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December 2021

STAND Up! Project Findings Report

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Executive Summary

This project aims to make IPRs a key vector for circular innovation in the textile and clothing sector in Lebanon. The study also aims to strengthen the integration of IPRs into the environmental technologies and industrial designs all along the value chain of the sector.

First, a mapping of the IPR system in Lebanon was done, allowing to have a detailed understanding of the system on the strategic, operational and commercial level, as well as its positioning and its performances in the value chain of the textile and clothing sector. In addition, a comprehensive understanding of the enabling environment for stakeholders and their willingness to move forward was observed. Based on a due diligence study, confirmed through an expert focus group consultation meeting, high level recommendations practical, appropriate and impactful were addressed. Also, a detailed legal mapping for the Lebanese legislations covering IPRs with special emphasis on the innovation and IPR system in relation to textile and clothing sector.

The use of IPRs in Lebanese business is limited. In several industries mainly in textiles IPRs were seen as relatively unimportant in setting business strategies. Despite the development of the clothing industry in Lebanon and its commercial market in the last decades, it has not kept pace with the development of textile innovation protection. Patents are infrequently applied for textile innovations and this is due to several reasons mainly can be summed up by two. First, Lebanese IPR officials undertake no substantive examinations of applications for industrial property protection (patents, designs, trademarks) for novelty but rather inspect applications solely for their satisfaction of formal requirements. Second, enforcement of IPRs is left largely to private actions, in which firms assemble evidence of infringement and use the police and courts to achieve its elimination or deterrence. Lebanon is unusual primarily in having an enforcement system that provides effective disciplinary action against infringement in some circumstances. This tends firms rarely try to enforce their patents or designs against infringement, both because of the limited penalties available and because court procedures in patent cases can be quite lengthy and costly. Indeed, deficiencies in technical expertise relating to patents within the administrative and judicial systems is probably a strong factor contributing to the limited use of patents. In the absence of effective patent protection, innovators do not find enough encouragement or incentives to register their IPRs especially when it comes to innovative issues such as related to textile.

1 Textile and clothing sector in Lebanon

1.1 Governance of the textile and clothing sector in Lebanon and economy key figures

The textile sector and clothing industry is managed by the industrialists first, the traders, as well as importers and exporters. The ministry of industry regulates the industrial production through permitting system initially in coherence with Lebanese permitting system procedures, including the obtention of the environmental impact assessment approval and environmental permit by the ministry of environment. The ministry of economy and trade regulates the import and export of the products. The textile market in Lebanon ranges from economical clothes sale to luxury apparel production in house. Some Lebanese businesses providing regular ready-to-wear could use an access where collections with a small number of models created by a designer who is typically the brands founder. Others concentrate on tailoring rather than creating original collections.

The textile industry of Lebanon accounts roughly 14% of the total industry sector. There are over 800 manufacturing units in total. They make things valued roughly \$101 million in total (Association of Lebanese industrialists, Infomedia 2019). Manufacturing entities with more than two workers account for around 35.6 million USD or about 38% of total national production. In Lebanon the process of fabrication begins with already manufactured Yarns. Fabric manufacture, finishing and fabrication are the three primary stages of processing for raw fibers. The Textile Business sector accounts for about 1.3% of Lebanon's total clothing imports. Experts see a significant drop in government exports to Lebanon and a minor boost in local manufacturing as a result of the local financial sector's severe limitations on money out flows. Imports have already decreased by 15% in the first half of 2020 compared to the same rate in 2019. Local textile makers in Lebanon found success by focusing on the high end of the market. Many businesses already have sophisticated equipment and know how to make high-quality goods.

However, Lebanon is a small market with a diminishing consumer base for these products. To protect local production of the Lebanon textile business sector, the government has attempted to prohibit the sale of some items notably textile import worth 123.3 million per year. According to his customers data, exports and imports are represented as follows:

Lebanon's Top 10 Textiles Exports by Countries

Sr No	Country Name	Export Value (in Million \$)	Exporter Share Percentage (%)
1	United Arab Emirates	5.73	12.06
2	Italy	4.52	9.51
3	Qatar	4.1	8.61
4	Syrian Arab Republic	3.81	8.02
5	France	3.5	7.35
6	Kuwait	3.26	6.85
7	Jordan	2.66	5.6
8	Saudi Arabia	2.39	5.03
9	Switzerland	2.07	4.36
10	Egypt, Arab Rep.	1.66	3.48
Total Textile Export Market Size of Lebanon:			USD \$ 0.05 (in Billion)

Source: World Trade Organization

Lebanon's Top 10 Textiles Imports by Countries

Sr No	Country Name	Import Value (in Million \$)	Import Share Percentage (%)
1	China	229.4	30.3
2	Turkey	115.13	15.21
3	Italy	68.33	9.03
4	Bangladesh	41.8	5.52
5	India	41.74	5.51
6	Germany	24.08	3.18
7	Morocco	20.53	2.71
8	Portugal	18.66	2.46
9	Vietnam	14.41	1.9
10	United States	13.19	1.74
Total Textile Import Market Size of Lebanon:			USD \$ 0.76 (in Billion)

1.2 Description of the textile and clothing industry benchmark value chain.

The textile value chain comprises all the activities that provide or receive value from designing, making, distributing, retailing and consuming a textile product, including the extraction and supply of raw materials, as well as activities involving the textile after its useful service life has ended. In this view, the value chain covers all stages of a product's life cycle, from raw material supply through end-of-life disposal, as well as activities related to value production such as business strategies, investments, and regulation.

The value chain for a textile product begins with the manufacture of fiber. This can be either the sourcing of natural agricultural materials and their subsequent processing to extract the fiber (e.g., cotton), or the extraction of crude oil and the manufacture of chemicals from which synthetic fibers are made (e.g. polyester), or a combination of the two, as textiles are frequently blends of natural and synthetic fibers or involve both natural and chemical processing in their production.

The activities associated with a value chain are often shown as a linear representation from raw material production to end-of-life treatment, albeit with the potential for the re-use, repair/repurposing and recycling of materials adding loops into the picture (such a linear representation is shown in Figure 1). The aim of circularity is to shift the “take- make-dispose” linear value chain into a circular system, where materials are not lost after use but remain in the economy, circulating as long as possible at the highest possible value.



Figure 1: Linear representation of activities along the textile value chain

In a circular value chain, after re-use the textile would be used in another textile product, e.g., upcycled into a new garment, or broken down to fiber level and spun into yarn.

There is currently some limited recycling of cotton back to fiber, while new technologies, such as chemical recycling, offer the potential to recycle synthetic textiles back to the raw materials from which they were made. The clothing and textile value chain includes the actors who perform the activities as well as the stakeholders who can affect those actions, in addition to the activities outlined above. It includes also business strategies and how things are produced, advertised, and sold to customers. Design, marketing, retailing, advertising, and publishing are all non-manufacturing activities that have an influence on how textiles are made and consumed (Table 1).

Key activities	Actors and stakeholders
Fibre production	Farmers, Petrochemical producers, Ginners Natural fibre producers, Virgin polymers producers, Recycled polymer producers, financial institutions and investors, Education institutions, Advocacy and policy organizations.
Yarn and fabric production	Fabric designers, Yarn and fabric producers, NGOs, UN organizations, Campaigners, Local and National government agencies, Regulators, Labeling organizations, Buyers, Importers and exporters.
Textile production	Garment designers, Garment makers, Brands and retailers, NGOs, UN organizations, Campaigners, Local and National government agencies, Regulators, Labeling organizations, Buyers, Importers and exporters.
Consumption	Retailers (including online) Consumers (including government & business), Social media influencers, Marketers, Logistics companies and warehouses, Couriers and postal services, Workers /employees, Labor unions, Trade unions and employer organizations, Industry associations / chambers of commerce, Fashion critics.
End-of-life	Collectors, Sorters and traders, Informal sector associations, Recyclers, Waste management companies, Innovators, Researchers, Media organizations, Standard-setting/ labeling organizations.

Table 1: Stakeholders associated with textile value chain

The focus is on those who have a role to play in bringing about a sustainable and circular textile supply chain. This includes those directly involved in value chain activities, such as cotton farmers, designers, buyers and consumers as well as stakeholders that can influence the value chain or pass on knowledge to actors in the value chain, such as government regulators, social and environmental campaigners. Innovators and researchers, as well as Academia interact transversally with each key activity.

Though the value chain is genuinely worldwide, the textile value chain's raw material extraction and manufacture are disproportionately weighted towards Asia and developing/transitioning nations, as seen in (Table 2).

Key activities of the value chain	Country actors
Fibre production	China (57%), India (13%), European Union (7%), Unites States of America (4%), Other (19%)
Yarn and fabric production	Chine (64%), India (9%), Pakistan (4%), Bangladesh (3%), Other (20%)
Textile production	China (35%), EU (11%), Bangladesh (7%), India (7%), Vietnam (6%), Other (34%)
Consumption	Europe (34%), North America (23%), Asia (Middle East) (11%), Japan (10%), China (11%), Other (11%)

Table 2: Geographical breakdown of global apparel production and consumption

Textile products and intermediates are primarily exported by developing textile manufacturing countries, whereas textile products are primarily imported by developed countries. Institutional purchasers and retailers, as well as textile product producers, are the major value chain actors at the later. Another distinguishing aspect of textile value chain stakeholders is the vast number of small and medium-sized businesses that carry out the activity.

1.3 Focus on the Lebanese components of the textile and clothing value chain

In Regular times and out of any impactful crisis, **because of lack of resources (natural fibers) and a poor industrial sector using relatively obsolete methods, all raw materials utilized in the textile industry, from fibers to equipment, are imported, as is the situation in Lebanon.**

The complete Value chain does not exist in all its milestones in Lebanon. The main 3 key activities of the textile value chain shown in Lebanon are: the Textile production, Consumption and the End of life.

- For textile production, some industries in Lebanon accomplish production in-house and manufacture their own fabrics, while others import particular fibers to meet their niche customers (high quality classical pieces).
- Following the completion of the manufacturing process, either brand name shops or intermediate buying offices move on to the distribution stage. These merchants, market and sell the goods to end customers using their distribution channels, brand name, and marketing expertise.
- As for the end-of-life activity, some Lebanese designers, incubators, waste management companies, entrepreneurs and many other actors are starting to develop the sustainable mindset and culture that leads to innovations.

These three value chain key activities are elaborated in paragraph 2.6 and 2.8, exposing facts and examples showcasing their effect on the Intellectual Property Right status and innovation level.

2 Intellectual Property Rights in Lebanon

2.1 Overview and definitions

Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce. They are similar to any other property rights and allow the creator, or owner of a patent, trademark, copyrights and industrial design to benefit and earn recognition or financial return from what they invent or create.

Striking the right balance between the interests of innovators and the wider public interest, the IP system aims to foster an environment in which creativity and innovation can flourish (Ministry of Economy and Trade, Lebanon, 2021). The different types of IPRs are the following:

- Patent is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem. To get a patent, technical information about the invention must be disclosed to the public in a patent application. Patents law provides the right to prevent the unauthorized making, selling, importing, or using of a product or technology that is recognized in the patent claim and that must demonstrate novelty and industrial utility.
- Trademarks protect rights to market goods and services under identified names and symbols. Trademarks and brand names must be sufficiently unique to avoid confusing consumers, thereby playing the important role of reducing consumer search costs.
- Copyrights include literary and artistic creations and computer software are protected by copyrights, which provide exclusive rights for some period to copy and sell particular expressions of ideas after they are fixed in some medium.
- An industrial drawing or design is any pattern or configuration of lines or colors, and any shape or form whether connected to lines or colors or not, which may be used in an industry or handicraft trade, manually or mechanically, including textile designs, provided that such configuration or shape gives the industrial commodity or handicraft a special aspect.

2.2 Legal Framework of Intellectual Property Rights in Lebanon

Lebanon was one the first countries in the Arab region to pass legislation to protect IPR, and has been a member of various international IPR conventions since the 1920. The table 4 present Lebanese legislation framework related to IPRs

Legal text	Year	Title
Law No.240	2000	Patent Law
Law No. 75	1999	Copyrights Law (Protection of Literary and Artistic property)
Law No.89	1991	Duties and fees due to the publication of industrial designs, patents, literary and artistic properties
Law No. 14	1987	Duties and fees due for the publication of trademarks and patents
Resolution number 83	1960	The conditions required to establish a Lebanese industry or business having a foreign mark registered in Lebanon
Law No.340	1943	Criminal Code
Decree No. 304	1942	The code of Commerce (The registration of marks and patents in the register of commerce)
Resolution number 152/LR	1937	The application of the Paris convention for the protection of the industrial property and the Madrid agreement for the repression of the false or deception indications of source on goods
Resolution No. 2385/LR, Amended by law issued on 1946	1924	Industrial Design Law, Governing Commercial and Industrial Property (Excluding Copyright & Patent Provisions)

Table 3: IPRs Lebanese legislative framework

In principle, the patent owner has the exclusive right to prevent or stop others from commercially exploiting the patented invention. In other words, patent protection means that the invention cannot be commercially made, used, distributed, imported or sold by others without the patent owner's consent.

2.3 Innovation and IPR system in relation to textile and clothing sector

At the industry level, research and development activities are linked to fashion and design trends and schemes. It is important to differentiate the luxurious textile and clothing industry from the regular popular one. The luxury market includes a more innovative approach in relation to international trends such as environment and sustainable development, while the popular market includes a more costing oriented strategy position. In general, the Lebanese innovations are weakly linked to research centers and incubators that start today to include textile and clothing innovations oriented towards circular economy and sustainable development principles.

In order to move from an idea to the industrialization, the following steps should be followed:

- There should be a permit provided by the ministry of industry in order to be able to move to industrialization.
- The ministry of environment should provide the EIA Environmental Impact Assessment.
- The ministry of trade will provide the IPR registry of the product.

Innovation is being done at two levels: at designers' level, at factory scale level, at university, and at incubators. This innovation is being active without any regulation except for the registration of a new product at the ministry of trade.

Any innovation is being registered at the IPR registry at the ministry of trade.

Strengthening the textile sub-sector in terms of higher productivity, quality, and creativity calls for a holistic understanding of IPR. As industry-insiders agree on the fact that innovation, creativity, and originalities are the building blocks of an impactful fashion and textile landscape.

To date, innovation in the textile and fabric industry has exerted revolution in three main sectors – clothing, home, and technical textiles. Also, the application of resistant fabric, smart cotton, activewear has made wearables more durable, comfortable, and attractive. Hence, it is of no doubt how innovations added tremendous value to the intellectual capital prevalent in the textile and fabric industry.

Since in Lebanon, the textile value chain starts from the Assembling (Textile production) of the textile, IPR particularly trademarks and copyrights are utilized in this phase to safeguard the original expression of ideas in the T&A industry.



Figure 2: Application of IPR on textile value chain

2.4 Patenting and promoting innovation activities

2.4.1 Conditions of Owning a Patent related to textile industry

When it comes to the manufacturing of textile fabric, the invention is liable for protection if it is **Novel, Creative and Applicable**. This is applied on a case-by-case basis by implementing Patent law number 240 dated 2000.

A patent shall be issued for each invention related to:

- New industrial product.

- New method that leads to the production of a new industrial product or a known industrial result.
- Every Novel application of a known industrial method or means.
- New group of known methods or means.
- Micro Organisms.
- Novel or discovered plant product provided that it complies with all the following conditions:
 1. Distinguished from all previously known varieties by a rarely changeable specific and important advantage; or by several advantages that collectively form a Novel plant variety.
 2. Homogeneity of advantages.
 3. Stability (by the end of each production cycle it remains identical to its first definition).

When it comes to textile design protection it may be protected either through industrial designs and drawings law or through copyrights law.

Conditions of Owning a Patent		
NOVEL To have a new and not an existing invention	CREATIVE To be inventive	APPLICABLE To be of use in industry

Figure 3: Conditions of owning a patent

The Intellectual Property Protection Office -IPPO at the Ministry of Economy and Trade was established in 1996. Its basic function is the registration of all types of IPRs.

IPRs enforcement in Lebanon starts with the registration of the rights at the IPPO which has a deposition system for patents, trademarks and industrial designs. The examination and opposition procedures are absent from the IPR laws.

2.4.2 Process to obtaining a Patent

As per the series of interviews with the stakeholders, mainly the ministry of trade, it was shown that Patent is the most adaptable IPR related to the textile and clothing general or eco-innovation in Lebanon, as main innovations tackle material or process engineering.

A request to the ministry of economy and trade should be presented to the head of the intellectual property protection authority and should include the following documents:

The application shall include:

A. A signed retainer if the applicant is represented by an associate.

B. A stamped envelope containing two copies of the following:

- 1) Description of the invention and abstract.
- 2) List of claims, which demonstrates the Novelty and Creativity to be protected.
- 3) Abstract of the invention in the Arabic Language.
- 4) Figures or drawings of the invention if they are necessary to comprehend the invention.
- 5) List of the attachments.

To note that if the applicant is not a Lebanese or not a resident of Lebanon, the applicant has to appoint an agent or proxy residing in Lebanon.

Also, if the invention is related to a microorganism or a plant product, a sample should be delivered to the central lab of the Ministry of Public Health within fifteen days from the day of application which in turn provides the applicant with a numbered and dated evidence of receipt of such sample. The Intellectual Property Protection Authority is to be notified of such action.

The patent will be issued within 60 days from filing the patent application unless the applicant requests the delay of issuance.

Usually, 24 to 48 hours are needed for payment of the official fees, and the date of payment is considered as the date of granting.

A patent in Lebanon is valid within 20 years from the date of registration.

The annual maintenance fees are payable on the first day of the year following the application filing date; however, a six-month grace period applies.

The decision taken by the minister can be appealed before the Court of Appeal of Beirut.

The fees for the different types of IPR in Lebanon are the following:

- Copyright: 300,000 LBP
- Industrial design: 500,000 LBP for up to 100 designs. There are additional fees of 9000 LBP per design.
- Patent: 600,000 LBP as registration fees, plus annual fees that start at 100,000 LBP for the first year, and increase by 50,000 LBP every year. The payment process is set up this way because the IPR is active for 20 years, thus, this process ensures that it's being used every year. If at any time the renewal of filing payment was not processed, the IPR is canceled.
- Trademark: Individual Trademarks start at 250,000 LBP for 15 years, up to 1,000,000 LBP for 60 years. The renewal of filing is every 15 years for 250,000 LBP.

2.4.3 Rights of patent holder

The owner of a patent shall have the exclusive right to his invention. It shall include, without limitation, the following:

- Manufacture right of the product subject matter of the invention, displaying it, marketing it, utilizing it, offering it for sale, importing it and holding it.
- Exploiting the method, subject of the invention, and offering such to third parties.
- Offering the product, being a direct result of the method, subject of the invention, marketing it, utilizing it, offering it for sale, importing it and holding it.

If the subject of the patent is an industrial method -such that for example related to textile- then the protection granted shall include the products directly produced by utilizing such method.

2.5 Gaps analysis in Lebanese Patent legislations and limitations

The initial intention of an IPR is to secure the innovator and to incentivize the innovation mechanism. It is important to consider the legislative framework as a main tool that will help in

framing the initiatives, and confirming the feasibility of any supporting programs. Nevertheless, some findings show considerable gaps in the Lebanese legislative framework that discourage the promoting and willingness of entrepreneurs and innovators to register IPRs in relation to the circular economy and environment in the clothing and textile sector. These limitations are presented as follows:

- Lebanon is not a party to the Patent Law Treaty: The Patent Law Treaty (PLT) was adopted in 2000 with the aim of harmonizing and streamlining formal procedures with respect to national and regional patent applications and patents and making such procedures more user friendly. With the significant exception of filing date requirements, the PLT provides the maximum sets of requirements the office of a Contracting Party may apply.
- Lebanon is not a party in the Patent Cooperation Treaty: The Patent Cooperation Treaty (PCT) makes it possible to seek patent protection for an invention simultaneously in each of a large number of countries by filing an "international" patent application. Such an application may be filed by anyone who is a national or resident of a PCT Contracting State. It may generally be filed with the national patent office of the Contracting State of which the applicant is a national or resident or, at the applicant's option, with the International Bureau of WIPO in Geneva.
- Patent Registration System is a deposit system without further investigation in the patent product itself.
- Absence of advisory bodies in the IPR sector in Lebanon. Although the Patent law states the obligation of advocative advice in every IPR demand.
- Lebanon is not a member of the WTO but its intellectual property rights legislation is somehow compliant with trade related intellectual property rights standards.
- IPR enforcement is weak especially by internal security forces and custom.
- Despite the improvement of the IPR understanding within the Lebanese judiciary still gaps remain in awareness of the economic repercussions of IPR violations, judicial prosecution of IPR cases, and strong court decisions with punishments prohibitive enough to deter future infringements.

2.6 Stakeholders interactions with relation to IPR in the textile and clothing sector

In Lebanon, different stakeholders are interrelated within the IPR system. All of them are institutions intervening in the innovation cycle. The classification and interaction between those, was described in detail in the NEXT_FINAL REPORT LEBANON (2019). Figure 4 shows the partition of these stakeholders.



Figure 4: Stakeholders list in research management, innovation toolboxes, and innovation commercialization

In the textile and clothing sector business models, the principal source for ensuring competitive advantage is evolved around pro-consumer innovation and unique creative expressions. Given this, sectoral entrepreneurs in Lebanon need to explore and capitalize on their unnoticed intangible assets in a timely manner, further proofing their business rationale and relevance, enabling them to conduct analyses to determine which needs to be protected by leveraging on the intellectual property (IP) system. In fact, stakeholders' analysis, showed that, little use is made of relevant national and/or regional IPR law to register and protect their unique creations. One of the most important reason, is the absence of systemic interaction between different stakeholders' categories. Moreover, Innovation is not driven by any policy direction, thus interaction between stakeholders

is not following any strategic plan, nor is secured by the legislative framework. All stakeholders does not know precisely others role in the sector, to us IPR efficiently.

Based on the information found within the next reported, while cross checking with interviews conducted by the consultant, it can be highlighted that for clothing and textile industry sector, groups of interests could be classified as demonstrated in the Table 4.

Category of Stakeholder	Name	Role	Link to the textile and clothing IPR
Governmental organisations	Ministry of industry	Industrial permit/ Research and development management/standardization	Regulator
	Ministry of environment	EIA/ Environmental permitting/ Awareness/	Regulator
	Ministry of economy and trade	IPR management/ Sector management	Regulator
Research centers and Universities	American University of Beirut (Incubator program/Faculties)	Research and innovation, Startup management	Innovation Management
	Lebanese Agriculture Research Institute (LARI)	Research and innovation	Innovation Management
	Industrial research Institute (IRI)	Research and innovation	Innovation Management
	Beirut Research and Innovation Center (BRIC)	Research and innovation	Innovation Management
	National Council for Scientific Research (CNRS)	Research and innovation	Innovation Management
	Saint Joseph University (Faculties and ESMOD center)	Research and innovation, Start up management	Innovation Management
	Lebanese University	Research and innovation	Innovation Management

Category of Stakeholder	Name	Role	Link to the textile and clothing IPR
Incubators and Accelerators and programs	Berytech	Incubation, Acceleration, Fund management,	Innovation Management/ Innovation commercialization
	Fondation Diane	Incubation, Acceleration, Fund management,	Innovation commercialization
	Lebanese Industrial Research Achievements Program (LIRA) consortium	Fund Management	Innovation commercialization
Non governmental organisations	Lebanon Softshore	Activities implementation	Innovation implementer/owner
	arcenciel	Activities implementation	Innovation implementer/owner
	Fabric Aid	Activities implementation	Innovation implementer/owner
Start Ups	-	Innovation, IPR owners	Innovation implementer/owner
Industries	-	Innovation, IPR owners	Innovation implementer/owner
Designers	-	Innovation, IPR owners	Innovation implementer/owner

Table 4: Stakeholders and their interaction with textile and clothing IPR

2.7 Industries and academic transfer from research to business & technology in the clothing and textile sector: the role of the LIRA program

The innovation of a new product starts at the university level or at the enterprise level (R&D). Sometimes there are interactions between the two parties. Financial grants are given for the universities or the industry is financing itself. For both cases, the IPR will be registered at the ministry of trade.

To go to the production and commercialization, the ministry of environment and the ministry of industry becomes involved. The LIRA program is supporting innovations at this level.

Lebanese Industrial Research Achievements Program (LIRA) consortium LIRA is a national program that aims to strengthen the cooperation taking place between industries and academic and research institutions. Their primary goal is to empower, address the R&D needs of, and increase the competitiveness of the Lebanese industrial sector through innovations, and achieve a transition towards a knowledge-based economy. The LIRA consortium is a partnership between 12 universities in Lebanon and over 300 industrial establishments. The technology transfer that takes place through collaboration via the LIRA program takes place over three main steps:

- Industrial institutions approach LIRA with specific needs, and academic institutions propose ideas as potential fulfillment of current needs.
- Projects and ideas proposed by academic institutions are then matched with relevant industrial institutions and manage the technology transfer process.
- Promising projects with high calibers get co-funded by LIRA The 12 universities that officially joined the LIRA consortium to date are: Lebanese University, Lebanese American University, American University of Beirut, Beirut Arab University, Saint Joseph University, Lebanese International University, Islamic University of Lebanon, Notre Dame University, Holy Spirit University of Kaslik, University of Balamand, American University of Science and Technology, and Rafik Hariri University.
- LIRA encourages innovation processes, specifically to take the innovation to an IPR level.

It is important to highlight that the LIRA program is in close relation with other stakeholders described in table 5. Nevertheless, the textile and clothing sector is still lacking in specific policy or program-oriented schemes. Interviews showed a lack of awareness at the country level, despite all the existing needs described previously.

2.8 Utilizing IPR strategies for Lebanese Textile and clothing sector innovation under Covid-19 pandemic and financial crisis: a way for environmental innovation

Textile industries were struck hard by the Lebanese crisis, just like the rest of the industrial sector. The main cause for industrials to suffer was a severe and extended economic crisis, which was accompanied by the closure of factories and travel restrictions imposed as a result of COVID-19 spread.

In fact, the crisis caused by the global COVID-19 pandemic and its economic consequences further highlights and exacerbates the vulnerabilities along the textile value chain, therefore, the C&T industry has experienced a number of significant impacts. To begin with, disruptions in the worldwide C&T supply chain have resulted in a slew of complicated issues. When COVID-19 initially entered China, the world's largest textile and garment producer, the tight lockdown created manufacturing supply chain delays. Because the majority of fashion products are seasonal, these delays have been extremely difficult for C&T businesses. After the virus was discovered in most countries around the world by March, sellers in China, Bangladesh, and India experienced large order cancellations or postponements. Even C&T firms that have reopened operations in China or South Korea confront a slew of supply-chain issues, including labor constraints, textile raw material shortages, and a significant increase in shipping and logistics costs.

Second, the lack of consumer demand or the fear that demand will drop significantly have severely damaged regular business operations. Although many countries have reopened physical retail stores that traditionally contribute 80% of the transactions in the fashion industry, consumers are still afraid of virus-spreading crowds and try to avoid in-person contact. As everyone's focus has been on purchasing essential items to survive during the lockdown, fashion has become an afterthought. In addition, due to travel restrictions, fashion consumers are not able to make big-ticket purchases in fashion capitals, where the luxury industry has suffered the most. Third, the lack of crisis management or flexible planning makes it exceedingly difficult for many companies to secure

liquidity during this crisis. With order cancellations, delayed payment, store rental costs, and many other unpredictable expenses, companies are having a hard time staying financially afloat and find themselves without effective backup plans.

Key activities of the value chain	COVID-19 impacts
Fiber production	<ul style="list-style-type: none"> ● Delays in raw material delivery (notably from China) ● Increasing prices of raw materials ● Major disruptions in manufacturing processes
Yarn and fabric production	<ul style="list-style-type: none"> ● Major disruptions in manufacturing processes
Textile production	<ul style="list-style-type: none"> ● Payment delays and cancelled orders causing financial difficulties for manufactures ● Collapse in demand from consumers and increase in e-commerce
Consumption	<ul style="list-style-type: none"> ● Lack in social security for workers losing their job due to cancelled orders
End-of-life	<ul style="list-style-type: none"> ● Textile waste management reached its limits ● Alarming amount of fabric waste caused by increased demand in personal protective equipment ● Overproduction ● Cancelled orders and decrease in sell off.

Table 5: Impacts of COVID-19 On the textile value chain

In Lebanon's textile industry, the fabrication process starts with already manufactured fabrics, hence the majority of enterprises rely on imported raw materials. Fabric manufacturing, finishing, and fabrication are all hampered by the bad economy if there isn't enough stock on hand. Likewise, the worldwide effect, in Lebanon, the short term, the COVID-19 outbreak has prompted civilization to reconsider its relationship with nature, emphasizing the importance of shifting from the current textile industry model (characterized by overproduction and significant environmental impact) toward a more sustainable, socially inclusive, and circular model. It is important to highlight that the redefinition of sustainability contributes to the development of a conceptual model to illustrate practices and strategies in the global C&T value chain, as well as envisage the turning point in the post-COVID-19 era.



Figure 5: The conceptual model of practices and strategies implemented by the C&T industry in response to the Covid19

The epidemic redefined sustainability principles and alerted fashion consumers and businesses to challenges such as waste management, materialism, and bad business methods. These practices influenced several areas in the textile and clothing innovation sector:

In Design and Product Development:

Throughout the global C&T value chain, companies may wish to position technology at the core of sustainability initiatives and develop robust governance for sustainability. For design and product development, incorporating 3D printing, eco-friendly design, and slow fashion may enhance sustainability. Many manufacturers took advantage of the pandemic and created a variety of masks, ranging from embellished couture masks to masks with customized designs; other companies created new fabrics and garments with protective features to address consumers' health concerns. In Lebanon for instance, “Wardé”, a well-known furnishing fabrics company, took advantage of the chance to manufacture a line of medical fabric face masks using their own waste. With the pandemic crisis, many other businesses, like "Jessica K," "Bokja Design," "Emergency Room," and others, came up with the idea of manufacturing washable fabric face masks from upcycled materials.

Minimal and repurposed designs may be the next big thing. Consumers may be less likely to spend on fashion as the global unemployment rate rises, opting instead for classic designs that will last. Consumers can repurpose their existing apparel to save money and add variety by repurposing it with their own inventiveness. C&T companies may wish to consider paying attention to minimal designs and engage consumers with redesign ideas on social media or through some other online communities. Another example can be highlighted in Lebanon, where many concepts were developed from leftover textile raw materials that had run out of space in landfills. These wastes were used to manufacture and design a range of furniture that included cushions, pet cushions, beds, sound isolation products, and thermal insulation materials (example: “GoodKill”).

Textile waste was also used in the design and production of accessories and bags made from reusable textile and clothing leftovers. “Waste Studio”, an eco-friendly textile and fashion designer, specializes in creating unique bags and accessories by stressing the use of reused and recycled materials in their designs. Nevertheless, innovation is not limited to the fashion market; it is also present in the food industry. Lebanon has long struggled with a difficulty in the production of "Labneh," which has a short shelf life due to the usage of the same fabric bag to carry the product, which becomes contaminated over time.

Fabric bags made from leftover textile waste that are quickly sanitized and specialized for those items can open up new possibilities for the textile value chain, particularly in the key activity of End-of-Life. As a result, textile developments are constrained not only in their value chain, but also in the value chain of food.

In Sourcing and Manufacturing:

Risk Management in International Trades: Hospitals and other organizations had faced a shortage of PPE when this crisis appeared. Many C&T companies are eager to chase this opportunity, more than 100 textile and apparel companies used their idled production facilities to mitigate the mass PPE shortage. Some Lebanese recycling industry innovated plastic shields as PPE usage used in Covid pandemic protection. The fashion sector is experimenting with Reshoring Manufacturing and Flexible Capacity Plans. C&T firms are understanding that the value chain needs to be reformed as a result of the global trade disruption. It's critical to look into near-shoring options to increase production flexibility and autonomy.

In conclusion, despite the fact that poor waste management and the Lebanese economic crisis did not put a stop to the sector, but rather constrained it, the concept of transitioning to an environmentally and socially responsible circular model is gaining traction, and the time to adopt sustainability in a serious way has found its path. Circularity and sustainable consumption and production are becoming increasingly popular. As a result, in the face of an unstable political environment and a dollar-denominated currency, Lebanon's major escape is innovation in the textile and garment sectors through recycling and upcycling techniques. With the limiting of exports and the overcrowding of landfills, the time has come for the Lebanese people to take genuine efforts toward achieving sustainability.

The Shift in Consumption Patterns has forced fashion companies to adjust their strategies. Consumers are less interested in shopping in the physical environment and are more price conscious. Design and product development must reflect consumers' new health concerns, changing needs due to working from home, and reduced purchase intention. Accelerating Digital Strategy and Transformation throughout the Global value chain may help to support consumer shopping journeys. The majority of companies have utilized online platforms to promote their sales during

COVID-19. Buyers are invited to attend virtual showrooms and use high-resolution imagery and interactive user interfaces. Purchase orders can also be completed online at the buyers' convenience.

Although these innovations, it was shocking to find that none of this product was registered at the level of the Lebanese ministry of economy and trade. Which lead the consultant to observe in benchmark, the relationships between environmental innovation in the textile and clothing sector and the IPR system, to be able at the end of this analysis to conclude recommendations and way forward.

2.8.1 Advancing sustainability and circularity in the textile value chain: IPRs importance

Some textile companies took advantage of the situation and shifted to more sustainable and environmentally friendly solutions by upcycling and recycling textile waste into new fabrics as an alternative to secondhand materials and selling them at a low cost. Eco innovative textile firms are now seen as projects that raise environmental awareness in the community, and they are working hard to reclaim waste and the future of the region.

In fact, circularity provides a framework for transforming the present textile business paradigm into one that is more sustainable. It needs governments, businesses, and consumers to move beyond the existing extractive industrial model of "take, make, and dispose" and redefine growth to focus on positive societal benefits. The basic goal of circularity is to keep materials at their best possible value as they move and are held as long as possible throughout the textile value chain. This lowers and separates the textile industry's use of natural resources and environmental repercussions from its economic activities, while still allowing for advances in human well-being. Circularity must be inclusive in order to benefit not only the environment but also everyone's well-being. As resource efficiency gains multiply across the whole textile value chain, enterprises can improve revenues by gaining access to influential investors and creating new consumer value. Observing Lebanon country like initiatives, towards shifting the textile industry, while enabling a framework environment to incentivize IPRs strategies, can be described in the table below. Those are important key needs to be secured, if policies wanted to encourage IPR registration as an incentive for green innovation in the textile and clothing sector (Table 6).

		Actions responding to unsustainable consumption	Actions to support business model innovation	Actions to close gaps in production and technology
Key Needs	Stronger governance and policies	<ul style="list-style-type: none"> - Incentivize new business models that increase textile utilization and reduce consumption - Tax unsustainable practices and virgin materials and decrease taxes on secondary raw materials - Implement eco-design requirements and production standards to level the playing field. 	<ul style="list-style-type: none"> - Create incentives for innovative business models and the use of sustainable materials (e.g., through sustainable public procurement, subsidies); - invest into research & development. 	<ul style="list-style-type: none"> - Regulate against toxic substances and harmful labor practices, considering the whole value chain and its hotspots as well as a just transition.
	Collaboration and financing	<ul style="list-style-type: none"> - Develop innovative solutions and new business models that increase the life span of products and reduce consumption 	<ul style="list-style-type: none"> - Provide education, skills and support for scaling of circular business models and sustainable solutions - Encourage public-private partnerships and cross-government collaboration) - Leverage funding from financial institutions. 	<ul style="list-style-type: none"> - Encourage value chain collaboration; - Strengthen global knowledge sharing, making guidelines available and ensuring businesses receive the information.
	Change in consumption habits	<ul style="list-style-type: none"> - Change consumer attitudes - Improve industry communication and advertising of new business models, - Run awareness- raising campaigns - provide information to consumers through tools such as product labelling. 	<ul style="list-style-type: none"> - Build consumer acceptance for product longevity that reduces consumption, for service over ownership models - Implement discounts/refunds to incentivize sustainable purchases. 	

Table 6 : Priority actions required to create a sustainable and circular textile value chain

In order to promote sustainability and circularity in the textile industry, many designers in Lebanon have begun to focus on eco-innovation lines offering sustainable fashion to a cross-border market by lowering the industry's normally high cost to consumers, allowing creative designs to penetrate the wardrobes of social media influencers and other trend-setters. The trend currently switches to eco-innovation concepts, such as designing with organic or recycled materials, or upcycling and manufacturing new fabrics, due to the Middle East's lack of understanding of sustainable fashion and the growing problem of wasteful shopping patterns.

2.8.2 Environmental and socio-economic impact:

The environmental and socio-economic impacts of the textile sector are quantified in terms of where they occur along the value chain; understanding where the hotspots are is critical to identifying corrective actions. Studies on the environmental and socio-economic impacts of the textile sector have tended to focus on clothing and apparel. The quantitative value chain results are taken from a life cycle assessment (LCA) study of global apparel.

	<i>Fibre production</i>	<i>Yarn and fabric production</i>	<i>Textile production</i>	<i>Consumption</i>	<i>End-of-life</i>
Climate	Fossil fuels used in production of synthetic textiles (12%)		Coal based energy used in textile production (36%)	Electricity used in washing and drying (24%)	
Water scarcity	Water used in cotton cultivation (33%)			Water used in washing (18%)	
Land used	Land used in cultivating cotton led to habitat loss and impacts on biodiversity (56%)				

Ecosystem quality	Fertilizers, herbicides and pesticides used in cotton cultivation		Chemicals and water pollution in textile production	Electricity and detergent used in washing and drying	
Human health	Agrochemical used in cotton cultivation, risk of injury and exposure to toxins and hazard (62%)	Risk of injury and exposure to hazards (18%)	High use of chemicals (11%)		
Social risk	Risk of child labor, force labor and excessive working time, below minimum wage pay (34%)	Risk of child labor, force labor and excessive working time, below minimum wage pay (25%)	Risk of child labor, force labor and excessive working time, below minimum wage pay (21%)		
Governance risk	Risk of corruption and fragility in the legal system	Risk of corruption and fragility in the legal system	Risk of corruption and fragility in the legal system		
Value loss				Economic value adds highly skewed to top end of value chain	Materials and resources lost in landfill and incinerator

Table 7: Environmental, social and economic hotspots of the clothing and tissues value chain

Although intellectual property rights confirm and secure innovations all over a value chain, in the textile and clothing value chain, IPRs are observed mainly as the physical product innovation, thus product-oriented innovations. It is true that environmental innovation can be done at any level of a value chain: Reducing and changing raw material, adjusting process emissions, adopting environmental values level and best available techniques, innovating in the product design. It appears that the common understanding is an innovative product to be registered through IPR.

Because the Life cycle Assessment of Textile Products is not well developed in Lebanon, this approach is beginning to show up in University research, namely: Saint Joseph University of Beirut, American University of Beirut, Lebanese American University, Balamand University. The indiscriminate dumping of textile waste in landfills, on the other hand, confirms the serious situation in Lebanon. Nonetheless, young entrepreneurs begin to take the lifecycle of these products seriously subconsciously; Rather than discarding these materials as waste in landfills that are already overburdened and may require the establishment of new dump sites, businesses are seizing the opportunity to use them as a raw material to develop innovative ideas while reducing the impact on the environment and water resources that can be affected while purchasing new synthetic textile raw materials. Furthermore, eliminating the concept of waste by reusing these textiles reduces the need for further landfills in Lebanon. Taking the fabric bags used to carry and dry the "Labneh" product as an example, these bags require water, detergents, and electricity to wash and dry after each use.

Regardless of any cross contamination that may occur as a result of this process, the impact on ecosystem quality and human health is significant. Furthermore, due to a lack of policy and procedures adopted and their control over the industrial sector, certain industrialists' understanding of greenhouse and gas emission reduction in Lebanese industries is limited. As a result, Lebanon still lacks a specialized database for product lifecycle assessment.

To conclude, In Lebanon today, the uncertain and insatiable economic environment makes industrial innovation a necessity. In the clothing and textile sector, IPR must be considered as a factor of competitiveness.

3 Findings and milestones: Assessment of the IPR system in Lebanon

3.1 Presentation of the stakeholders interviewed in the textile and clothing sector

Several interviews were conducted in order to further assess the current situation of the IPR system, the circularity and the eco-innovation in Lebanon.

Below is the table that lists every stakeholder contacted:

Stakeholder type	Company name	Interviewee full name
Government	Ministry of economy and trade	Wissam El Amil
Incubator	Berytech	Krystal Khalil
Educational Institution	ESMOD	Nicole Massoud
Fashion Designer	CIVVIES	Aya Hoteit
Start Up	Lemonade Fashion	Arthur Bizdikian
Non-Governmental Organisation	Fabric Aid	Feyrouz Hatoum
Non-Governmental Organisation	La Boutique Social; Arcenciel	Nadim Abdo

Table 8: List of interviewed stakeholders

- **Government:**

Ministry of economy and trade. The Ministry of Economy and Trade is responsible for the administration of Lebanon economic affairs. Hence, the Ministry is dedicated to elaborate, coordinate and implement all the works in the field of trade, economy and supply. The ministry of economy and trade is officially responsible of the IPR system in Lebanon.

- **Incubator:**

Berytech is the ecosystem for entrepreneurs, providing a dynamic environment for the creation and development of startups and SMEs, fostering innovation, technology and entrepreneurship in Lebanon. Berytech is the only organization in Lebanon to provide an across-the-board ecosystem for innovative entrepreneurs to create and develop their own startups and SMEs.

With its thorough business support offerings and multi-faceted programs, Berytech aims to catalyze the growth of startups and SMEs ensuring long-term sustainability of their businesses while assuring that they have constant and updated access to all the resources they need to scale-up.

- **Educational Institution:**

ESMOD Beirut is a fashion educational institution. The number of students graduating from our school exceeds a thousand and most of them work for prestigious brands or created their own label. Their goal is to create a culture of innovation, creativity, technicity, and to adapt the training to the

evolution of the fashion field. The Lebanese Government has officially recognized its three-year intensive program (180 ECTS) as a BA.

- **Fashion Designer:**

CIVVIES, established by Aya Hoteit, is an eco-friendly Lebanese clothing label, to join the growing struggle against wasteful shopping habits in the Middle East. CIVVIES offers an experimental range of hand-printed designs made from organic and recycled materials, with an eco-conscious production strategy to match.

The mission of holistic sustainability impacts CIVVIES' entire business model. Hoteit imports organic materials from nearby Turkey rather than China, reducing the carbon footprint of freight. Hoteit's staff diligently sweeps the floor after CIVVIES' tailors have finished for the day, salvaging scraps of fabric for future use.

- **Start up company:**

Lemonade Fashion is a clothing shopping platform that contributes to a sustainable world and empower the most talented designers around the world. Lemonade Fashion sells clothing of different designers while having no inventory by aiming to generate zero waste and be cruelty-free. Once an order is made, the product is produced with an option of being made to measure as per the customer's demands. They have innovated a made-to-measure technology with 93% accuracy online in order to produce the perfect fit and contribute to a sustainable fashion world.

- **Non Governmental Organisations: Textile recycling companies in Lebanon:**

FabricAID is a four-year-old social enterprise dedicated to textile waste management, which collects, sorts, repairs, and distributes good-quality clothing to disadvantaged Lebanese people.

It was developed and started by a young Lebanese entrepreneur. Their goal is to create a socially and environmentally conscientious and sustainable value chain for the apparel industry; they achieve sustainability through their sorting plant, which is the largest in the Middle East. They've worked on a variety of positive projects and launched four brands: Souk l Khlanj, which sells donated secondhand clothes after they've been treated; Second Based, which receives a small percentage of vintage clothing donations; Fabric Base, which recycles or upcycles damaged clothes into new clothes, pillow cases, tote bags, and pillow stuffing; and Souk Okaz, which allows people to buy and sell secondhand clothes.

La Boutique Sociale is a more than nine-year-old social waste management firm founded by arcenciel with the goal of providing inexpensive apparel to all people, regardless of socioeconomic situation, and reducing waste by repurposing old clothing. La Boutique accepts donated clothing, which is either upcycled into new stylish things or cleaned and sold if in good shape (second hand clothes).

The middle and lower classes are the target audience of these brands, according to interviews and questionnaires conducted with the marketing department of these enterprises (Annex 2 &3).

3.2 Findings by key indicators

The findings are highlighted in the following paragraphs by type of key indicators assessed during the discussions.

3.2.1 IPR legal process:

- Complication of the legal process:

2 out of 3 consider the bureaucratic process and the legal requirements to register a patent complicated. The representative of the ministry of trade specified that anyone can register, however, the registration should be done in person at the ministry of economy and trade in Beirut. The person that wants to register cannot send anyone on their behalf. Therefore, an area of improvement was highlighted during the interview, which consists of having the whole process online. In order to do so, the ministry needs to implement the possibility to make an e-payment and e-signature online which needs funding and expertise.

Designer and founder of CIVVIES Designs finds that in our region, specifically in Lebanon, notices are not respected or dealt with seriously regarding copyright infringement. As for the process itself, innovating in a startup context or intra corporate context is not impossible but very much challenged by the lack of resources on many occasions.

- Effectiveness of the IPR:

4 out of 4 consider the IPR protective in Lebanon. To limit copies, the ministry of trade usually does surprise visits to the sites where copies of trademarks are sold.

The representative of the incubators highlighted that on the academic level the patent is protective. However, the rules are not clear for co-developed projects with professors. For example, there are no incentives for the development of spin-offs.

The representative of the fashion company stated that they don't think that they need patents, because they just innovated in the process while integrating different technologies together in a unique way. In technology, if a line of coding is changed, the patent no longer works which makes it expensive. He also mentions that he feels that IPR makes the information go public, and they like to keep their work private.

3.2.2 Role of innovation and IPR in economic, social and environmental development

There is no stability of the government and a lack of economic support to create more innovation. However, the inflation and the devaluation of the Lebanese currency affected the numbers of IPR registration. The ministry of economy and trade recorded an increase of IPR registrations after the political and economic crisis in Lebanon in 2019. Before 2019, international companies had more IPR registered than Lebanese companies. 7 out of 7 interviewees consider exporting as crucial for the economic development in Lebanon nowadays in order to collect foreign currency facing the devaluation of the Lebanese currency.

The representative of the incubators highlighted that innovation and IPR can have a direct contribution to economic growth, however, the level of innovation is increasing. This is due to the lack of grants to fund innovations and the lack of legal aspects to encourage innovators. There are no clear laws and processes in Lebanon or expertise to guide and support entrepreneurs. In addition, both representatives of NGOs agree that giving rights to social and environmental innovations gives them more credibility and importance, and thus encouraging more entrepreneurs to invest in these businesses. The role of the IPR would be to provide exclusive rights and encourage investment in research, which will motivate others to create and innovate.

3.2.3 Operational mechanisms for promoting innovation and IPR

All institutions need support on the financing level in order to be able to apply innovations and get the IPR. The ministry of trade specified that most designers and innovators do not register an IPR because of two main reasons, the payment fees, lack of awareness of the IPR systems.

Educational institutions related to the clothing and textile industry do not currently incorporate IPR in their educational programs and courses. Nevertheless, when asked if they would consider adding the aspects of innovation and IPR in the curriculum, they specified that it would be more than interesting and would consider it. ESMOD has a fashion design and patent module integrated. They plan to have a module called sustainability. The concept notes and the outline of the module are drafted; however, the educational institution highlighted the need for a different type of support to get this going. They need the proper expertise of a foreign professional who has taught textile and clothing innovation in an American or European area, and who could teach the creation of new products for students.

Incubators specified that the support that they can provide on the innovation and IPR level, would be the design of an acceleration program to support researchers with grants, networking, and spin-offs. While Investment Development Authority of Lebanon, IDAL, provides support to the local Lebanese market to export, they also provide startups with market information, free legal and tax/accounting advice as well as licensing support in order to help them establish and grow their company in Lebanon.

The academic and industrial industries are not working together. Their collaboration is crucial for the promotion of innovation and IPR. Also, the GAP is reflected in the lack of interaction between the ministry of trade and ministry of industry regarding the IPR.

As the table below (table 9) shows, the GAP on the operational mechanisms for promoting innovation and IPR would be on the level of new technologies, prototyping, hosting, financing, spin-out and the marketing of research results.

Design and innovation specialist Aya Hoteit agrees that more support is generally required in new technologies testing and implementation, and financing. For example, many complex material recycling projects were very challenging in the local context due to the lack of industrial facilities and links to relevant technical partners.

Operational Mechanism	Supporting Institution
Support for R&D	LIRA Program
Patenting	Few independent experts
Spin-off	Incubators
Prototyping	Fablab supports prototyping for manufacturing technologies. Thus, a supporting institution is needed for Textile sector
Financing	Incubators get the grants from the European Union and from embassies. Nevertheless, all stakeholders specified a need for financing.
Marketing of research results	No supporting institution handles the marketing.
Export	IDAL

Table 9: Operational mechanisms for promoting innovation and IPR

3.2.4 The list of projects created and/or registered

When asked about the number of registered projects for IPR regarding the textile and clothing industry, the representative of the ministry of trade specified that the data is not classified by type of industry because the system is not upgraded. The only data that is present is the total number of registered projects by type of IPR.

	2017	2018	2019	2020	2021
Industrial design	110	91	59	45	35
Patents and trademarks	234	262	241	258	269
Copyrights	240	313	230	148	154

Table 10: Registered projects by type of IPR at the ministry of trade

From the year 2017 until 2021, the industrial design registration decreased by 68% as per table 10. As for the patents and trademarks, the registration is more or less stable and even recorded its highest number in 2021. Copyrights increased by 36% from 240 to 154 in the last four years.

Nevertheless, the most numerous IPRs registrations at the ministry of trade are related to trademarks of the brands. For the ministry of trade, this shows that even there is not enough physical innovation for textile or clothing in the sector, or that the innovators do not find enough encouragement or incentives to register their IPRs.

The representative of the incubator Berytech has specified that they are supporting one program in the textile industry, and one program in the fashion sector. Mostly, the projects supported are related to innovation factory programs (from 2018). Currently there are around 10 projects, out of which, only 2 are interested in IPR.

In total, innovation factory programs created the following from 2018 until today:

- 4 Editions of the Innovation Factory (3 local, and 1 regional.)
- 85+ Researchers supported in 7 countries (Acceleration, incubation, E-softlanding, and grants.)
- 3 Matchmaking events with regional investors and partners

3.2.5 Awareness of sustainable fashion

7 out of 7 interviewees are interested in sustainable fashion.

Arthur Bizdikian mentions that sustainable fashion starts by the source of the material, and how the fabric is maintained and dyed using chemicals which produces a lot of wastewater that goes into the ecosystem. In addition, fabric wastes generated at the manufacturing level are a problem. Most fashion is mass produced which leaves 30% of inventory that is never sold and end up being incinerated or in landfills. Fashion produces more than 300 million kg of waste every year. He agrees that mass production is a problem in sustainable fashion, because the returns are increasing (50% of online orders are returned) due to the low quality or because of the fit.

Very few companies resell these items because it costs them more to return items and add them again in the inventory and resell them. Because of fast fashion, the life cycle of the product is low, because the quality is really low.

Aya Hoteit states that awareness is increasing by the day, however, just like customers initially had no idea what sustainable fashion is and made progress in that regard, going forward, they need to be more aware of their contribution and what makes any fashion line truly sustainable. For that, she agrees that marketing should have a huge role to work on advocacy and knowledge sharing.

In order to raise awareness on sustainable fashion, the educational institution ESMOD has one project every year on sustainability. It is integrated in the module where students have to design products by upcycling fabrics. In addition, they have collaborated twice NGOs and developed two initiatives:

- Collaboration with Fabrik Aids: The students had developed 300 garments by upcycling textile and clothing, then sold them all.
- Collaboration with Arcenciel: Students upcycled clothes during the years of 2017 and 2018.

Nicole Massoud, representative of ESMOD, mentioned that the old generation focuses on quality on clothing more than quantity. Buying fast fashion that has lower quality, induces buying more clothing, therefore inducing the increase in production. This is why she considers that buying good quality clothing also helps with sustainability.

Arthur Bizdikian, CEO and founder of Lemonade Fashion, states that consumers will pay extra for sustainable clothing that has the same style, comfort, and quality as regular apparel, but only if it's part of a movement. The reasonable increase of price would be around 10%.

In order to achieve this, a branding strategy should be developed: "What type of person are you while buying this piece?". The products should be branded just like Apple did. For example, while buying an apple iphone, it means that the person is more sophisticated than if they buy an android.

Krystel Khalil, representative of Berytech, agrees that sustainability starts by the raw material that should be reused and adds that the production shouldn't be impacting the environment as well. She also adds that overproduction and overconsumption are not fashion's biggest sustainability issues

because we live within a society that buys and consumes more than its needs. Thus, sustainability issues are on the levels of the whole value chain.

The representatives of NGOs have a different view on sustainable fashion. Fairouz Hatoum, representative of Fabrik Aid, specified that what best defines sustainable fashion is organic biodegradable fabrics, other than recycled clothes. Nadim Abdo, representative of La Boutique Social, highlights the 3Rs and U: Reduce, Reuse, Recycling and Upcycling.

Because of the Lebanese economic situation and the worldwide lockdown due to the COVID-19, which limited import and export activity, people are shifting their thoughts and becoming more aware about the risks on the environment of the apparel value chain, as well as the positive impact of circularity and sustainability. Fabric Aid, on the other hand, is always open to sustainability and eco-friendly fashion, which is why they recently created Replaid, a new brand that tackles high society while maintaining the principle of sustainability.

La Boutique Social stands out by focusing on both social and environmental development: “arcenciel employs people with disabilities and offers affordable clothing to all people regardless of their socio-economic status by paying whatever amount they are able,” Mrs. Feyrouz explained. In their opinions, customers will become more aware of the importance of sustainable fashion consumption. They believe that effective sustainable marketing strategies are used to emphasize the negative aspects of existing clothes production practices. They agree that incorporating sustainability into design school programs will increase awareness among the next generation of designers. Furthermore, they believe that encouraging and supporting innovation through a legal and bureaucratic procedure such as the IPR is a critical step that will encourage more entrepreneurs to invest in these types of businesses.

3.2.6 Awareness of circularity and eco-innovation

7 out of the 7 interviewees are aware of circularity and eco-innovation.

3 out of 4 interviewees consider that customers are not aware of circularity and eco-innovation.

The representative of the ministry of trade mentioned that circularity and eco-innovation represents a big part of their work. However, the need for more awareness is agreed on with all interviewees. The government can currently support by writing and providing laws.

The educational institution representative highlighted the need of a marketing strategy in order to spread awareness on sustainable fashion even though the new generation is more prone to be interested in sustainable fashion. In fact, ESMOD participated in the Beirut Art Fair, an event on sustainability. They invited two experts from Belgium and Germany to handle the part of the event. However, they had no visitors or participants that came to the sustainability themed event.

Arthur Bizdkian agrees that customers are not sufficiently aware of circularity and eco-innovation unless they work in the industry. The only way to make something work on a massive scale is to make it very convenient. For example, recycling is made convenient and cost efficient in developed countries, this is why people are sufficiently aware. We can raise awareness when we can make sustainable fashion cost friendly, stylish and most importantly accessible. In addition, people don't feel that they are part of the circular economy. "When I save money it's good for me, but bad for the circular economy", he states.

A summary is compiled of the current state of the IPR system, circularity, and eco-innovation in Lebanon after interviewing stakeholders in the textile and clothing sectors.

- The process of registering a patent is complicated and needs funding and expertise to make it more accessible online.
- In Lebanon, patent registration is not required or applicable in all cases; however, if it exists, it is effective and protective.
- There is no stability of the government and a lack of economic support to create more innovation. The inflation and the devaluation of the Lebanese currency affected the numbers of IPR registration. This is due to the lack of grants to fund innovations and the lack of legal aspects to encourage innovators.

- Most designers and innovators do not register an IPR because of two main reasons, the payment fees and lack of awareness of IPR systems. The GAP is reflected in the lack of interaction between the ministry of trade and ministry of industry regarding the IPR.
- The ministry of trade has stated that there is not enough physical innovation for textile or clothing in the sector. This shows that the innovators do not find enough encouragement or incentives to register their IPRs. The total number of registered projects for IPR decreased by 68% from 2017 to 2021.
- Most fashion is mass produced which leaves 30% of inventory that is never sold and end up being incinerated or in landfills. Lemonade Fashion CEO Arthur Bizdikian states that consumers will pay extra for sustainable clothing that has the same style, comfort and quality as regular apparel. Consumers are becoming more aware of the importance of sustainable fashion consumption. What defines sustainable fashion is organic biodegradable fabrics, other than recycled clothes. Overproduction and overconsumption are not fashion's biggest sustainability issues. The NGOs believe that incorporating sustainability into design school programs will increase awareness.
- The need for more awareness is agreed on with all interviewees. The government can currently support by writing and providing laws. We can raise awareness when we can make sustainable fashion cost friendly, stylish and most importantly accessible. ESMOD participated in the Beirut Art Fair, an event on sustainability.

A summary table regrouping the key findings per category of stakeholder is presented in table 11

Stakeholders	Key Findings					
	Complication of the legal process	Effectiveness of the IPR	The significance of exports in Lebanon's economic development	Support need on the operational mechanism for promoting innovation and IPR	Aware of sustainable fashion	Aware of circularity and eco-innovation
Ministry of Economy and Trade	Agreed	Agreed	Agreed	- Financial support -Awareness of the IPR system	YES	YES
Berytech	NO	Agreed	Agreed	Incubators would offer the design of an acceleration program to support researchers with grants, networking, and spin-offs.	YES	YES
ESMOD	-	-	Agreed	Need the proper expertise of a foreign professional who has taught textile and clothing innovation	YES	YES
CIVVIES	-	-	Agreed	Support is required in new technologies testing and implementation, and financing	YES	YES
Lemonade Fashion	-	Agreed	Agreed	-	YES	YES
Fabric AID	Agreed	Agreed	Agreed	-	YES	YES
La Boutique Sociale	-	-	Agreed	-	YES	YES

Table 11- Summary of Key findings: Suggestion of recap section to add as a summary of key findings

4 Focus group consultation meeting summary

To confirm and cross check observations found by the consultant, a focus group meeting was established and interviewed

4.1 Presentation of the experts interviewed during the focus group:

A focus group meeting was held on Tuesday November7, 2021 to present and discuss the findings of the scoping mission of observing the state of IPR in Lebanon with regards to green innovation in the clothing and textile sector. Below is the table that lists every stakeholder contacted:

Stakeholder type	Expertise	Interviewee full name
Fashion Designer	Fashion designer University Lecturer, events and activities coordinator	Mira Walieddine
Incubator	Programs Director Environmental Management Expert	Nancy Boueir
Industry	Industrialist University Lecturer	Dany Elias

4.2 Overview and background of experts:

Ms. Mira Walieddine, is a fashion designer and University Lecturer in Muscat Oman, Experienced Fashion Designer with a demonstrated history of working in the retail industry. Skilled in Technical Drawing, Pattern drafting, Fashion Illustration, Fashion Design, and Adobe Photoshop and Illustrator. Strong arts and design professional graduated from ESMOD École Supérieure des Arts et techniques de la Mode.

Mrs. Nancy Boueiri, is a Programs Manager at Fondation Diane, she holds a PhD in Environmental Management from Hautes Ecoles Sorbonne Arts et Métiers Université, and MBA in International Business Research from Montreal University. With over 15 years of experience in the industrial field, mainly in paper, cardboard and plastics manufacturing and recycling.

Expert in developing and implementing integrated quality, environmental and food safety management systems. Also, has a vast experience in project management (mainly in the circular economy) and in training and coaching “green” entrepreneurs.

Mr. Dany Elias, is an industrialist and University Lecturer. Experienced in Planning, organizing industrial plant, studying the flow of materials, managing people, enhancing productivity, reviewing business processes, measuring process performance, leading industrial deployment projects, helping startups in setting their procedures, studying technical feasibility of projects and organizing lean methodology.

4.3 Findings by key activities

Effectiveness of IPR system

According to Mr. Dany Elias, the industrialists do not fully trust the IPR system because they lack trust in the entire Lebanese government system. For him, IPR cannot provide the necessary security to protect the brand or product. He believes that because innovators and entrepreneurs are afraid of sharing their innovations and ideas, registering their product can jeopardize the innovation by making it public.

However, according to Mrs. Nancy Boueiry, there is a lack of knowledge of IPR in Lebanon. Young entrepreneurs, particularly new startups, are only concerned with the idea and what consumers require; they are unaware of the IPR system and its benefits; and even if they are aware, they believe that registering their products is not the best way to protect their products in Lebanon.

Awareness of sustainable fashion

Ms. Mira Walieddine believes that the market for eco-friendly and sustainable fashion designers is far too limited. Eco-friendly fashion is a new concept to most designers, and they are hesitant to create it because they are unfamiliar with the market, particularly in the Arab world. She also mentioned that new designers lack experience and awareness of environmental issues, they do not consider sustainability but they focus primarily on purchasing good quality raw materials rather than sustainable raw materials, even if they are out of their budget. Furthermore, they make an additional purchase without considering the extra stock that may go to waste if not used.

Nancy agrees with Mira's assessment that fresh designers are unaware of the environmental issues caused by the textile and clothing industries, owing to a lack of applied research in universities. They did, however, establish a program for green entrepreneurs through the Lebanese NGO Fondation Diane.

Dany also stated that a lack of awareness of sustainable fashion and its benefits on a social, environmental, and economic level can lead to a fear of innovation in the eco-friendly fashion sector.

Operational mechanisms for promoting innovation and IPR

Dany believes that the main issue in Lebanon is a lack of connection between stakeholders throughout the supply chain. As an industrialist, the lack of networking and coordination is insufficient to build an effective system to promote innovation and IPR in a proper manner. According to him, industries are in the middle of the process, and every innovation should go through the industrial sector.

Nancy added that Switch Med supports green entrepreneurs through the coordination and coalition of all Lebanese organizations that promote sustainability and green innovation. They can find a way to reduce time waste in an eco-design tool through this program.

Mira also mentioned that there is a limited relationship between designers and stakeholders, with the exception of fresh and young designers who are more in contact with stakeholders due to their association during their university projects.

4.4 Key Recommendations of the Focus Group

The three interviewees shared the following recommendations during the focus group meeting:

Governance and policies recommendations:

- Create policies and regulatory frameworks that alert fashion industries to environmental issues (pollution caused by the industries, type of fabrics used) and encourage sustainability in innovation.

- Improve collaboration and coordination between environmental and social requirements and the government in the fashion industry
- Work on supply chain innovation by sector, which should then be verified and validated
- Review the process to optimize cost in an efficient and lean manner.

Institutional recommendations:

- Raise awareness of intellectual property policy and its benefits in universities and research institutions.
- Encourage university-based applied research on sustainability and eco-innovation.

5 Conclusive Recommendations

Based on all the above, policy and applicable recommendations can be drafted:

5.1 Governance and policies recommendations:

Governments are critical change agents, and regulatory and legislative deficiencies are impeding the transition to a more sustainable and circular textile value chain. While textile sector players are increasingly embracing more sustainable and circular business models, and while some countries are championing supportive programs, more work is needed to build cohesive legislative frameworks that drive sustainability and circularity in the textile value chain.

- Develop policies and regulatory frameworks that allow enterprises to easily transition to new business models.
- Enhance the collaboration between Fashion Industry and Ecofriendly requirements through incentive mechanisms in order to increase the innovative textile creations and resources in Lebanon.
- Acceptance and ratification of The Patent Cooperation Treaty PCT to seek an easy process to register patents worldwide and ensure protection for Lebanese patent award holders worldwide.
- Enhancing Public sector censorship and advisory sector.
- Taking into consideration WIPO assistance and recommendations.

- Enhancing criminal sanctions for patent abusers to show a preliminary protection aspect for patent certificate holders.

5.2 Institutional recommendations

It is becoming increasingly clear that relying on existing solutions and best practices will not be adequate to establish a sustainable textile sector, and that new business models and innovative solutions will be necessary. There remain, nevertheless, technological limitations, particularly in terms of the systemic adjustments required to get beyond tiny incremental advances.

- Increasing awareness around existing IP policies in research institutions and universities
- Increase the number of patent experts in Lebanon
- Facilitating and increasing stakeholders' knowledge of services, programs, and projects taking place in universities, and publicizing researchers' success stories and increasing awareness of latest advancements in technology and commercialization
- Enabling and facilitating access to government-provided knowledge as well as periodical publications
- Improving financial support for developing Intellectual Property assets.

5.3 General and Social recommendations

Overconsumption and fast fashion are major issues among the Lebanese population's habits. Following that, there's a particular need to raise customer awareness and the knowledge of sustainability and circular economy. Along with education and awareness raising, other options to motivate consumers should be implemented:

- Launching awareness raising campaigns with emerging media
- Incentivizing sustainable purchases with choices like discounts and refunds
- Establishing a system and methods that make it easy for consumers to choose sustainable options
- Supporting entrepreneurs for sustainable development

6 Annexes

Annex 1: List and date of the individual interviews

Interviewees	Name	Date of the interview	Duration of the interview
Fabric AID	Mr. Tarek Hilal Mrs. Loulya Halawany	October 27, 2021	N/A - By email
Boutique Sociale (arcenciel)	Mrs. Feyrouz Hatoum	October 29, 2021	N/A - By email
Berytech	Krystel Khalil	October 29, 2021	47 minutes
Ministry of economy and trade	Wissam El Amil	September 16, 2021	86 minutes
ESMOD Beirut	Nicole Massoud	September 23, 2021	18 minutes
Lemonade Fashion	Arthur Bizdikian	September 29, 2021	42 minutes
CIVVIES Fashion	Aya Hoteit	October 30, 2021	N/A - By email

Annexe 2: Interview questionnaire with Boutique Sociale (arcenciel)

Questions	Answers: Boutique Sociale (arcenciel)
Type of stakeholder	Vulnerable people or beneficiaries - people who love vintage and fashion - People who donate clothes - donors
Number of years in the business	More than 9 years
What do you think about the role of innovation and IPR in economic, social and environmental development?	In my opinion, The role of IPR is that it provides exclusive rights and encourages investment in research, in addition will motivate others to create.
Are you interested in sustainable fashion? Why?	Yes, Since the fashion industry is one of the world's biggest polluters, that's why we need to encourage people about preserving nature.
Based on your understanding, what are the features that best define sustainable fashion?	Reduce - Reuse - Upcycling - Recycling
What is your niche market in terms of clientele?	for second hand clothes: vulnerable people and lebanese who are not able to buy new clothes. Upcycled clothes: People who are aware about the environment and green life, stylish people.
What distinguishes you from other designers?	arcenciel employs people with disabilities and offers affordable clothing to all people regardless of their socio-economic status by paying whatever amount they are able.
Have you ever worked on an environmentally or socially positive project?	yes, I've been working for 4 years in an employment office where we are providing job opportunities for people with disabilities
Have you ever thought about launching a new line	Yes, I am planning to have my own brand (handmade

of sustainable and eco-friendly apparel?	pieces of crochet...)
Have you ever thought about launching a new class on sustainable and eco-friendly apparel?	no
Do you think that eco innovation and sustainable fashion can be an added value to your business?	Sure since our business is a sustainable fashion activity.
Do you think the future of apparel is sustainable? Why?	Yes, especially that most of fashion brands are developing new ways to create clothing out of recycled products in an effort to reduce waste
Do you believe that customers are sufficiently aware of circularity and eco-innovation?	No due to the lack of awareness
Are you sufficiently aware of circularity and eco-innovation, and what can be done to help apply it?	yes. by designing green products, saving energy, recycling , reusing
Do you believe that consumers will pay extra for sustainable clothing that has the same style, comfort, and quality as regular apparel?	They should pay,
Do you believe that moving to eco-friendly apparel will harm your brand and reputation, resulting in the loss of certain customers? If yes, which customers and why?	no at all. Our business is an eco-friendly activity.
Where in your supply chain can you implement sustainability practices?	outlets selling second hand clothes, e platform for selling vintage, upcycling units and repairing damaged pieces.
Do you think effective sustainable marketing strategies will help customers become more aware of the importance of sustainable fashion consumption?	of course , awareness campaigns
Do you think the implementation of sustainability in	Definitely especially in fashion schools they should

design education programs will raise awareness among the new generation of designers?	
Have you considered recycling and upcycling?	Yes
What are the materials used in your industry?	second hand clothes, sewing machines to do new design and give new value to the old pieces
How concerned are you about your waste generated from your industry? What do you do with them?	No wastage in my business
As some people avoid buying new clothes and repairing their damaged ones, do you think that a sustainable approach in the fashion sector could be a threat for your business?	No
In your opinion, having a sustainability score or labelling system could encourage your clients to purchase more sustainable fashion?	yes
Vogue business considers that overproduction and overconsumption are fashion's biggest sustainability issues, do you agree with them?	100%. Since Reducing consumption and production is the only way can make good on sustainability by buying second hand
Do you think Haute Couture could be a good solution for solving the consumption problems we face today?	I don't think so since it's a high price which a lot of people can't afford.
What role do designers play? What can they influence and what role model effect do they have?	The designers play a big role . Since they use used garments and clothes to do new design, and minimise waste through good pattern design and cutting techniques

Annex 3: Interview questionnaire with Fabric AID

Questions	Answers: Fabric Aid
Type of stakeholder	FabricAID is a social enterprise
Number of years in the business	Less than 4
Do you consider the bureaucratic process and the legal requirements to register a patent complicated ? protective ?	Yes
Have you tried registering a patent? If not, why? If yes, to describe briefly their experience.	No, we are waiting for the right project.
If yes: have you registered it personally or through a lawyer?	Through a lawyer
What do you think about the role of innovation and IPR in economic, social and environmental development?	giving rights to social and environmental innovations gives them more credibility and importance and thus encouraging more entrepreneurs in investing in these businesses.
Are you interested in sustainable fashion? Why?	Apart from the environmental impact, sustainable fashion teaches us to love our clothes again
Based on your understanding, what are the features that best define sustainable fashion?	What best defines sustainable fashion is organic biodegradable fabrics, other than recycled clothes
What is your niche market in terms of clientele?	In the economic circumstances we live in, middle class and lower class people are our target clientele when it comes to Souk Lkhlanj and Souk Okaz. RePlaid on the other hand is aiming to high society personnel
What distinguishes you from other designers?	When it comes to our brand Re-Plaid what distinguishes from other designers is that we are giving clothes another chance another life while aligning with our values of sustainability

Have you ever worked on an environmentally or socially positive project?	Yes: all our brands from Souk Lkhlanj, Souk Okaz, SecondBase to Replaid are both environmental and socially positive projects
Have you ever thought about launching a new line of sustainable and eco-friendly apparel?	Yes: Replaid our new brand
Have you ever thought about launching a new class on sustainable and eco-friendly apparel?	We are always open to adding new lines
Do you think that eco innovation and sustainable fashion can be an added value to your business?	Yes of course as our main aim at FabricAID is sustainability and being eco-friendly
Do you think the future of apparel is sustainable? Why?	Yes because people are shifting their thoughts on the apparel industry as more and more are aware about the risks on the environment from the production of apparels. In addition as resources are becoming scarce, the direction towards eco-innovation is inevitable
Do you believe that customers are sufficiently aware of circularity and eco-innovation?	Yes, people are becoming aware on the positive impact of circularity and eco-innovation
Do you believe that consumers will pay extra for sustainable clothing that has the same style, comfort, and quality as regular apparel?	On the short run maybe not, unless it aligned with his values, but on the long run surely people will be more demanding for sustainable clothes
Do you believe that moving to eco-friendly apparel will harm your brand and reputation, resulting in the loss of certain customers? If yes, which customers and why?	No we believe this won't affect us
Do you think effective sustainable marketing strategies will help customers become more aware of the importance of sustainable fashion consumption?	Surely when you market the benefits of it and when you highlight the negatives of the current methods of producing apparels you can surely shift people's thinking

Do you think the implementation of sustainability in design education programs will raise awareness among the new generation of designers?	Yes, it surely will and FabricAID wants to be part of this
Have you considered recycling and upcycling?	Our whole framework is about recycling and upcycling
Do you have the resources to recycle/upcycle	FabricAID has the largest sorting facility in the Middle East, and is working on recycling clothes into other materials
How concerned are you about your waste generated from your industry? What do you do with them?	In our module we reach our sustainability from our sorting facility, and we aim on using the scrap products to produce environmental friendly materials
Have you ever thought about the harmful impact of your business on the environment and animals?	Yes but we are proud that we at FabricAID are doing our best to be fully environmental friendly
Do you think switching your approach and business model to increase sustainability and circularity in your textile value chain will cost you more?	Our current model is built on sustainability
In your opinion, having a sustainability score or labelling system could encourage your clients to purchase more sustainable fashion?	Any incentive given to customers will encourage them to buy more
Vogue business considers that overproduction and overconsumption are fashion's biggest sustainability issues, do you agree with them?	Surely, the fashion industry is one of the most polluting and material demanding industry
In your opinion, how much has the Covid 19 pandemic accelerated the shift towards sustainability in fashion?	COVID changed the world, and people's thinking shifted more on helping our planet in recent years. All these factors help in the shift towards sustainability

Supporting Documents:

IPR Berytech project-questionnaire (Boutique Sociale) Inbox x



Judy Zeineddine

Oct 29, 2021, 1:56 PM (9 days ago)

Dear Feyrouz, Thank you for taking my call. As discussed, we are a team of consultants working on an EU-funded project with Berytech to study the current landsc



Feyrouz Hatoum

Fri, Nov 5, 8:41 PM (2 days ago)

to me

Hello Judy,

First of all, my apologies for the delay in getting back to you.
Attached the questionnaire and hope I've answered to your questions.

regards,



feyrouz hatoum

Boutique Sociale
tél 961.1.495561.5 ext 1216
fax 961.1.512107
adresse rue john kennedy, jsr el bacha, sin el fil



arcenciel.org
participer au développement



Spreadsheet shared with you: "Interview Questions - V.1.2 (1).xlsx" Inbox x



Tarek Hilal (via Google Sheets) <drive-shares-dm-noreply@google.com>

Sat, Nov 6, 6:11 PM (17 hours ago)

to me

tarek@fabricaid.me shared a spreadsheet



tarek@fabricaid.me has invited you to **edit** the following spreadsheet:

Hello Judy! Sorry for the delay, my manager and I answered as many questions as we can considering a lot is at a later stage for our company.

Interview Questions - V.1.2 (1).xlsx ☆

Annexe 4: Interview responses with Berytech

Questions	Answers: Berytech
Type of stakeholder	Incubator
Number of years in the business	More than 9
Do you consider the bureaucratic process and the legal requirements to register a patent complicated ? protective ?	There are no clear laws and processes in Lebanon or expertise to guide entrepreneurs. On the academic level, IPT is protective yes, however, the rules are not clear for co-developed projects with the professor (for example for developing spin-offs).
What do you think about the role of innovation and IPR in economic, social and environmental development?	It is contributing to economic growth. However, the level of innovation is decreasing, and there are no grants to fund innovations, nor legal aspects to encourage them.
<p>What can you provide from the below in regards to helping institutions in innovation & IPR, and how?</p> <ul style="list-style-type: none"> - Support for R&D - New technologies - Prototyping - Hosting - Financing - Patenting - Spin-off - Spin-out - Marketing of research results and work - Collaborations with businesses - Creation of startups - Promote and support the initiatives of young / female entrepreneurs 	<p>On the IPR level, we design an acceleration program to support researchers to turn to start-up spin-offs. We also offer grants and networking.</p>

How is innovation and IPR contributing to the creation of start-ups?	It is limiting; there is no enabling environment or legal measure and expertises to protect. International protection is important, and there are no fundings. In addition, academics and industries should be working together on that level.
Are you interested in sustainable fashion?	Yes
Based on your understanding, what are the features that best define sustainable fashion?	Reused raw material, and the production process that doesn't impact the environment.
Have you ever worked on an environmentally or socially positive project?	Yes
Do you think the future of apparel is sustainable? Why?	Yes, nowadays, there are more and more trends, / corporate, and consumers that are interested.
Do you believe that customers are sufficiently aware of circularity and eco-innovation?	No, customers are not sufficiently aware.
Are you sufficiently aware of circularity and eco-innovation, and what can be done to help apply it?	Yes. To help apply it, we need more awareness (media/training/ market places).
Do you believe that consumers will pay extra for sustainable clothing that has the same style, comfort, and quality as regular apparel?	The more the product is eco-friendly, the more you have to pay. I am not sure people will pay more with the economic crisis in Lebanon.
Do you think effective sustainable marketing strategies will help customers become more aware of the importance of sustainable fashion consumption?	Yes
Vogue business considers that overproduction and overconsumption are fashion's biggest sustainability issues, do you agree with them?	No, we live in a "societe de consommation", where people buy more than their needs. The problem is on the whole value chain level.

In your opinion, how much has the Covid 19 pandemic accelerated the shift towards sustainability in fashion?

Luxury fashion is not relevant nowadays. Personally, my shopping experience changed. The economic crisis brought more awareness on second hand shops and affected the way distribution is being done (import and export).

Annexe 5: Interview responses with the ministry of economy and trade

Questions	Answers: Ministry of economy and trade
Type of stakeholder	Governmental institution
Number of years in the business	More than 9
Do you consider the bureaucratic process and the legal requirements to register a patent complicated ? protective ?	It is complicated and also protective. To limit the copies, the ministry does surprise visits in areas that sell copies.
In your opinion what are the major gaps in the registration process and how do you foresee this?	<p>No one can register on your behalf at the ministry, you have to be physically present. Areas for improvement include e-payment and e-signature that are not available, which is a project that should be funded by the ministry of finance.</p> <p>Also, there is not enough IPR registration because of the high fees and the lack of awareness.</p> <p>Textile and clothing industry doesn't have a lot of patents, but there are a lot of unregistered innovations.</p> <p>In addition, fast fashion does not need it because they produce a huge variety of styles.</p>
What do you think about the role of innovation and IPR in economic, social and environmental development?	<p>There is no stability in the government to give economic support to create more innovation.</p> <p>There was a turning point with the economic crisis and inflation in Lebanon: before 2019 international brands had more IPR, after 2019, lebanese had a lot more.</p> <p>Export is important for economic development.</p>
What is the number of IPR for the last few years by type of industry?	There is no data per industry because of the system that is not upgraded. The only data present is by type

	of IPR.
Do you think the future of apparel is sustainable? Why?	Yes, of course. The economic situation made the people work more in textile and in the factories. Green technology is nowadays booming, which helps this sector.
Are you sufficiently aware of circularity and eco-innovation, and what can be done to help apply it?	Yes, it's a big part of my work. The government can only support in providing laws, loans should be granted form banks as a support. Private sector is mostly supporting itself. IDAL supports local market to export.
In your opinion, how much has the Covid 19 pandemic accelerated the shift towards sustainability in fashion?	Local production increased after limiting import. Also, export at low prices made us competitive in the international market. This is why the government should help with ease of export, and investments.

Annexe 6: Interview responses with ESMOD Beirut

Questions	Answers: ESMOD Beirut
Type of stakeholder	Educational institution
Number of years in the business	More than 9
Have you tried registering a patent? If not, why? If yes, to describe briefly their experience .	We never reached the stage for IPR patenting. Some students have chosen their collection but did not register them.
<p>What are you lacking from the below in regards to innovation & IPR, and why?</p> <ul style="list-style-type: none"> - Support for R&D - New technologies - Prototyping - Hosting - Financing - Patenting - Spin-off - Spin-out - Marketing of research results and work - Collaborations with businesses 	<p>We have courses on fashion design and patent modules that are integrated.</p> <p>We plan to have a module called sustainability with credits, we wrote the concept note and the outline however, we still need the proper expertise to handle the course.</p> <p>The needed support to get this going is on the level of expertise, to get an expert that specialised in sustainability in a developed country, where sustainability is properly applied (Europe or USA), to teach and to create products with the students.</p>
Are you interested in sustainable fashion? Why?	Yes
Based on your understanding, what are the features that best define sustainable fashion?	Recycling and reusing fabric mostly, and producing good quality of products in order not to buy more and cause overproduction.
Have you ever worked on an environmentally or socially positive project?	We have worked with 2 initiatives: A collaboration with fabrik aid, where students upcycled 300

	<p>garments that students upcycles and sold them. A smaller project with Arcenciel during 2017 and 2018, which also included upcycling textile on a smaller scale.</p> <p>As of 2019, we are not having similar projects because of distance learning and online courses.</p>
Do you think that eco innovation and sustainable fashion can be an added value to your business?	Yes. This is why we work on sustainability projects and we're trying to include sustainability in the curriculum with university credits.
Do you think the future of apparel is sustainable? Why?	I am optimistic for the future and for the new generation.
Do you believe that customers are sufficiently aware of circularity and eco-innovation?	<p>2016- événement regarding sustainability Beirut Arts festival theme was sustainability Started Brought 2 experts belgium and germany About sustainable fashion</p> <p>No market - no one visited the spot at 2016 We need marketing strategy and the new generation is more interested Optimism for the future</p>
Are you sufficiently aware of circularity and eco-innovation, and what can be done to help apply it?	Yes
Do you think effective sustainable marketing strategies will help customers become more aware of the importance of sustainable fashion consumption?	Yes, marketing is the most needed nowadays.

<p>Do you think the implementation of sustainability in design education programs will raise awareness among the new generation of designers?</p>	<p>Yes, of course. This is why we have one yearly project on sustainability (before 2019 and online learning). Also, this is why we want to add a sustainability course in the curriculum in the future.</p>
<p>Vogue business considers that overproduction and overconsumption are fashion's biggest sustainability issues, do you agree with them?</p>	<p>Fast fashion is booming, and cost efficient in the short term. However, the quality is really bad, this is why we end up buying more, which increases the production. Buying high quality is more costly but induces sustainability.</p>

Annexe 7: Interview responses with Lemonade Fashion

Questions	Answers: Lemonade Fashion
Type of stakeholder	Fashion company, Designers
Number of years in the business	1 to 4
Have you tried registering a patent? If not, why?	No. It's very expensive. In technology, if you change one line of coding, the patent no longer works. It's better to keep things a secret.
<p>Do you apply innovation and/or IPR systems in any of the below? If yes, how and what is the result?</p> <p>a- Training and learning</p> <p>b- Research and development</p> <p>c- Organizational framework for innovation</p> <p>d- Support system</p> <p>e- Innovation promotion</p>	No, we don't need patents, we just innovated in the process, integrated different technologies together in a unique way: New way of doing fashion and we use technology to be able to do that. What's unique is that we work with independent designers and turn them into global successful designers.
<p>What are you lacking from the below in regards to innovation & IPR, and why? (Choose the options from the list below)</p> <ul style="list-style-type: none"> - Support for R&D - New technologies - Prototyping - Hosting - Financing - Patenting - Spin-off - Spin-out - Marketing of research results and work - Collaborations with businesses 	Financing.
Are you interested in sustainable fashion?	Yes

Fashion is an entire ecosystem. We need to take different types of approaches. We start by the source of the material, what is the fabric, how the fabric is maintained because they have to be dyed (chemical usage), which produces a lot of wastewater that goes into the ecosystem. In addition, creating fabrics has environmental hazards. Two, the problem is ethical at the manufacturing level with child labor and sweat shops. Three, animal abuse is to be considered, because a lot of fashion is made out of animal products even if they're endangered animals. Four, most of the fashion is mass produced (30% of inventory is never sold which ends up being incinerated or in landfills). Fashion produces more than 300 million kg of waste every year. In mass production, also the returns (50% of online orders are returned). The reasons for returning are the quality or the fit. Very few companies resell these items because it costs them more to take that item and add it again in the inventory and sell it on sale (sometimes it's cheaper to throw it). Inventory costs 200 billion dollars a year for fashion that is not sold.

Because of fast fashion, the life cycle of the product is low, because the quality is really low. These items are not meant to be worn repeatedly; they're just stylish and have nothing to do with quality. Their goal is to keep on buying and upgrading your style and end up buying more.

Based on your understanding, what are the features that best define sustainable fashion?

In addition, for young designers, it needs a lot of money to be able to produce and sell to be able to

	<p>compete with big brands that have been around for years and have a lot of capital. It's hard to create an independent brand and succeed; they need an entire infrastructure of a company to support them.</p>
<p>What is your niche market in terms of clientele?</p>	<p>Our niche is on the side of the designer. We are creating a fashion booklet. Our approach would be to target a mass market. We're targeting a population of people that want fashion to be sustainable and that embodies the values that they have.</p>
<p>Do you think the future of apparel is sustainable? Why?</p>	<p>Yes, the new generation is more woke and holds brands accountable. We live in an age of transparency because of the digital world. It doesn't make sense for fashion to be the second most polluting industry in the world.</p>
<p>Are you sufficiently aware of circularity and eco-innovation?</p>	<p>Yes</p>
<p>Do you believe that customers are sufficiently aware of circularity and eco-innovation?</p>	<p>No, they're not sufficiently aware unless they're in the industry. The only way to make something work on a massive scale is to make it very convenient, for example, recycling is made convenient in other countries and cost efficient. When we can make sustainable fashion cost friendly and styling and accessible.</p> <p>People don't feel that the circular economy is part of it. When I save money it's good for me, but bad for the circular economy.</p> <p>The short term application of sustainable fashion is more costly than in the long term.</p>

<p>Do you believe that consumers will pay extra for sustainable clothing that has the same style, comfort, and quality as regular apparel?</p>	<p>Yes if it's part of a movement and they would spend an extra of around 10%. For them to do so, they need to learn the entire story. You need to ask yourself what type of person you are while buying this piece, and think that I'm a woke person that cares about others and I refuse to pollute. You need to brand this and have a role model as a person that you believe that you resonate with. This is why branding is really important. This is what apple did, while buying an apple it means you're more sophisticated than if you buy an android.</p>
<p>Have you considered recycling and upcycling?</p>	<p>We have thought of it, it's part of our future plans. We will assign an expert to handle this part for us.</p>
<p>Do you have the resources to recycle/upcycle</p>	<p>Not yet.</p>
<p>Vogue business considers that overproduction and overconsumption are fashion's biggest sustainability issues, do you agree with them?</p>	<p>Yes, as stated before.</p>
<p>In your opinion, how much has the Covid 19 pandemic accelerated the shift towards sustainability in fashion?</p>	<p>With the economic crisis that generated, our biggest problem became the talent drain. Companies follow talents, now companies look for it elsewhere. Fashion is a very talent focused industry (production, design, marketing) and the best people are leaving. Lebanon is already a small country. The advantage was that it's small but talent focused. With the loss of talent we're losing.</p>

Annexe 8: Interview questionnaire with CIVVIES

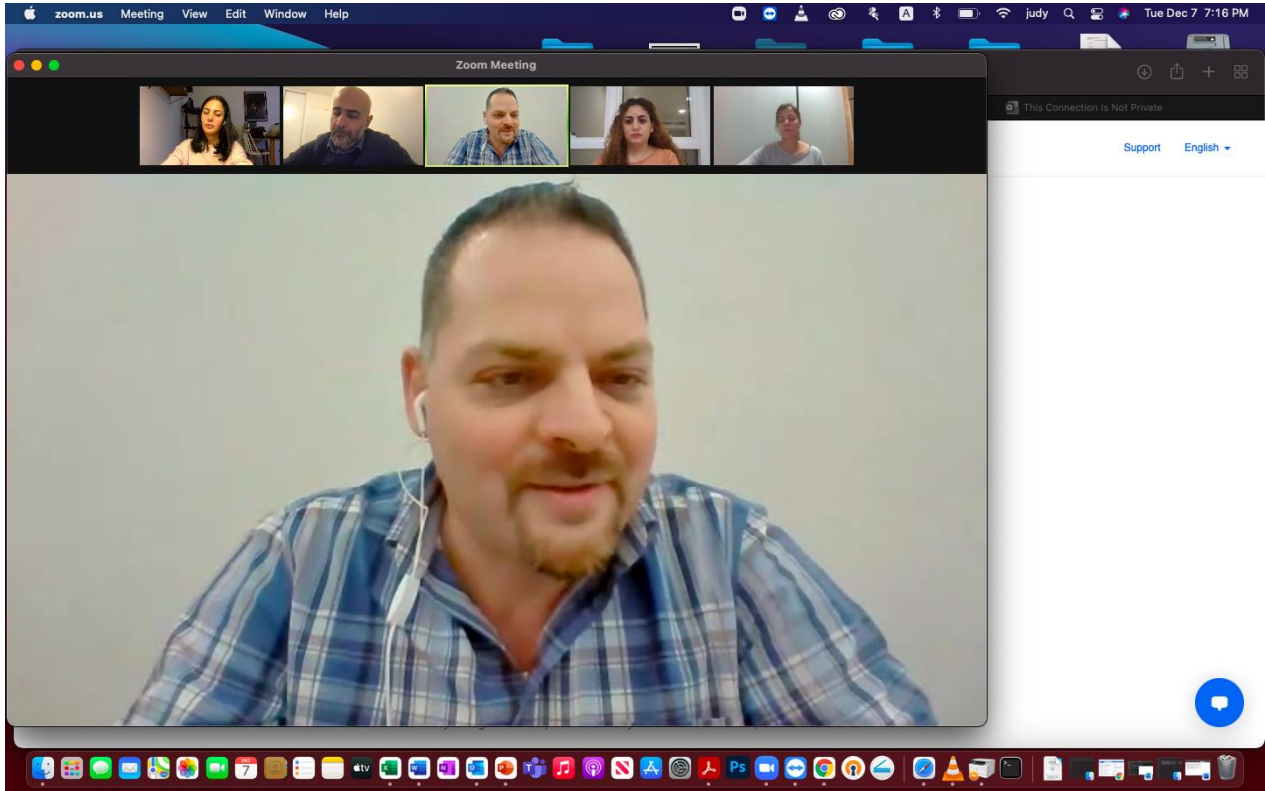
<p>Questions</p>	<p>Answers: CIVVIES</p>
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Type of stakeholder	Fashion company, Designers
Number of years in the business	1 to 4
Have you tried registering a patent? If not, why? If yes, to describe briefly their experience.	No
Do you apply innovation and/or IPR systems in any of the below? If yes, how and what is the result? a- Training and learning b- Research and development c- Organizational framework for innovation d- Support system e- Innovation promotion	Yes, I have experience in a, b, and c. The systems were internal or communicated with clients based on waivers and disclaimers. I find that in our region, specifically country, those notices are not respected or dealt with seriously regarding copyright infringement. As for the process itself, innovating in a startup context or intra corporate context is not impossible but very much challenged by the lack of resources on many occasions.
What are you lacking from the below in regards to innovation & IPR, and why? (Choose the options from the list below) - Support for R&D - New technologies - Prototyping - Hosting - Financing - Patenting - Spin-off - Spin-out - Marketing of research results and work - Collaborations with businesses	More support is generally required in new technologies testing and implementation, and financing.
Are you interested in sustainable fashion?	Yes

<p>Based on your understanding, what are the features that best define sustainable fashion?</p>	<p>I came to realize, from experience, that sustainable fashion is defined by its design process, long term vision, materials and sourcing, waste management, finishing sustainability, garments functionality and usability, production ethicality, and impact communication.</p>
<p>Have you ever worked on an environmentally or socially positive project?</p>	<p>Yes</p>
<p>Do you think the future of apparel is sustainable? Why?</p>	<p>It is a long journey, customers and producers need a long time and a dramatic shift to adapt for the benefit of our environment. I see the future to hold more sustainable fashion but it's a long way to go.</p>
<p>Are you sufficiently aware of circularity and eco-innovation?</p>	<p>Yes</p>
<p>Do you believe that customers are sufficiently aware of circularity and eco-innovation?</p>	<p>Awareness is luckily increasing by the day, but just like customers initially had no idea what sustainable fashion is and made progress in that regard, globally, going forward, they need to be more aware of their contribution and what makes any fashion line truly sustainable or not. For that, tons of work on advocacy and knowledge sharing is required by multiple and major players in the ecosystem.</p>
<p>Do you believe that consumers will pay extra for sustainable clothing that has the same style, comfort, and quality as regular apparel?</p>	<p>Essentially, fashion is not supposed to be cheap, it has a production process that requires multiple inputs. Fast fashion changed that to maximize profit and resulted in a huge change in the relevant consumer behavior. Accordingly, to consume more sustainably,</p>

	<p>purchasers will have to pay more but only what is fair for sustainable items. However, in the long run, tons of responsible optimizations can lead to a more reasonable pricing of sustainable fashion items.</p>
<p>Have you considered recycling and upcycling?</p>	<p>Yes, I have worked and advised on projects and startups that involved recycling and upcycling.</p>
<p>Do you have the resources to recycle/upcycle?</p>	<p>Yes, it is case dependent though. For example, many complex material recycling projects were very challenging in the local context due to the lack of industrial facilities and links to relevant technical partners.</p>
<p>How concerned are you about your waste generated from your industry? What do you do with them?</p>	<p>In my personal projects, I am not concerned at all as I keep and reuse all of the fabric waste for other products while reducing the consumption and waste of any material used in the process. It is an exhaustive process but it's what keeps brands truly sustainable.</p>
<p>Vogue business considers that overproduction and overconsumption are fashion's biggest sustainability issues, do you agree with them?</p>	<p>Yes, indeed. The fashion industry needs to be more smart and data-driven about their production and sales processes to reduce their environmental harm. However, the real issue is their endless endeavor of maximizing their profits and maintaining their images.</p>

Annex 8:



7 References

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