460 manufacturers) are divided into 5 sub-categories: Clothes - Textile - Furs – Leather, Accessories, Fashion Designers, Furniture, and Startups. Traders who represent 45% (390 manufacturers) are divided into 4 sub-categories: Traders – Retailers, Wholesalers, Furniture, Carpets & Moquette.

Like many industries, the textile and clothing industry in Lebanon is facing various challenges, from the absence of the adequate legal framework, lack of financing, to broader external

factors. Despite the existence of a number of laws and regulations that could be applied to promote circularity in the textile industry, there is still a lack of specific legal framework for circular economy. Challenges are also emerging from internal and external factors encompassing environmental, social, economic and political aspects. The adoption of circularity, so far implemented by many countries in the world, is nowadays a necessity to introduce the 3R (reduce, reuse and recycle) culture in the textile manufacturing process.

The findings of this study show many challenges facing manufacturers and traders, as a great part of them lack recycling systems, and alternatively sell or donate unsold stock, reduce inventory through prolonged sales or pricing strategies, sell upon client request which result in minimal unsold stock, while a very small percentage of them is working actively to develop a recycling strategy and incorporate recycling practices in the future. Controversially, a big stake of the participants stated having a waste management system.

As for the use of recycled products, 69% stated that they do not use them. Reasons behind this abstention are mainly: unavailability of recycled products that meet the quality standards, reliance on the imported new products, limitation in finding suitable recycled alternatives, weak market acceptance leading to limited demand, lack of familiarity or awareness about the benefits of such products, high cost associated with the implementation of recycling practices and, last but not least, workforce lacking of necessary knowledge or skills to effectively implement recycling processes.

For SMEs and startups, the main challenges they face are predominantly related to external factors encompassing environmental, social, economic, political, and legal aspects. For support providers and experts, regulations and policies, external

¹Textile Trepidations on the Global Economy

factors such as economic, social and environmental aspects, access to skills and knowledge, as well as access to finance are the core challenges.

Against these challenges, many opportunities were identified by participants mainly in the events and exhibitions fields where manufacturers and traders can showcase their products, network with industry professionals, and increase visibility among potential customers. Opening new markets emerged also as a significant opportunity, reflecting the desire for business expansion and tapping into unexploited customer segments. Furthermore, participants also suggested the development of a comprehensive directory to facilitate access to relevant information and resources within the industry. Collaborative opportunities were also recognized, highlighting the potential for linking, networking, and collaboration between companies, NGOs, and government entities to foster collective growth and innovation. The concept of clusters, or industry-specific collaborations, was also seen as an opportunity, acknowledging the potential benefits of collective efforts and knowledge sharing. Some participants equally mentioned the importance of sharing know-how and expertise among industry stakeholders, emphasizing the value of continuous learning and professional development. Opportunities for SMEs and startups were identified in access to skills and knowledge, highlighting the importance of continuous learning, acquiring new competencies, and staying updated with industry trends. As for experts, opportunities were defined in networking and visibility, access to technical support, access to skills and knowledge, regulations and policies and, finally, access to finance.

To conclude, promoting circular textiles businesses in Lebanon involves a multifaceted

approach that addresses various aspects of the textile industry, sustainability, and economic development. The following recommendations can help in achieving this goal:

1. Creating awareness of the benefits of circular textiles.
2. Developing a regulatory framework that supports circular textiles.
3. Providing incentives and financial support.
4. Supporting Innovation and Research.
5. Creating a network or a cluster of circular textiles businesses.
6. Providing capacity building for manufacturers in the sector.

Given the actual situation of the textile and clothing industry in Lebanon, and in the light of the decline it witnesses over the years, the rehabilitation of this sector seems to be inevitably necessary with the initiation of a reshaping process that encompasses futuristic approaches and international compliance. By following these recommendations, Lebanon can become a leader in the development of circular textiles businesses. This would create jobs, reduce pollution, and protect the environment.

1 Overview of the Textile and Clothing sector in the world

The textile industry is of global importance, providing high levels of employment, foreign exchange revenue and products essential to human welfare. Its Industry Market size was valued at USD 959.87 Billion in 2022 and is projected to reach USD 1371.84 Billion by 2030, growing at a CAGR of 4.05% from 2023 to 2030².

The global Textile and Clothing sector is an important light manufacturing industry. The sector includes a wide range of differentiated products with global exports of USD 437.5 billion and global imports of USD 645.9 billion. Global exports are dominated by China with a share of 34%, followed at a distance by Germany, Vietnam and the United States. 498 among the leading exporters are both high-income industrialized countries such as Germany, as well as low wage developing countries such as Bangladesh.

The main importers are large or high-income countries. The main importers are the United States with a share of 17%, Germany with a share of 8%, and France and the United Kingdom with shares of approximately 5%³.

This high employment industry embraces over 300 million workforces, a great part of them being women⁴.

The textile industry has a considerable environmental footprint. It consumes large amounts of water, energy, and chemicals throughout its production processes, contributing to water pollution, greenhouse gas emissions and waste generation. Additionally, the industry is associated with issues such as deforestation (for natural fiber production) and microplastic pollution (from synthetic fibers). Moreover, the textile industry faces various social and labor challenges, including poor working conditions, low wages and lack of worker rights in some regions. Issues like child labor and unsafe working environments have been reported in

certain parts of the industry, leading to increased attention on improving labor standards and social sustainability.

Therefore, in recent years, there has been a growing focus on promoting sustainability within the textile industry. Sustainable practices include the use of organic and recycled fibers, water and energy conservation measures, reduction of chemical usage, adoption of eco-friendly dyes and finishes, and responsible waste management. Efforts are also being made to improve labor conditions and promote fair trade practices. Circular economy principles are being increasingly applied in the textile industry to address its resource-intensive and waste generation aspects. Strategies such as textile recycling, upcycling and extended manufacturer responsibility are being explored to minimize textile waste and keep materials in circulation for as long as possible. The textile industry is experiencing technological advancements that are transforming various aspects of its operations. Digitalization, automation and the integration of smart technologies are improving efficiency, transparency, and traceability within the supply chain. Innovative techniques like 3D printing and nanotechnology are also influencing textile production and design possibilities.


The recent trend of smart textiles in the market that use optical fibers, metals, and various conductive polymers to interact with the environment promises to propel the market growth during the forecasted period. Emerging economies of developing countries are helping the textile industry to have modern installations which are capable of high-efficient fabric production. This development promises to boost the market demand for the textile industry during the forecasted period.

The textile and clothing industry continues to evolve, driven by sustainability concerns,

² www.verifiedmarketresearch.com/product/textile-industry-market

³ UN comtrade.

⁴ <https://www.unep.org/explore-topics/resource-efficiency/what-we-do/sustainable-and-circular-textiles>



technological advancements, and changing consumer expectations. Efforts are underway to address its environmental and social challenges, making it more sustainable and responsible throughout its supply chain.

2 Overview of the Textile and Clothing sector in Lebanon

Lebanon has a long history of textile production and is known for its skilled artisans and craftsmanship in the textile industry. The textile and clothing sector in Lebanon has traditionally been an important part of the country's economy, contributing to both domestic consumption and export markets. Today, the textile and clothing industry are one of the most important sectors in Lebanon's economy. According to the Association of Lebanese Industrialists, the industry employs over 50,000 people and accounts for around 8% of the country's GDP⁵. The industry is mainly divided into three sectors: spinning and weaving, knitting, and clothing. The spinning and weaving sector is the largest, accounting for 70% of the industry's production. The industry produces a wide range of products, including cotton, wool, silk, and synthetic fabrics. The textile and clothing industry in Lebanon has seen significant growth in recent years. According to data from the Ministry of Industry, and Lebanon customs the industry's exports increased by 5.9% in 2019, reaching a total of \$230 million. The main export destinations for Lebanese textiles are Europe, the United States, and the Middle East⁶.

The Lebanese Textile and Clothing sector was affected by end of the Multi Fiber Agreement in 2004. The general economic climate experienced severe difficulties because of the financial crisis around 2009 and the Arab Spring in 2011. The refugee crisis resulting from the ongoing Syrian influx has also had a substantial impact on Lebanon, which has hosted more Syrian refugees per capita than any other country in the world⁷. In addition, the sector had to learn how to deal with the Rules of Origin of the Association Agreement with the EU.

Traditionally, Arab tourists and Lebanese expatriates drove robust retail apparel sales in Lebanon. Lebanon's economic crisis and global travel restrictions imposed as a result of the spread of COVID-19 prohibited tourists from traveling to Lebanon in 2020. However, the government has lifted most COVID-19 movement restrictions as of July 2021, and a greater number of tourists are today back again to the country. Experts predict sales in apparel to regain historical averages in the coming few years.

Key characteristics of the sector

The Lebanese clothing sector is a small but export-oriented industry. Lebanon has no vertically integrated supply chains and has to import all of its components. Stakeholder consultations elucidated that the clothing sector is currently producing for high-end segments, targeting the domestic market, the Arab market, as well as some specialized European niche markets. The local fashion industry has been a driver for the growth of domestic of textile and clothing firms. Beirut has often been described as MENA's "most fashionable city", accounting numerous fashion businesses. Several Lebanese startups have emerged and built world-class fashion brands⁸. Among these, Lebanon's native Elie Saab, founder of a globally recognized fashion house, setting an example and source of inspiration for the entire industry.

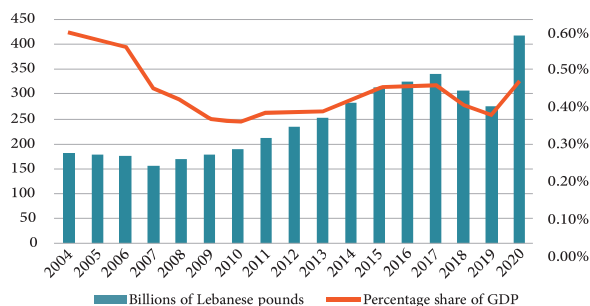
⁵ Productivity setbacks impede Lebanon industry, BLOMINVEST Bank

⁶ Lebanon Customs

⁷ The Economic Impact of the Syrian Refugee Crisis in Lebanon, WORLD REFUGEE & MIGRATION COUNCIL RESEARCH REPORT, September 2021

⁸ <https://www.forbes.com/sites/stephanrabimov/2019/05/06/haute-beirut-lebanon-reinvents-itself-as-a-fashion-destination/#13f5d30777d4>

Figure 1. Textile sector value and share of GDP



Source: Central Administration of Statistics, 2022 Lebanese National Accounts.

Note: The sector includes both textiles, wearing apparel and leather ware and thus does not exactly coincide with the definition employed in the rest of the chapter. Value-added in constant 2010 prices, billion Lebanese Pound (columns, left-hand-side axis) and share in GDP (line, right-hand side axis), 2004 to 2020.

Technology has also played a growing role in the fashion value chain, linking textile manufacturers to designers and merchandizers to consumers⁹. Nevertheless, despite these developments, the Lebanese fashion industry has not been able to catalyze further commercial benefits for the Lebanese Textile and Clothing sector, which remains a niche sector of the Lebanese economy with its importance diminishing over the last decade.

Value-Added & Contribution to the GDP

The share of value-added in constant prices of the textiles, clothing and leather sector over GDP is very small and has declined from 0.56% in 2004 to only 0.44% in 2020. The sector also has had an unstable history: Starting with a little over 1200 firms in 1999, only around 560 firms were operational in 2004¹⁰. This trend was accompanied by the loss of over half of the sector's employees, leaving about 7000 workers in 2004. In 2006, these numbers remained

unchanged, with a little under 7000 employees working for almost 570 firms, but with an estimated capacity of almost 32,000 workers¹¹. The challenges related to the ongoing Syrian invasion have created instability across all sectors of the Lebanese economy, but especially for small firms in the Textile and Clothing sector. With a risky political climate and a currency pegged to the dollar, Lebanon has kept high interest rates to keep deposits flowing into domestic banks. The policies that have kept the Lebanese pound stable through turmoil at the same time failed to protect or boost local production. High interest rates discourage borrowing, which small Textile and Clothing manufacturers desperately need to invest in new machinery. At the same time, ever since the economic downturn in 2011, the government imposed fiscal austerity, raising taxes across the board, a move which has harmed already struggling SMEs. The already dire business environment was further damaged by the outbreak of popular uprisings in late 2019 and early 2020, where protesters demanded an end to corruption and the introduction of reforms to promote healthy economic growth. Such context, coupled with a lack of supportive policies for Textile and Clothing companies, has hindered the export potential of the sector.

Trade developments and Free Trade Agreement (FTA) related effects

In 2022, Lebanon exported textiles and raw hide worth more than USD 63 million. This is relatively limited if compared to its total exports of almost USD 4.5 billion¹². Wearing apparel accounted for more than 82% of the textiles and raw hide exports. Notwithstanding this performance, some exports to the EU in narrow six-digit categories are sizeable, concentrated overwhelmingly in the apparel and clothing accessories sub-sector.

⁹ <http://endeavor.uberflip.com/i/518538-endeavor-lebanon-fashion-study/5?>

¹⁰ <http://www.dailystar.com.lb/Business/Lebanon/2004/Apr-10/550-textile-industry-focuses-on-niche-markets-to-get-by.ashx>

¹¹ Ex-post Evaluation of the impact of trade chapters of the Euro-Mediterranean Association Agreements with six partners: Algeria, Egypt, Jordan, Lebanon, Morocco and Tunisia, 2021

¹² Lebanese customs

¹³ Lebanese customs

Within the narrow product categories, the top ten exports account for more than 70% of Lebanon's exports in the Textile and Clothing sector. The EU is an important trade partner for Lebanon, as approximately 13% of all textile and clothing exports are destined for the European Union. Other main export destinations include GCC countries, Jordan, Syria, Turkey and Iraq¹³. Apparel demand in Lebanon is mainly satisfied through imports, given limited domestic production. Factors that negatively impact domestic production include high production costs due to the business environment and foreign competition due to low import duties on imported textiles and clothing. China has long been the main country of origin for Lebanon's apparel imports, as are Turkey, EU countries, Bangladesh and India. Partial Equilibrium (PE) modelling provides an indication of the impact of the Association Agreement. While the definition of the sector in the PE modelling slightly differs from the definition employed in this chapter, with some limitations the modelling results are nonetheless broadly comparable with the actual development as seen in trade data. The PE model suggests a positive, but modest impact of the Association Agreement on exports and imports, with the largest impact on the wearing apparel sector, for which trade flows are estimated to increase by EUR 33 million for imports and by EUR 12 million for exports (Table 1).

Table 1. Modelling results, 2011 compared to 2018.

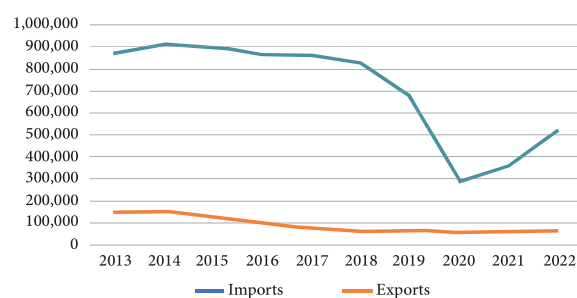
	Change in Exports		Change in Imports	
	Relative	Million Euro	Relative	Million Euro
Textiles	29%	1	17%	8
Wearing apparel	126%	12	37%	33

Source: CGE results (European Commission, 2019)

Actual trade developed much differently. Lebanese imports from the EU decreased from about 230 million USD in 2013 to about 92 million USD in 2022. Respectively, exports decreased from around 24 million USD in 2013 to around 11 million USD in 2022¹⁴ (Figure 2). Imports have been overwhelmingly limited to wearing apparel,

with raw materials imported to a very limited extent, reflecting also the small size of the industry. A reason for the late stagnation in growth of imports is the fact that sales within Lebanon are mostly driven by Arab tourists and expatriates. Due to unrest in the region, however, the number of visitors as well as the domestic sales have halted.

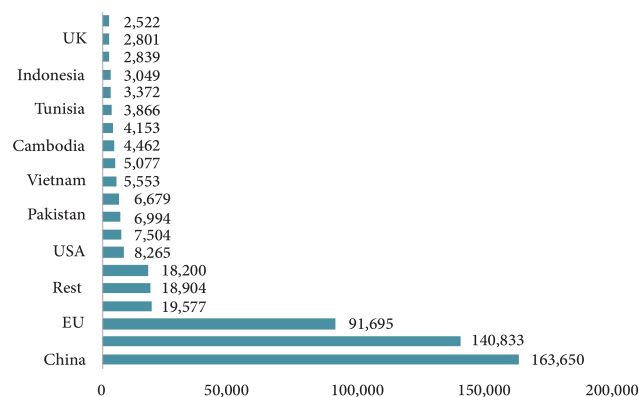
Figure 2. Lebanon trade in textiles and raw hides in Thousand USD, imports and exports, 2013 to 2022



Source: Lebanese Customs.

Exports, in turn, are also overwhelmingly comprised of wearing apparel, with other previously somewhat significant exports of silk products having declined to virtually zero in the last decade.

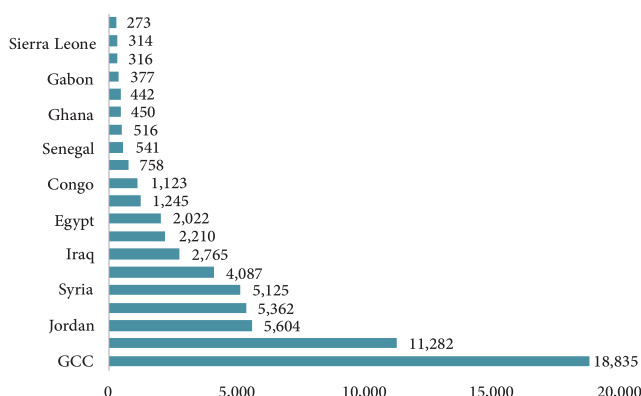
Figure 3. Lebanon's Textile imports by country (values \$)



Source: Lebanese Customs.

¹⁴ Lebanese customs

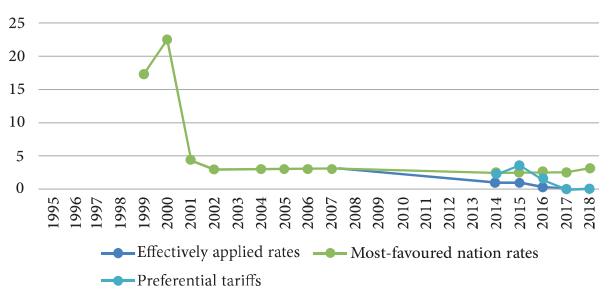
Figure 4. Lebanon's Textile Export by country (values \$)



Source: Lebanese Customs.

It should be noted that Lebanon reduced its Most Favored Nation (MFN) rates on textile and clothing imports significantly already before the Association Agreement with the EU (AA) entered into force, and remaining tariffs were therefore relatively low.

Figure 5. Lebanese tariffs on imports from the EU (%)



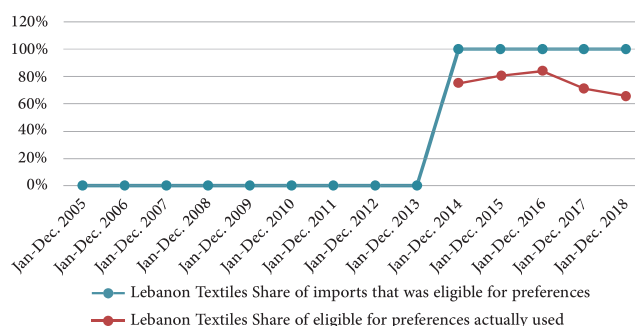
Note: the rates displayed here are based on weighted averages.
Source: TRAINS database (2019).

Virtually, all of Lebanon's textile and clothing exports are eligible for preferences under the Association Agreement, but preference use is limited, having peaked at 80% in 2016 and having fallen to less than 70% in 2018 (Figure 6).

A potential explanation for this declining performance is the two-step rule, the requirement that two out of three production steps have to take place in Lebanon.

This is potentially burdensome for manufacturers, as given the small size of the textile industry, local production capabilities are limited. In addition, Rules of Origin are also an issue, as the Lebanese textile industry sources a significant share of raw material imports from countries not qualifying for cumulation, e.g. cotton from China, India and Pakistan (accounting for 68.3% of all cotton imports) or man-made staple fibers from China, India and Pakistan (57.2% of all fiber imports). Lebanese textile and clothing exporters have also not been using to the full extent the preferences available to them, as highlighted in figure 4.

Figure 6. Preference utilization of Lebanese textile and clothing exports to the EU



Source: Eurostat Easy Comext.

Conclusions and lessons learned:

As shown in the previous section, Lebanese textile and clothing exports to the EU have decreased in the last decade from around 24 million USD in 2013 to around 11 million USD in 2022. Similarly, exports to the rest of the world

and there are currently no clear support policies in place. Furthermore, Lebanon's preferential treatment has significantly eroded, as the EU has eliminated quotas for least developed countries and has reduced duties to zero under the GSP and the EBA amendment. This was also reflected in section 3.3, which showed a clear decrease in preferential margins for Lebanese textile and clothing manufacturers wanting to access the EU markets.

The above-mentioned changes in quota restrictions have benefited competitors such as Bangladesh, countries in Southeast Asia or emerging textile manufacturers such as Ethiopia. This is a major issue for Lebanon, as the local textile industry lacks the scale and cost competitiveness to compete with countries such as Bangladesh. As highlighted above these competitive constraints, coupled with a stagnating economy, an unstable political climate and a difficult business environment have translated in numerous challenges for Lebanese textile and clothing manufacturers, especially SMEs.

Several stakeholders mentioned the Lebanon challenging Business environment impacted severely by the economic crisis, monetary crisis, banking crisis, recessions and negative growth for the last year. The financial and monetary constraints limit possibilities for importing the needed inputs for the sector. Furthermore, the situation has led to massive "parallel trade flows". A number of stakeholders also complained that the current regime of Rules of Origins imposed by the EU is hindering Lebanese export growth and that the EU has benefitted from the FTA more than Lebanon. According to stakeholders, a derogation from Rules of Origin set forth by the EU could help.

Furthermore, Lebanon seems to have reduced its tariffs much quicker compared to some other Mediterranean countries, allowing the EU to enter

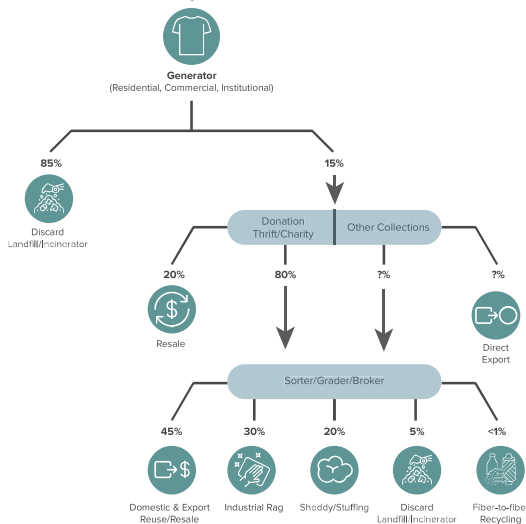
decreased as well during the same time. The partial equilibrium modelling results also estimate the effects of the Association Agreement Lebanon's textile and clothing exports as relatively small. The downward trend in exports is in line with the feedback received from stakeholders during consultations. There are only a few companies that are successful, but they have very high production costs, meaning that they constantly look to outsource production to other countries. Haute couture dresses are only one of the segments where Lebanon is competitive.

There is a preference in the EU market for EU and US textile and clothing brands. These brands have good marketing, branding and design. For Lebanese manufacturers, it is difficult to compete against such strong brands and support is needed to upgrade design and quality, in order to be able to market products at better prices. Interviewed counterparts indicated that, although the textile and clothing sector is considered important by the government, this sector remains relatively small with preferential treatment earlier on. Lebanon Textiles Share of imports that was eligible for preferences used evaluation of the impact of trade chapters of the Euro-Mediterranean Association Agreements with six partners: Algeria, Egypt, Jordan, Lebanon, Morocco and Tunisia 741. In summary, the increased trade flow expectations have not been met. The ongoing economic crisis in Lebanon, coupled with difficulties faced by local textile and clothing firms to compete in the external markets and to take advantage of the FTA, has resulted in decreased exports. As confirmed by stakeholders, additional supportive policies are needed in order for the local textile and clothing industry to increase its competitiveness and be able to optimally benefit from the FTA.

3 Circular Economy

The textile industry is a major contributor to environmental pollution with an estimated waste volume of 92 million tons each year. Only 12% of this waste is recycled and the remaining 88% ends up in landfills or incinerators, releasing harmful pollutants into the environment¹⁵.

Figure 7. This flowchart shows the fates of used textiles in the United States today



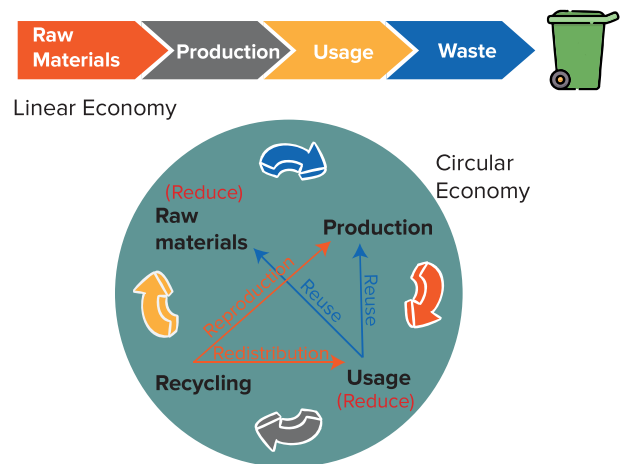
Source: Circular Economy for Textiles, National Institute for standards and Technology "NIST"

Fashion Makers are nowadays keen to cater the increasing demand of consumers with the release of at least one new "collection" every week (Stanton 2018). Global clothing consumption is 400% more than two decades earlier. Textile production is the world's second most polluting after the oil industry, with approximately 1.2 billion tons of greenhouse gas emissions (Change 2018). By 2050, it is anticipated that the fashion industry will consume up to 25% of the world's carbon budget (Pandey 2018).

The current clothing system, from manufacturing to distribution and usage, operates in an almost entirely linear way (Figure 8). Over 68% of

current clothes fibers are extracted from non-renewable resources such as fossil fuels (known for its polluting processes). Often, these clothes, used for a very short time (fast fashion), end up later in landfills or incinerators (Wrap 2020). Therefore, there is an urgent need to switch from such a linear economy to a circular economy to address the challenges (Gardetti 2019). The circular economy is driven by the "3R" approaches (Fig. 8) i.e. "reduce", "reuse" and "recycle", which are all typical traditional waste management (Manickam and Duraisamy 2019).

Figure 8. Key differences between linear and circular economy



Source: Circular Economy and Sustainability of the Clothing and Textile Industry, Xuandong Chen1, · Hifza A. Memon2 · Yuanhao Wang, Ifra Marriam3, Mike Tebyetekerwa4, 2021

The circular economy aims at eliminating waste and pollution by keeping products and materials in use for as long as possible. Benefits of shifting to textile circular economy includes:

- Reduced environmental impact achieved through reducing waste, conserving resources and using more sustainable production methods.
- Generation of new jobs, businesses and reduced import of raw materials.
- Social benefits by providing affordable clothing and creating jobs in the textile industry.

¹⁵ Circular Economy and Sustainability of the Clothing and Textile Industry, Xuandong Chen1, · Hifza A. Memon2 · Yuanhao Wang, Ifra Marriam3, Mike Tebyetekerwa4, 2021

In order to achieve those benefits, a number of challenges needs to be addressed to move towards a circular economy:

- Lack of infrastructure in collecting and recycling textile waste.
- Increased cost of recycling textile waste compared to landfilling or incinerating.
- Consumer behavior change to become more susceptible to buy used textiles, repair old clothes and recycle their textile waste.

Despite the challenges, a promising potential can promote the move of the textile industry towards a circular economy:

- Reduce consumption by buying less, yet better quality clothing to reduce the amount of textile waste produced.
- Reuse and repair which can extend clothing lifespan and reduce the need for new products.
- Upcycling by transforming waste materials into new products, thus creating new markets and jobs.
- Recycling enables the recovery of valuable materials, such as fibers, yarns and fabrics.
- Invest in research and development to come up with new technologies for recycling textile waste and create new products.

Best practices of circular economy over the world

Best practices of circular economy have emerged across the world. As many countries are moving towards a circular economy, the textile industry is adopting special practices that play an increasingly important role in reducing waste and protecting the environment. These practices include:

- Designs for circularity: designing products that are easy to repair, reuse and recycle.
- Recycling and upcycling: converting textile waste into new materials or products.
- Reduce, reuse and recycle: assuring sustainability as they are a key principle of the circular economy.

Below are some countries' examples adopting best circular economy practices in the textile industry by country:

- Germany: The German textile industry has a long history of innovation and sustainability. In recent years, the industry has made significant progress in moving towards a circular economy. German companies are developing new technologies to recycle textile waste and reduce the environmental impact of their production processes.
- The Netherlands: The Dutch government has set up ambitious targets for reducing waste and increasing recycling and the textile industry is playing a key role in meeting these targets. Dutch companies are developing new ways to collect and recycle textile waste, and they are also working to design products that are easier to repair and reuse.
- Sweden: The Swedish government has a number of policies in place to support the development of a circular economy, and the textile industry is one of the sectors that is benefiting from these policies. Swedish companies are developing new ways to use recycled materials in their products, and they are also working to reduce the water and energy consumption of their production processes.

4 Legal framework on Circular Economy and Decarbonization in Lebanon

Lebanon has not promulgated yet a comprehensive legal framework on circular economy and decarbonization. However, there are several laws and regulations that are relevant to these issues.

1. Circular Economy

- The Solid Waste Management Law 80/2018: In 2018, Lebanon approved this law, which aims at promoting sustainable waste management practices, including recycling and waste reduction.

The law encourages the establishment of recycling facilities, waste treatment plants, and composting facilities.

- The Waste Management Law 175/2004: This law regulates the management of waste in Lebanon. It tackles waste collection, transportation, treatment and disposal.

- The Water Law 239/2008: This law regulates the management of water resources in Lebanon. It focuses on water conservation, water quality and water pollution control.

2. Decarbonization

- Lebanon is committed to the United Nations Framework Convention on Climate Change (UNFCCC) and ratified the Paris Agreement in 2016.

- The country's Nationally Determined Contributions (NDCs) outline its climate change mitigation goals, including reducing greenhouse gas emissions.

- The Lebanese government has initiated the preparation of a National Energy Efficiency and Renewable Energy Action (NEEREA) plan to promote clean energy and energy efficiency measures.

3. Renewable Energy

- The Lebanese government has enacted several laws and regulations to encourage renewable energy development, including Law No. 288/2014 on the Promotion of the Use of Renewable Energy.

The law establishes the legal framework for renewable energy projects and sets feed-in tariffs for electricity generated from renewable sources.

- The Lebanese government also adopted the Energy Law 462/2002, which regulates the production, transmission, distribution, and use of energy in Lebanon. It includes provisions on renewable energy, energy efficiency, and energy conservation.

4. Energy Efficiency

- The Lebanese Center for Energy Conservation (LCEC) is responsible for promoting energy efficiency measures and implementing relevant programs.

It has developed the National Energy Efficiency Action Plan (NEEAP) to guide energy efficiency initiatives across various sectors.

The Law No. 220/2000 on the Regulation of the Electricity Sector encourages energy efficiency practices and mandates energy audits for certain industries.

It is worth noting that the implementation and enforcement of these laws and regulations in Lebanon have faced challenges due to political and economic circumstances. However, there is a growing awareness of the importance of circular economy principles and decarbonization, and efforts are being made to advance these agendas.

In addition to these laws, there are a number of policies and strategies that are relevant to circular economy and decarbonization. These include:

- The National Climate Change Strategy 2016-2030: This strategy sets out Lebanon's goals for reducing greenhouse gas emissions and adapting to the impacts of climate change.

- The National Energy Strategy 2017-2030: This strategy sets out Lebanon's goals for increasing energy efficiency and reducing dependence on imported energy.

- The National Waste Management Strategy 2016-2030: This strategy sets out Lebanon's goals for improving waste management and reducing waste generation.

In addition to the aforementioned laws and strategies, there are different initiatives stemming from non-governmental institutions that could promote circularity in the textile industry in Lebanon. These include:

The STAND Up! initiative: This initiative is funded by the European Union and aims to promote circularity in the textile sector in the Mediterranean region. It is working with stakeholders in Lebanon to develop a circular economy roadmap for the textile sector.

The Lebanese Eco-Fashion Network (LEFNET): This network is a group of businesses, organizations, and individuals who are working to promote sustainable fashion in Lebanon. They are working to raise awareness of the environmental and social impacts of the fashion industry and to promote the use of sustainable materials and practices.

Moreover, the government of Lebanon is currently working on developing a comprehensive legal¹⁶ framework on circular economy and decarbonization. This framework is expected to be finalized in the coming years. Meanwhile, there are some initiatives led by different governmental institutes to improve the circular economy eco-system which can be summarized in the following table:

Table 2: Initiatives to improve the circular economy eco-system

DOCUMENT	DEPARTMENT OR MINISTRY	VISION, OBJECTIVE & STRATEGY	POLICY, ACTION PLAN & PROJECT
Lebanon's Nationally Determined Contribution (NDC) (2020)	Government of Lebanon	Vision: Green economy which is described as a sustainable development model with high human development and reduced ecological impact. The NDC aims at reaching the 'Low Emission Development Strategy', and envisions a CE with increased development, and a decoupling of economic growth and GHG emissions. Strategies: promoting a sustainable use of natural resources, restoring degraded landscapes, increasing forest coverage, strengthening the resilience of the agriculture sector through climate smart initiatives, and developing sustainable water services and irrigation systems.	Actions: technological transfer to access best practices and avoid additional GHGs within industry, agriculture, waste, energy, and the construction – sector, and to introduce a Green Climate fund.
Policy Summary on Integrated Solid Waste Management (2018)	Ministry of Environment	Vision: Reduce production, reuse, recycle, energy recovery, and sanitary landfill deposit. Strategy: working towards a culture of shared responsibility where there is a protection of the environment and public health through decentralization, but with central authorities as main responsible for ensuring efficient resource allocation.	Actions: Prepare a communication program on integrated solid waste management for stakeholders (in coordination with the Ministry of Education and Higher Education and the Ministry of Information.)
Energy and Waste Solutions – Promoting Waste Management Practices and the 3R by Utilizing New Technologies and Circular Economy Approach (2020-2024)	Ministry of Environment, other Ministries and Local Stakeholders (2020-2024)	Vision: Strengthening the country and communities' capacity to move towards a CE, social stabilization by improving recycling of plastic and reducing the amount of plastic waste. Strategy: the phasing-out of single use plastic bags and to introduce a circular plastics economy in Lebanon (by strengthening the institutional capacity and developing monitoring mechanisms).	Action plan: Increase the number of government officials who comprehend waste management through training and to enable municipalities or communities to benefit from improved recycling systems. A platform for CE has been established, with the purpose of awareness rising and capacity building.
Sustainable Consumption and Production Action Plan for the Industrial Sector (2015)	Ministry of Environment & Ministry of Industry (SwitchMed)	Objectives: Promote a sustainability-driven innovation with knowledge integration of 'best practices' within the whole value chain of goods production; develop laws and policy to promote a sustainable consumption, production and recovery within the industrial sector and raise awareness and educate all stakeholders.	Actions: Promote, use, and develop ecodesign and ecolabels; implement the waste management hierarchy for a CE; and implement the Pollution Pays Principle, fiscal instruments to integrate a sustainable consumption and production, and sustainable public procurement with priority to the key aspects related to sustainable consumption and production in the industrial sector.

Source: *Transitioning to a Circular Economy: Status and Enablers in the Arab Region ESCWA 2023*

The development of a comprehensive legal framework on circular economy and decarbonization is important for Lebanon for several reasons:

- 1- Reduce the country's environmental impact.
- 2- Create jobs and boost the economy.
- 3- Improve the quality of life for all Lebanese citizens.

¹⁶ Transitioning to a Circular Economy: Status and Enablers in the Arab Region ESCWA, 2023

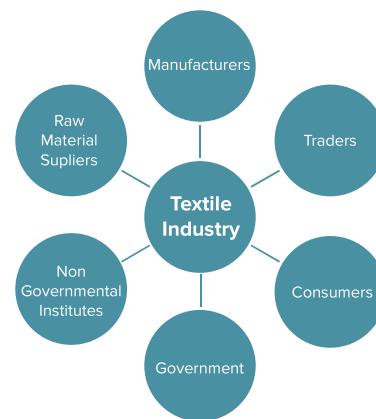
5 Mapping of the Textile and Clothing sector in Lebanon

The textile industry is a vast and multifaceted sector that encompasses the production, manufacturing, and distribution of various textile products. Within this industry, numerous stakeholders play vital roles in shaping its operations, growth, and impact. These stakeholders represent diverse sectors and interests, all interconnected in a complex web that drives the textile industry forward. From raw material suppliers to consumers, all stakeholders contribute with their expertise, resources, and influence to outline the industry's trajectory. Understanding the roles and interactions of these stakeholders is crucial for comprehending the dynamics of the textile industry and addressing its challenges, such as sustainability, labor rights, and market demands. Some of the main stakeholders in the textile industry include:

1. **Raw Material Suppliers** involved in the production and supply of raw materials such as cotton, wool, silk, synthetic fibers, dyes, chemicals, and other materials used in the textile manufacturing process.
2. **Textile Manufacturers** responsible for converting raw materials into finished textile products. They operate spinning mills, weaving or knitting units, dyeing and printing facilities, and garment manufacturing factories.
3. **Retailers and Wholesalers** purchase textile products from manufacturers and distribute them to consumers or other businesses. They can be individual retail stores, department stores, e-commerce platforms, or wholesale distributors.
4. **Consumers** are an essential stakeholder group as they purchase and use textile products. Their preferences and demands influence the overall market trends, product designs, and purchasing patterns.
5. **Government and Regulatory Bodies** at the local, regional, and national levels play a role in setting policies, regulations, and standards related to the textile industry. They may oversee trade agreements, labor laws, environmental regulations, and safety standards.

6. **Non-Governmental Institutes** working in areas such as labor rights, fair trade, sustainability, and environmental protection also contribute to the textile industry. They raise awareness, advocate for responsible practices, and may provide support to workers or communities affected by the industry.

Figure 9. Textile & clothing sector main players



Source: Jadwa

These stakeholders collectively shape the textile industry's dynamics, from the sourcing of raw materials to the production, distribution, and consumption of textile products.

Findings of the Mapping

As we mentioned earlier, players in the textile sector are represented under six main categories. In our analysis, we will address four of these categories due to the predominant reliance on imported raw materials. Additionally, the limited duration of the study prevented us from conducting a consumer survey. In the Lebanese market, 873 players represent the four main categories of the stakeholders: Manufacturers, Traders, Government and Non-Governmental institutes.

Table 3. The Textile and Clothing sector stakeholders by category and sub-category

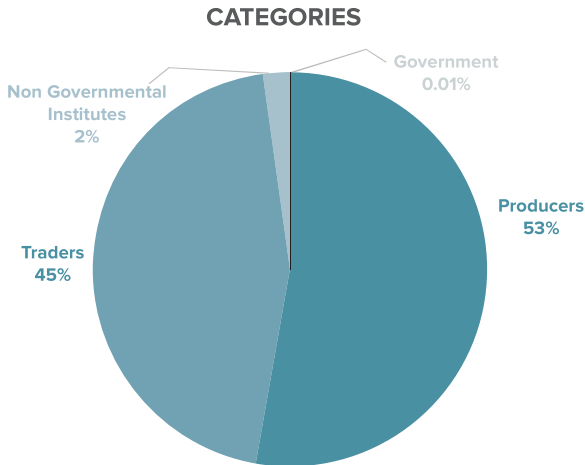
Manufacturers	Traders	Government	Non-Governmental Institutes
-Manufacturer of Clothing and Textile -Manufacturer of Furniture -Startups -Fashion Designers	-Wholesalers of Clothing and Textile -Retailers of Clothing and Textile	-Ministry of Industry -Ministry of Trade & Economy -Ministry of Environment -IDAL	-Chambers of Commerce -NGOs -Academic Institutes -Experts -Assosiation of Lebanese Industrialists

Source: Jadwa

Categories

Below is the chart showing the distribution of the 873 mapped stakeholders per category:

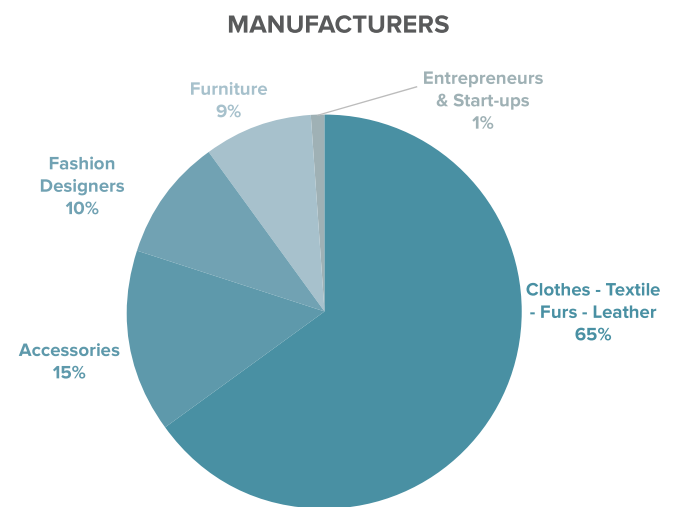
Figure 10. The categories of the stakeholders of the textile & clothing sector



Source: Union of Chambers of Commerce, Berytech, Jadwa

Manufacturers who represent 53 % of all players (460 manufacturers) are divided into five sub-categories as per figure 11:

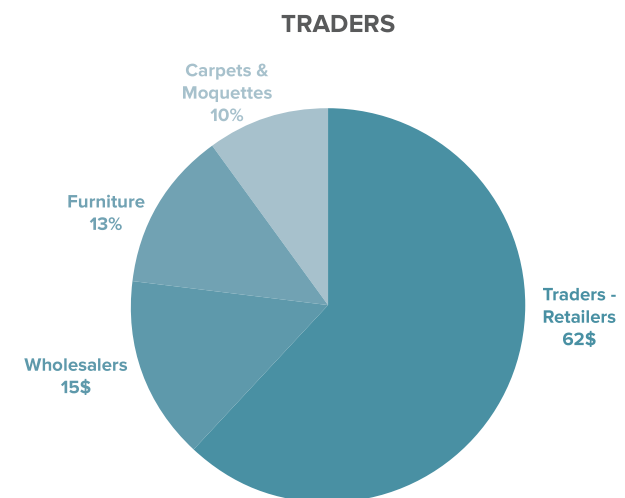
Figure 11. Sub-categories of the manufacturers in the textile and clothing sector



Source: Jadwa

Traders who represent 45 % of all players (390 manufacturers) are divided across four sub-categories as per the figure 12 below:

Figure 12. Sub-categories of the traders in the textile and clothing sector

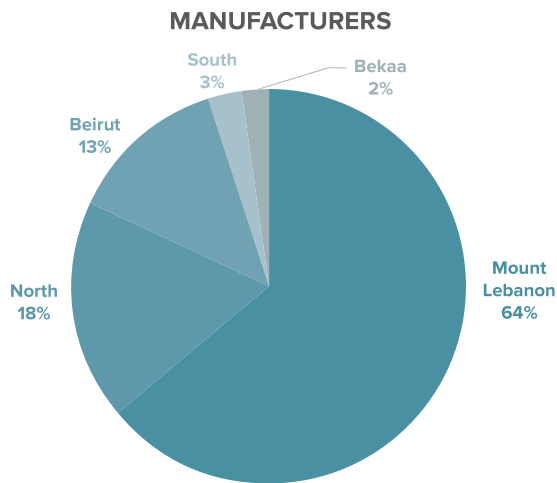


Source: Jadwa

Geographic Distribution

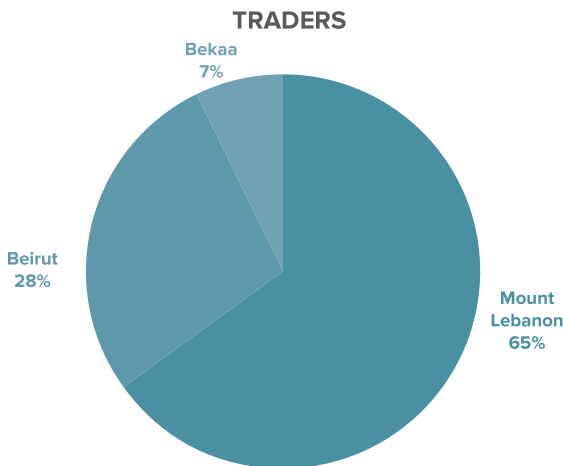
The geographic distribution of all manufacturers and traders shows that they are mostly concentrated in Mount-Lebanon as per figures 13 & 14.

Figure 13. The geographic distribution of all manufacturers



Source: Jadwa

Figure 14. The geographic distribution of all Traders



Source: Jadwa

Although the textile industry is a major economic driver, providing jobs and income for millions of people around the world, it is also a major source of pollution, and contributes to climate change.

Stakeholders in the textile industry are working to address these challenges. They are developing more sustainable production methods and maneuvering to improve the working conditions of textile workers. By joining efforts, stakeholders can make the textile industry a more sustainable and equitable industry. Here are some of the key challenges facing the textile stakeholders today:

- Sustainability¹⁷: The textile industry is a major contributor to environmental problems such as pollution and climate change. Stakeholders are working to find ways to make the industry more sustainable.
- Labor conditions¹⁸: Textile workers often work in underprivileged conditions and are poorly paid. Stakeholders are working to improve the working conditions of textile workers.
- Fair trade¹⁹: Stakeholders are working to ensure that textile workers are paid a fair wage for their work.
- Transparency²⁰: Stakeholders seek to increase transparency in the textile supply chain. This will help to ensure that workers are treated fairly, and that the environment is protected.

¹⁷ Environmental Sustainability in the Fashion Industry

<https://www.genevaenvironmentnetwork.org/resources/updates/sustainable-fashion/>

¹⁸ Textile workers in developing countries and the European fashion industry Towards sustainability? EPRS | European Parliamentary Research Service, 2020

¹⁹ Fair Thread: Policy Recommendations for a Sustainable Textile Industry, European Union 2019

²⁰ Fair Thread: Policy Recommendations for a Sustainable Textile Industry, European Union 2019

6 Survey and Findings

To identify the challenges and opportunities facing manufacturers, traders, and startups, we conducted a survey with 100 participants covering all categories of the sector's stakeholders. In addition, we interviewed experts to determine their point of view on these issues. Moreover, we organized a synergy workshop for stakeholders and experts to learn more about challenges and opportunities.

Sociodemographic information

The sociodemographic analysis reveals a split between traders and manufacturers among the participants:

- 60% representing manufacturers
- 24% representing traders
- 16% representing startups
- Four were experts

This distribution highlights the prevalence of manufacturing businesses within the participants' pool.

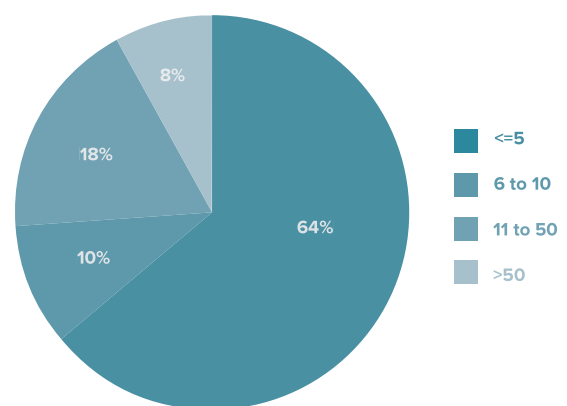
In terms of geographical representation, participants were diverse in their locations within Lebanon.

- **Beirut:** Approximately 16% of the participants were based in Beirut, indicating a notable presence in the capital city.
- **Bekaa:** The Bekaa region accounted for 25% of the participants, showing a significant representation from this area.
- **South Lebanon:** Participants from the southern region constituted 2%.
- **North Lebanon:** While those from the northern part of Lebanon accounted for 11%.
- **Mount Lebanon:** The majority, 46%, were from the Mount Lebanon region, indicating a significant concentration of participants from this particular area.

When it comes to number of employees, most businesses (64% of participants) had less than five employees, while 18% had between 11 to 50 employees, and 10% had between 6-10 employ-

ees and the remaining stated that they have more than 100 employees.

Figure 15. Distribution of number of employees within businesses



Source: Jadwa

Assessment of survey results

- In our survey, we divided the questions into three parts: the first part was addressed to the manufacturers and traders to describe the current situation of applying waste management systems. The second part was addressed to all stakeholders including startups regarding challenges and opportunities to apply circular economy in the sector of textile and clothing. And the third part was addressed to the experts in the field.

Manufacturers & Traders

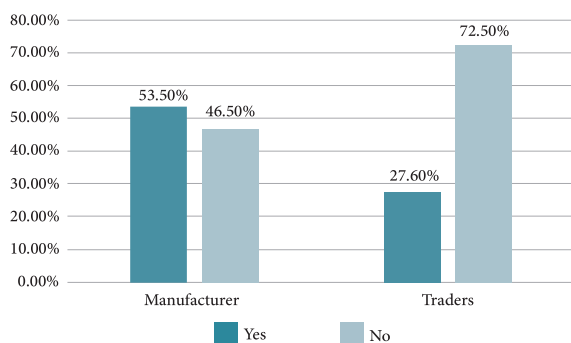
Adoption of Recycling Systems for Unused Stock

Among the participants, data analysis reveals that 54% of the respondents stated that they have implemented a recycling system for their unused stock. This indicates a significant majority that prioritizes sustainable practices in managing their surplus materials. However, 46% of the participants reported not having a recycling system in place for their unused stock.

When considering different sectors, a higher proportion of manufacturers (53.5%) have implemented recycling systems compared to traders (27.6%). The reasons varied among those who stated they do not have a recycling system. Approximately 35% cited stock depletion as the reason, indicating that their inventory levels are efficiently managed, leaving little or no excess stock. Another 33% mentioned stock clearance strategies, implying that they actively utilize discounts or special pricing to sell off surplus stock. Interestingly, 9% of the participants sell their stock upon request, suggesting a customized approach to minimizing waste.

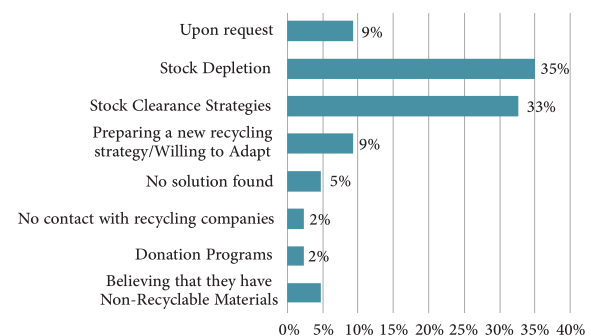
Additionally, 9% mentioned that they are in the process of developing a new recycling strategy, highlighting their intention to adopt more sustainable practices. Some participants (5%) expressed that they believe their materials do not require recycling, while others (5%) mentioned not having a solution or contact with suppliers for recycling. Notably, a portion of the participants stated their involvement in donation programs as an alternative to recycling.

Figure 16. Adoption of Recycling Systems for Unused Stock: Manufacturer vs. Trader Segregation



Source: Jadwa

Figure 17. Reasons for Not Adopting a Recycling System for Unused Stock



Source: Jadwa

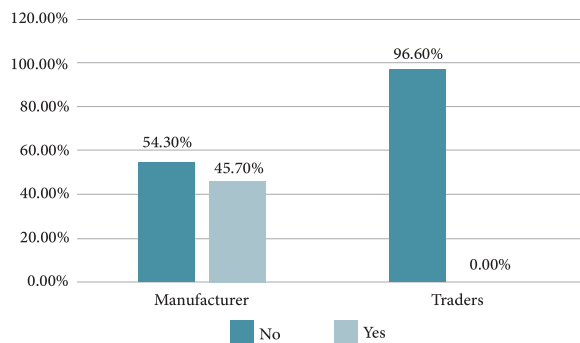
Adoption of Recycling Systems for Unsold Stock

Data analysis reveals that among the participants, a majority of 67% stated that they do not adopt a recycling system for unsold stock, while 33% indicated that they do. When examining the breakdown among manufacturers and traders, it becomes evident that the adoption of recycling systems differs significantly between the two groups. Among manufacturers, 54.3% stated that they do not adopt a recycling system for unsold production, while 45.7% mentioned that they do. Conversely, among traders, a vast majority, 96.6% stated that they do not use recycling systems for unsold production, with only a small percentage implementing such systems.

Delving into the reasons behind the lack of adoption of recycling systems for unsold stock, it is notable that 33% of the participants who do not use such systems mentioned that they sell over the years or offer discounts as alternative strategies for managing unsold stock. This suggests that they prioritize reducing inventory through prolonged sales or pricing strategies rather than recycling. Additionally, 36% stated that they do not have any products left for recycling, implying that their inventory turnover is high, leaving no surplus stock to be recycled. Interestingly, 21%

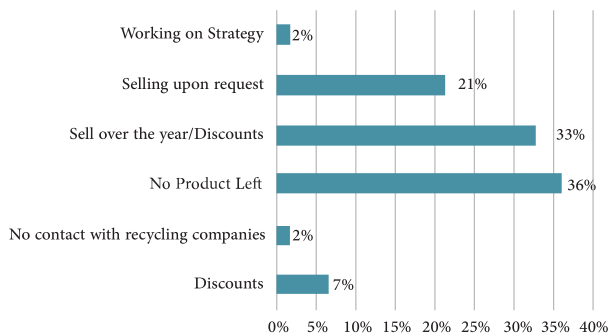
mentioned that they sell upon client request, indicating a tailored production approach where they produce items based on specific customer demand, resulting in minimal unsold stock. A smaller percentage, 7% mentioned offering discounts solely for unsold stock, suggesting a targeted approach to clear excess inventory. Furthermore, 2% stated that they are actively working on developing a recycling strategy, reflecting their intent to incorporate recycling practices in the future. A negligible percentage mentioned a lack of contact with recycling companies.

Figure 18. Adoption of Recycling System for Unsold Stock: Manufacturer vs. Trader Segregation



Source: Jadwa

Figure 19. Reasons for Not Adopting a Recycling System for Unsold Stock



Source: Jadwa

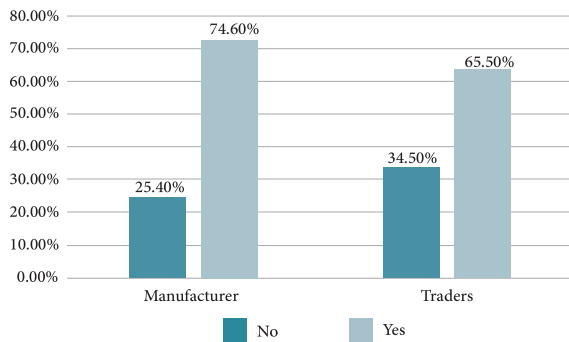
Adoption of Waste Management Systems

Among the 100 participants, 72% stated that they have a waste management system, while the remaining 28% stated that they do not have such a system in place. When examining the breakdown between manufacturers and traders, it is evident that the adoption of waste management systems varies between the two groups.

Among manufacturers, 25.4% stated that they do not have a waste management system, while the majority of 74.6% mentioned that they do have one. Among traders, 34.5% stated that they do not have a waste management system, while 65.5% stated that they do. Participants provided diverse descriptions of their waste management systems. Among those who stated having a system, 40% mentioned engaging in recycling and upcycling practices, highlighting their commitment to sustainable waste management. Additionally, 19% stated that they give their overstock to organizations and industries such as NGOs or factories, indicating their proactive approach to repurposing excess materials. Another 20% mentioned donating their overstock, demonstrating their social responsibility and contribution to charitable causes. A small percentage of 7% stated that they do not generate any waste, suggesting efficient inventory management practices that minimize waste generation. However, 13% stated that they simply throw away the waste, indicating a lack of structured waste management practices in place. These findings underscore the presence of waste management systems among a majority of participants, particularly among manufacturers.

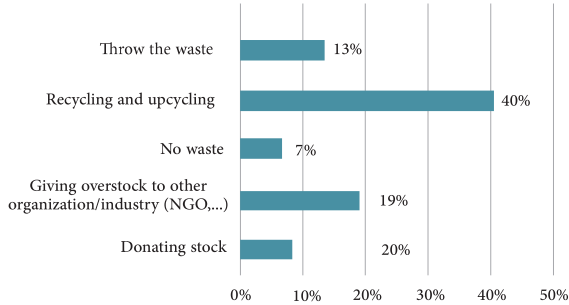
The descriptions provided by participants highlight the diverse approaches to waste management, with recycling, donation, and repurposing emerging as common strategies. However, there is still room for improvement, as a portion of participants reported not having any waste management system or resorting to discarding waste.

Figure 20. Adoption of Waste Management Systems: Manufacturer vs. Trader Segregation



Source: Jadwa

Figure 21. Reasons for Not Adopting a Waste Management Systems



Source: Jadwa

Usage of Recycled Products

Data analysis reveals that among the participants, 69% stated that they do not use recycled products, while 31% mentioned that they do. When examining the breakdown between manufacturers and traders, it becomes evident that the adoption of recycled products differs between the two groups.

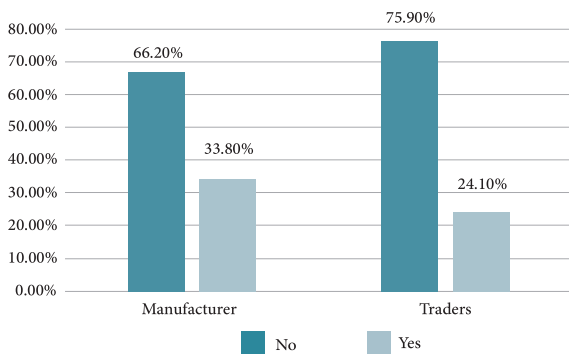
Among manufacturers, the majority of 66.2% stated that they do not use recycled products, while only 33.8% mentioned that they do.

Similarly, among traders, a significant majority of 75.9% stated that they do not use recycled products, with only a small percentage indicating their usage. Exploring the reasons behind not using recycled products, several factors emerged.

Approximately 56% of the participants mentioned the lack of available recycled products that meet quality standards. This suggests that the client standards and expectations do not allow them to switch to recycled products, making it challenging to find suitable alternatives in the market. Another 19% stated that their businesses heavily rely on imported products, indicating a preference for new products over recycled options. Additionally, 18% mentioned that they cannot use recycled products due to the nature of the materials they work with or the specific requirements of their products, highlighting limitations in finding suitable recycled alternatives. A smaller percentage of 6% stated that they have never tried using recycled products before, suggesting a lack of familiarity or awareness about the benefits and availability of such products. Only 3% indicated a lack of contact with suppliers of recycled products, suggesting that better communication and access to suppliers could potentially increase the adoption of recycled products.

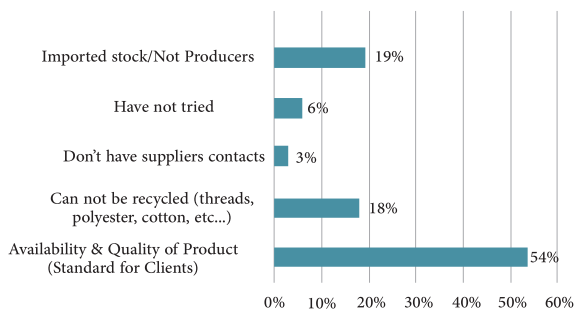
These findings illustrate the prevailing reluctance among participants, especially manufacturers and traders, to utilize recycled products. Factors such as limited availability, quality concerns, reliance on imports, and specific product requirements contribute to this trend. Encouraging the development and accessibility of high-quality recycled products, raising awareness about their benefits, and fostering stronger supplier networks could help increase the adoption of recycled products within these industries.

Figure 22. The adoption of recycled products



Source: Jadwa

Figure 23. Reasons for Not Using Recycled Products



Source: Jadwa

Willingness to adopt a recycling system in their business

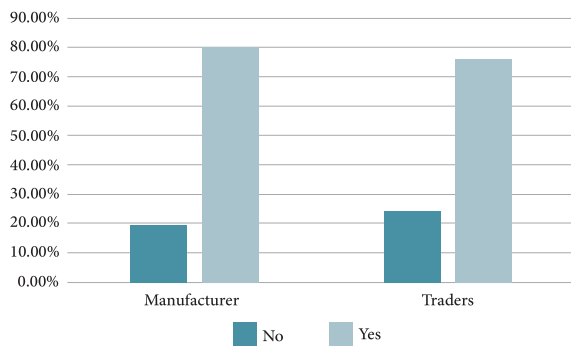
Data analysis reveals that 79% of the participants expressed their willingness to adopt a recycling system in their business, while 21% stated they are not willing.

When examining the breakdown between manufacturers and traders, it is worth noting that 19.7% of manufacturers stated they are not willing to adopt a recycling system, while a significant majority of 80.3% expressed their willingness.

Among traders, 24.1% stated they are not willing to adopt a recycling system, while 75.9% stated they are willing to do so. Among the participants who indicated their unwillingness to adopt a recycling system, only a small number provided input. Out of those who responded, 43% mentioned that it is not within the scope of their company, indicating that their business operations or industry may not lend itself easily to implementing a recycling system. Another 29% stated that they already engage in recycling practices, suggesting that they feel their current recycling efforts are sufficient and do not see the need for further system adoption. Additionally, 14% stated that they do not generate any waste, implying that their operations are already efficient in minimizing waste generation. Interestingly, 15% mentioned that they had previously attempted to implement a recycling system but faced challenges due to the crisis, particularly related to banking system problems that prevented necessary support.

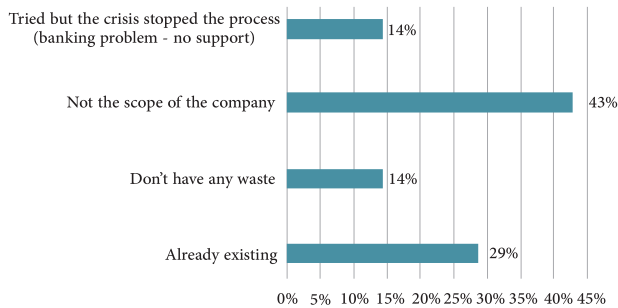
These findings highlight the majority's willingness to adopt a recycling system, particularly among manufacturers. However, a portion of participants, both manufacturers and traders, expressed reservations. Reasons for not willing to adopt such systems varied, including considerations related to company scope, existing recycling practices, waste generation levels, and external challenges. Encouraging businesses to assess the feasibility and benefits of implementing recycling systems, addressing industry-specific challenges, and providing support during crises can help overcome barriers and foster greater adoption of recycling practices.

Figure 24. Willingness to adopt a recycling system in their business



Source: Jadwa

Figure 25. Reasons for Not Willing to adopt a recycling system in their business



Source: Jadwa

Willingness to use recycled products in their production.

The data analysis reveals that 73% of the participants expressed their willingness to use recycled products in their production, while 27% stated they are not willing to do so.

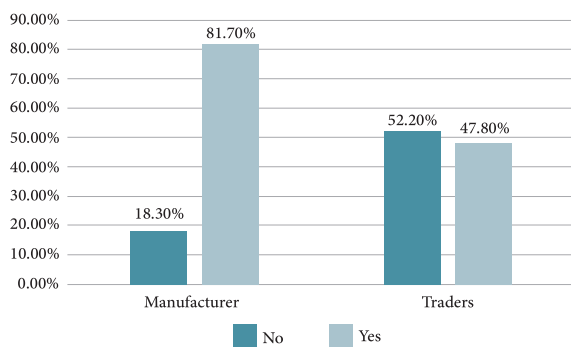
When examining the breakdown between manufacturers and traders, it is interesting to note that only 18.3% of manufacturers stated they are not willing to use recycled products, while a significant majority of 81.7% expressed their willingness.

Among traders, 52.2% stated they are not willing to use recycled products in their production, while 47.8% stated they are willing.

Among the participants who indicated their unwillingness to use recycled products in their production, several reasons were mentioned. Approximately 32% expressed concerns about the quality of recycled products, indicating that they are apprehensive about the performance or reliability of such materials. However, an equal percentage, 32% stated that they are willing to use recycled products if quality that meets their standards is available. This suggests that quality is a key factor influencing their decision, and they are open to adopting recycled products if they meet their requirements. Another reason mentioned by 18% of participants was that using recycled products is not applicable to their business since they import products and clients prefer non-recycled options. This highlights the influence of client preferences and the challenges associated with market acceptance and pricing of recycled products. Furthermore, 12% of participants mentioned that they are not willing to use recycled products due to market unacceptance and perceived high costs. This suggests that market dynamics and price competitiveness play a role in their decision-making process. The remaining 6% provided varied reasons, including a lack of contact with suppliers of recycled products or already using recycled products.

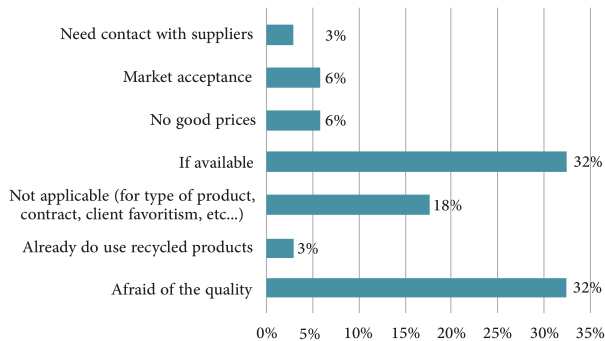
These findings demonstrate the majority's willingness to use recycled products in their production, particularly among manufacturers. However, concerns about quality, market acceptance, and price competitiveness present barriers to adoption for some participants.

Figure 26. Willingness to use recycled products in their production: Manufacturer vs. Trader Segregation



Source: Jadwa

Figure 27. Reasons for Not Willing to use recycled products in their production



Source: Jadwa

Type of Support Needed

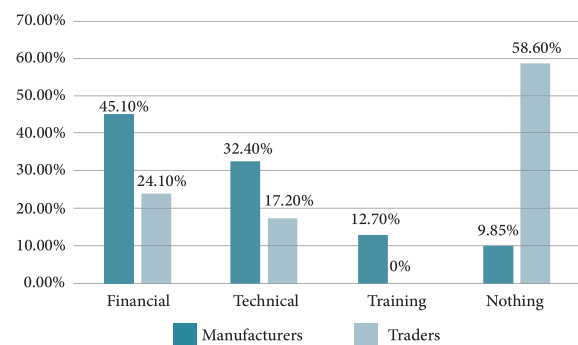
Among the participants who expressed a need for support, the breakdown of their specific support requirements is as follows: 9% stated a desire for training, 28% expressed the need for technical support, and 29% expressed the need for financial support. However, it is worth noting that a portion of the participants did not provide any specific response regarding their support needs.

When examining the breakdown among manufacturers, it becomes apparent that 45.1% of them stated a need for financial support, indicating their

desire for financial assistance in implementing sustainable practices. Additionally, 32.4% mentioned a need for technical training, suggesting their interest in acquiring the necessary skills and knowledge to enhance their sustainability efforts. Furthermore, 12.7% expressed the need for general training, without specifying the technical or financial aspects. Among traders, 24.1% expressed a need for financial support, indicating their requirement for financial assistance to implement sustainable practices. Furthermore, 17.2% mentioned the need for technical support, suggesting their interest in technical guidance or assistance in incorporating sustainable practices within their trading operations. Similar to manufacturers, a portion of traders did not provide any specific response regarding their support needs.

These findings highlight the diverse support requirements among participants, with financial support and technical support being the most frequently mentioned needs. Manufacturers, in particular, expressed a higher demand for financial support compared to traders.

Figure 28. Type of Support Needed



Source: Jadwa

7 Challenges and opportunities to develop circular textiles businesses

Manufacturer & Traders

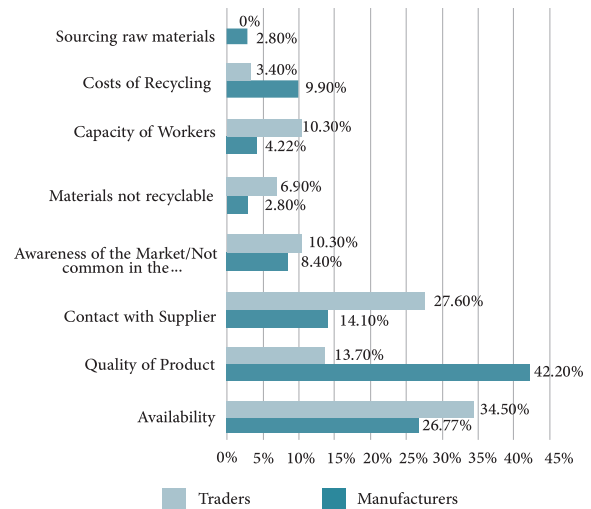
■ Challenges

According to the data analysis, participants highlighted various challenges they face in adopting recycling practices and utilizing recycled products. The breakdown of these challenges includes:

- **Finding quality products:** 34% of participants identified this as the main challenge, indicating their struggle to source recycled products that meet their quality standards.
- **Availability of recycled products:** 29% mentioned the availability of recycled products as a challenge, suggesting difficulties in finding a wide range of recycled products in the market.
- **Outreach to suppliers:** 18% expressed challenges in contact with suppliers, indicating issues in establishing effective communication and relationships with suppliers of recycled products.
- **Weak market awareness on sustainable textile and clothing sector:** 9% stated that the main challenge is weak market awareness or cultural factors, suggesting that the market or the culture does not fully embrace recycling or the use of recycled products, leading to limited demand and acceptance.
- **High cost of recycling:** 8% mentioned the high cost of recycling as a significant challenge, implying that the cost associated with implementing recycling practices or acquiring recycled products is a barrier for them.
- **Skills and capacity of workers:** 6% highlighted the capacity of their workers as a challenge, suggesting that their workforce may lack the necessary knowledge or skills to effectively implement recycling options.
- **Sourcing raw materials:** 2% faced challenges in sourcing raw materials, indicating difficulties in obtaining the necessary materials for recycling or incorporating recycled content.

The analysis also revealed a difference in challenges between manufacturers and traders. For manufacturers, the main challenge lies in finding products with good quality, while for traders, the primary challenge is the availability of recycled products or recycling options. These findings emphasize the various obstacles that participants encounter when it comes to adopting recycling practices and utilizing recycled products. The challenges include product quality, availability, supplier contact, market awareness, cost, worker capacity, and raw material sourcing.

Figure 29. Pooled Main challenges: Manufacturers vs Traders



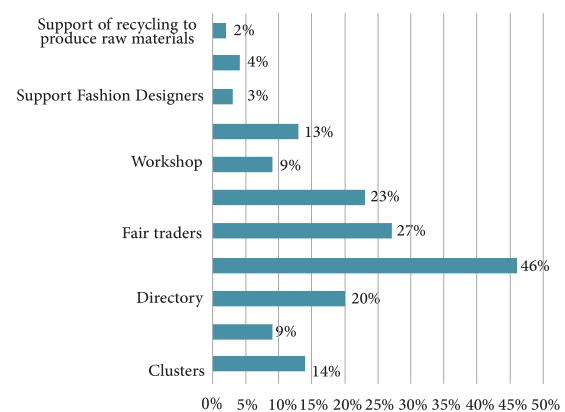
Source: Jadwa

■ Opportunities

Participants provided a range of suggestions for opportunities within their businesses, reflecting their aspirations for growth and development.

- **Networking activities:** The top opportunity identified by 46% of participants is to have events and exhibitions. This highlights the potential benefits of showcasing their products, networking with industry professionals, and increasing visibility among potential customers.
- **Market fair trade:** Additionally, 27% of participants emphasized the importance of fair traders in the market, recognizing the value of promoting ethical and equitable trade practices.
- **Soft-landing in new markets:** Opening new markets emerged as a significant opportunity for 23% of participants, reflecting the desire for business expansion and tapping into unexploited customer segments.
- **Access to information:** Furthermore, 20% suggested the development of a comprehensive directory to facilitate access to relevant information and resources within the industry.
- **Collaborative opportunities** were also recognized, with 13% highlighting the potential for linking, networking, and collaboration between companies, NGOs, and government entities to foster collective growth and innovation.
- **Clustering:** The concept of clusters, or industry-specific collaborations, was seen as an opportunity by 14% of participants, acknowledging the potential benefits of collective efforts and knowledge sharing.
- **Sharing knowledge:** Moreover, 9% mentioned the importance of sharing know-how and expertise among industry stakeholders, emphasizing the value of continuous learning and professional development.
- Other suggestions included supporting fashion designers, establishing schools and training programs, and supporting the recycling industry for the production of raw materials.

Figure 30. Distribution of Pooled Main opportunity suggested among participants



Source: Jadwa

These findings underscore the diverse range of opportunities perceived by participants, highlighting their aspirations for business growth, market expansion, collaboration, and knowledge sharing. Implementing these opportunities can contribute to the overall development and sustainability of their businesses. When comparing the opportunities suggested by manufacturers and traders, there were noticeable differences in their perspectives. Manufacturers highlighted opening events and exhibitions as a key opportunity, recognizing the value of showcasing their products and connecting with potential customers. They also emphasized the importance of fair traders in the market, emphasizing the significance of indicating their interest in expanding their reach and exploring untapped customer segments. On the other hand, traders shared a similar view regarding the importance of events and exhibitions as an opportunity to promote their products and engage with industry stakeholders. However, they also emphasized the need for a reliable and comprehensive directory, recognizing the value of a centralized resource that provides easy access to relevant information within the industry. Additionally, traders highlighted the importance of

a centralized resource that provides easy access to relevant information within the industry. Additionally, traders highlighted the importance of networking, collaboration, and linkages within and outside their organizations, including partnerships with NGOs and government entities. This suggests their recognition of the potential benefits of cooperative efforts and leveraging external support for business growth.

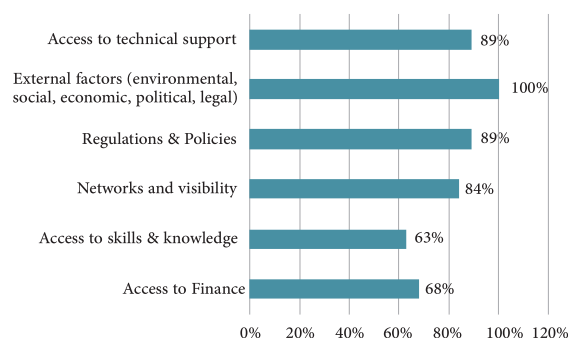
Startups

■ Challenges

Among Startups, the main challenges they face are predominantly related to external factors encompassing environmental, social, economic, political, and legal aspects:

- **Influence of external factors:** This challenge was identified by all participants, highlighting the complexity and influence of external factors on their business operations.
- **Lack of technical support:** 89% of startups stated that access to technical support and navigating regulations and policies present significant challenges.
- **Understanding the regulatory framework:** This underscores the need for expert guidance, regulatory compliance, and understanding of the legal framework surrounding their ventures.
- **Access to networks and visibility:** 84% of participants highlighted networks and visibility as a challenge, indicating the importance of establishing connections, building relationships, and gaining market visibility.
- **Access to finance, skills, and knowledge:** Were also identified as challenges, with an average of 65% of participants expressing concerns in these areas.

Figure 31. Title: Distribution of Pooled Main challenges among participants



Source: Jadwa

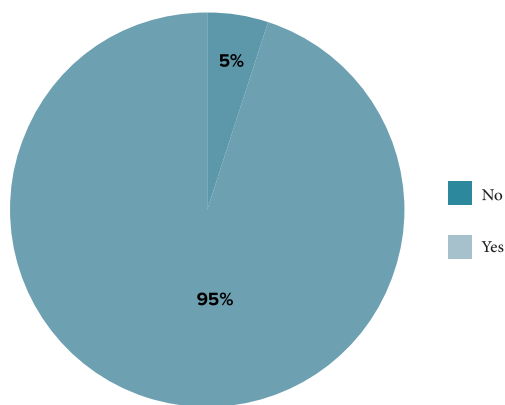
■ Opportunities

Among startups, a significant majority of 95% recognized that there are still ample opportunities available for them.

- **Access to capacity building opportunities:** The top opportunity sought by 89% of participants was access to skills and knowledge, highlighting the importance of continuous learning, acquiring new competencies, and staying updated with industry trends.
- **External factors:** Furthermore, 42% of participants identified external factors such as social, economic, and environmental conditions as opportunities, indicating their readiness to leverage these factors for their business growth.
- **Networking and visibility:** Enhancing networking and visibility emerged as an opportunity for 32% of participants, emphasizing the value of building connections, establishing partnerships, and increasing market presence.
- **Access to finance and technical support:** Additionally, 10% of participants highlighted access to finance and technical support as opportunities they are seeking, recognizing the importance of financial resources and expert guidance in scaling their businesses.

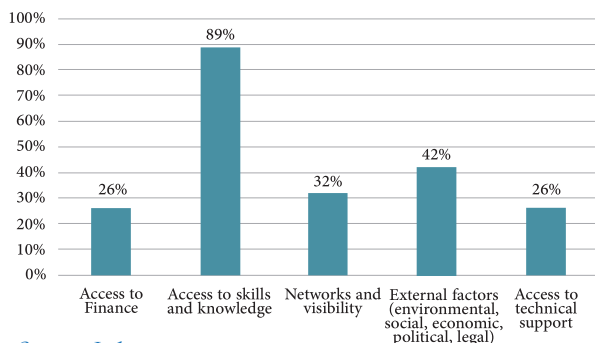
These findings demonstrate the positive outlook and startups spirit among startups, with a strong belief in available opportunities for their ventures. The focus on acquiring skills and knowledge, leveraging external factors, networking, and accessing financial and technical support underscores their commitment to growth and success. By capitalizing on these opportunities, startups can position themselves for long-term viability and maximize their potential for innovation and market impact.

Figure 32. Distribution of Participants' Perception on Availability of Opportunity



Source: Jadwa

Figure 33. Main Opportunities for startups.



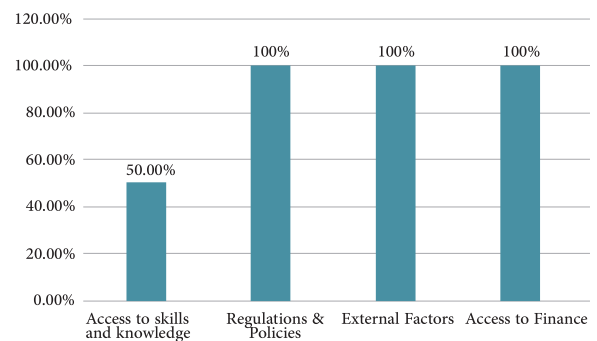
Source: Jadwa

Experts

Challenges

All experts identified regulations and policies, external factors such as economic, social, and environmental aspects, as well as access to finance as core challenges. 50% of the experts considered access to skills and knowledge as a challenge.

Figure 34. Title: Distribution of Pooled Main challenges among participants

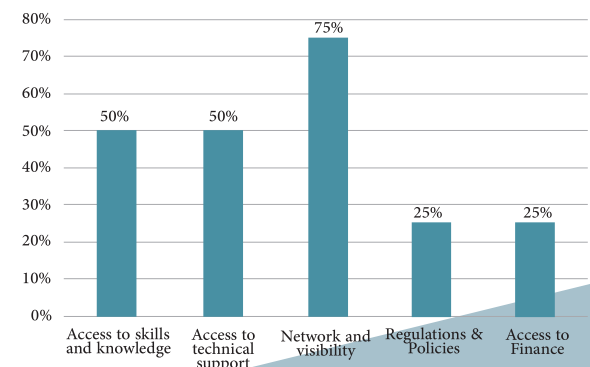


Source: Jadwa

Opportunities

Among all experts, 75% of the opportunities were attributed to network and visibility, 50% were attributed to access to technical support, and another 50% were attributed to access to skills and knowledge, and 25% were attributed to regulations and policies and access to finance.

Figure 35. Main Opportunities for experts



Source: Jadwa

8 Recommendations for the promotion of circular textiles businesses in Lebanon

Promoting circular textiles businesses in Lebanon involves a multifaceted approach that addresses various aspects of the textile industry, sustainability, and economic development.

Here's a comprehensive roadmap to achieve this goal:

Government & Policy Makers

1. Developing a regulatory framework that supports circular textiles (Government)

This could include laws that require businesses to recycle textiles, or that promote the use of recycled materials in textiles production. The goal is to create a level playing field for circular textiles businesses, and to make it easier for them to compete with traditional businesses.

Establish a solid regulatory framework with government leadership to attract investors and catalyze sustainable initiatives., in addition to encourage source sorting of used clothes, accurate textile material identification for recycling, initiatives for clothing repair and textile upcycling, and separate collection streams for textiles.

2. Providing incentives for the textile circular business (Government)

There is a call for more regulations and subventions from the government to support and subsidize Startups and the manufacturing industry in Lebanon. This can provide the necessary incentives and financial assistance for startups to thrive. In addition to amend national tax regulations to increase tariffs on imported clothes and regulate the market for imported textiles, especially second-hand textiles.

3. Access to raw materials (municipalities)

Establish partnerships with waste management companies and municipalities to ensure efficient collection, sorting, and processing of textile

waste. The availability of high-quality raw materials and machinery is essential for the production process. Support in sourcing quality materials and upgrading machinery can improve product standards and competitiveness. Moreover, Textile factories should be regulated to control and manage waste effectively, thus preserving the environment, and endocrine disruptor dyes and textiles should be banned from the market due to their harmful effects.

Chamber of commerce

Access to Markets

1. Encouraging the rehabilitation of the industry, exploring new markets, participating in trade fairs, exhibitions, and organizing big events can help Startups gain visibility, access new customers, and expand their businesses. Work with international partners to share knowledge and expertise on circular textiles.

2. Providing capacity building for manufacturers in the sector

Provide training and technical assistance to circular textiles businesses through chambers of commerce, non-profit organizations, or businesses themselves. Support could be in the form of affordable fashion design academies, technical training, workshops, and events which can enhance the skills and knowledge of Startups. Focus on marketing, digital marketing, upcycling, circularity, and sustainable practices can equip startups with the necessary tools for success. In addition ensuring access to qualified labor and facilitating collaborations between big companies and Startups can provide opportunities for small-scale projects and enhance skills development.

Manufacturers

1. Supporting Innovation and Research (Universities and Manufacturers)

This can be done through government funding, partnerships with universities, and collaborations with businesses. The goal is to develop new technologies and processes that can make circular textiles more efficient and affordable.

2. Creating a network or a cluster of circular textiles businesses, (Manufacturers)

This can be done through trade associations, chamber of commerce, online platforms, and events. The goal is to create linkages and contacts between sector members through hubs or clusters and encourage collaboration, partnerships, and exchange of ideas can foster innovation and growth within the Startups ecosystem, and to provide them with support and resources.

NGOs

1. Creating awareness of the benefits of circular textiles NGOs)

This can be done through public awareness campaigns, educational initiatives, and partnerships with businesses and organizations. The goal is to educate people about the environmental and social benefits of circular textiles, and to encourage them to support businesses that are committed to this approach, and how they can contribute through responsible consumption.

International organizations

1. Access to finance

Provide grants, subsidies, and low-interest loans to circular textile startups and businesses to support their growth and expansion, specially to those using new technologies and upgrading machinery to higher standards, in addition to encourage investment in circular textiles through venture capital and impact investing.

In the light of the findings of this study, we recommend the following roadmap to endorse the Textile and Clothing's Circular Economy in Lebanon over the coming 3 years (2024-2027). This roadmap provides a framework for implementing the actions outlined below, so Lebanon can reduce its clothing and textile sector environmental impact, create jobs and build a more sustainable future.

The vision of this roadmap is to create a thriving circular economy for the textile and clothing sector in Lebanon, where resources are valued and used to their full potential and waste is minimized.

Founded on 3 pillars, the goals to be reached are:

- Reduce the environmental impact of the textile and clothing sector by 20% by 2027.
- Increase the use of recycled materials in the textile and clothing sector by 10% by 2027.
- Create 100 new jobs in the circular economy of the textile and clothing sector by 2027.

To achieve these goals, the focus must be on the following areas:

- Waste management which aims at an enhanced collection and recycling of textile waste.
- Sustainable consumption which shall start by educating consumers about the circular economy and encourage them to make sustainable choices.
- Eco-innovation with the adoption of innovative circular economy technologies and processes which lead to the development of the textile and clothing sector.

The timeline of this roadmap, split over 3 years, includes the consequent actions below:

- Year 1: Develop and implement a national strategy for the circular economy of the textile and clothing sector.

- Year 1: Launch a public awareness campaign to educate consumers about the circular economy and encourage them to make sustainable choices.
- Year 1: Promulgate regulatory framework and new laws to support circular economy in the textile and clothing industry.
- Year 2: Start providing financial incentives for businesses to adopt circular economy practices.
- Year 2: Develop the circular economy infrastructure, such as waste collection and recycling systems.
- Year 3: Invest in research and development of new circular economy technologies and processes.
- Year 3: Create a fund to support manufacturers and startups to use new technologies.
- Year 3: Invest in research and development of new circular economy technologies and processes.
- Year 3: Create a fund to support manufacturers and startups to use new technologies.

Conclusion

In conclusion, the adoption and implementation of a strategy to promote a circular economy are not merely commendable pursuits; they are imperative for the sustainability of our country and the well-being of future generations. As we confront the challenges of resource depletion, environmental degradation, and economic instability, a circular economy strategy offers a holistic and innovative approach.

The advantages of embracing the circular economy are evident: reduced waste generation, decreased reliance on finite resources, increased competitiveness for businesses, and a healthier environment. But beyond these tangible benefits, it offers a vision of a world where growth is decoupled from resource depletion, where waste is transformed into value, and where the well-being of people and the planet are prioritized.

However, the successful implementation of a circular economy strategy requires collective effort and commitment from governments, industries, and individuals alike. It requires a shift in mindset, a reevaluation of consumption patterns, and the development of new technologies and infrastructures. It calls for robust policy frameworks, incentives for sustainable practices, and a reimagining of business models.

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DEVELOPMENT OF A STRATEGY, A ROADMAP AND POLICY RECOMMENDATIONS TO SET SUSTAINABLE TEXTILE AND CLOTHING INDUSTRY

LEBANON

August 2023

