



Negative Impacts of Fast Fashion from around the world to Turkey.

*Design a new model for
territorial valorisation and increased
awareness.*

SEMIH KIRGECLER

Negative Impacts of Fast Fashion from around the world to Turkey.

*Design a new model for
territorial valorisation and increased
awareness.*

Supervisor

Silvia Barbero

Co-Supervisor

Chiara Battistoni

Candidate

Semih Kirgecler

Master's Degree in Systemic Design

Politecnico di Torino

2018-2019 Academic Year



**POLITECNICO
DI TORINO**

Dipartimento di
Architettura e Design

I would like to thank everyone who contributed to the realization of the project, especially to Professor Silvia Barbero and Chiara Battistoni, who supported me from the beginning to the final stage of this project; to creative designer Emre Bayhan who never refused his support during the design and research phase; to Bezsan Textile company for the sponsorship of their GOTS certified organic fabrics that I wanted to buy; to Ufuk Sarkın, owner of U&S Haute Couture, for his sponsorship for sewing; to Elif Çepniler, one of the owners of Odd Thing & Co, who supported me for branding design; to Özgür Mandal, who supported me for the brand name and slogans; to photographer Alessandro Crivellaro, who was the sponsor of the collection's photo shoot; to İnci Karaman, the director of the Lütfe+ 1 environmental TV program; and to the announcer, actress, model Şebnem Schaefer, who provided the visibility of this project on the several news and TV programs.

To everyone who has supported me.



It is a living project formed as a result of the necessity of research that emerged at the point where the personal interests intersect with environmental problems. This continuous small project aims to raise awareness and inspire the people in the region and to create greater impact than itself. Yes, even small actions can have great effects, just as the drop of water falling into the lake creates infinite ripples that grow around itself...

CONTENTS

Introduction	11
FIRST PART – Today's Fashion	16
1. Fashion	17
2. Fast Fashion	19
2.1 When, how and where was it born?	19
2.2 How does it work?	20
2.3 What are the brands involved?	20
3. Fast Fashion's Negative Impact Areas	22
3.1 Social Impacts	22
3.1.1 Global Estimates on Child Labor and Forced Labor by ILO	25
3.1.2 Child Labor Statistics	26
3.1.3 Regional Prevalence of Child Labor	28
3.1.4 Forced Labor Statistics	29
3.1.5 Regional Prevalence of Forced Labor	31
3.1.6 Goods Produced by Child Labor or Forced Labor	33
3.1.7 Fashion Goods Produced by Child Labor or Forced Labor	35
3.1.8 Wages of Garment Sector by Countries	37
3.2 Economic Impacts	39
3.2.1 Top Ten Exporters of Textile & Apparel	44
3.2.2 Global Cotton Production	46
3.2.3 Organic Cotton Production	48
3.3 Environmental Impacts	50
3.3.1 Today's Linear System	52
3.3.2 Chemicals in Fashion Industry	54
4. Fashion and Sustainability	57
4.1 Sustainability	57
4.2 The Relationship Between Fashion and Sustainability	61
4.3 Suggestions for Sustainability in Fashion and Textile Sector	62
4.4 Case Studies	63
5. Slow Fashion	66
5.1 Values of Slow Fashion	67
5.2 How to Adopt Slow Fashion	69
5.3 Certifications	69

SECOND PART - Turkey as a case study	74
6. Holistic Diagnosis of Turkey	75
6.1 Demographics of the Country	75
6.1.1 Population	75
6.1.2 Ethnic Groups in Turkey	77
6.1.3 Fertility Rate	78
6.1.4 Proportion of Children in Total Population	78
6.1.5 Income and Living Conditions Rate	78
6.2 Labor Force Statistics	79
6.2.1 Employment by Economic Activities	79
6.2.2 Turkey's Export Figures by Sector	81
7. Textile Sector in Turkey	83
7.1 Turkey's Textile Export in 2018	83
7.2 Exports of Clothing and Apparel by Basic Product Groups	87
7.3 Exports of Textile and Raw Materials by Basic Product Groups	88
7.4 Regional Clustering Map of Fashion Sectors	91
7.5 Cotton Production in Turkey	92
7.6 Some Negative Situations in Turkey	93
	96
THIRD PART – Knowear Project	98
8. Knowear	98
8.1 Target	99
8.2 Logo History	101
8.3 Branding Design	102
8.4 Knowear Collection	103
8.4.1 Technical Drawings	104
8.4.2 Collection Preview	105
8.4.3 Features and Photos of the Collection	108
8.5 Knowear Platform	114
8.6 Knowear on Social Media, News and TV	115
Conclusion	118
References	

Introduction

In order to survive, people have to make production and consumption throughout their lives. But in this age, increasing living standards, population growth and globalization have caused many problems. Recently people have been consuming to fulfill their desires rather than their needs.

Because of globalization, people are now producing and consuming faster, and therefore working more than necessary. This consumption craze, of course, threatens the future of the world. While the existing natural resources are consumed rapidly, the environment is left with irreversible pollution. These problems have negative effects on the lives of all species, including humans. In order to leave a livable world for future generations of all living species, urgent measures should be taken by governments, public institutions, civil organizations and companies. But the real success will be achieved by raising awareness of individuals.

In this research, fashion, which is one of the most polluting and human rights violating sectors in the world, is examined. The main reason for choosing this topic was the notice of the negative impacts of the personal interest on the environment. Yes, after a small amount of research, I learned that fashion is the second most polluting sector in the world after oil. I further deepened my research with the sense of remorse that arose when I discovered the negative impacts of this sector that I am very interested in.

In fact, in the later stages of the research, I realized that it is not the only problem that it pollutes the environment; deeper, when I learned about the violations of society, human rights, suffering for animals, and exploitation of natural resources, I realized that I had to do something urgently.

Everything had to be learned from the beginning again. This was the basis of the methodology of this research. "What is fashion?" The first part started with the answer to this question.

Then, fast fashion was defined, the reason for the emergence of this sector, its development, its current situation; negative impacts on economic, social and environmental issues were examined at global level. Under the title of social impacts, all sectors involving forced labor and child labor were examined and it was seen that the textile sector was extremely exploitative in this regard.

The economic and environmental impacts of this globalizing sector, where design is done in one country and production in another, were also mentioned. For example, garments of international brands are now produced by low-paid Bangladeshi workers. As a result of cheap production, clothes sold cheaply are now bought out of need and disposed of in a short time. The second-hand clothes of the western countries are sent to Africa under the name of donations, but this affects the local production and market there negatively.

Based on the informations obtained from the reports of official institutions and organizations, when the countries producing the most textile products and raw materials in the world are examined, it is seen that these social, economic and environmental problems are more experienced there.

It has now reached the point of carrying out mandatory sustainable activities in all areas of life. Many philosophical movements or approaches have emerged to solve the problems that threaten the future of the world and humanity. The concept of sustainability can be regarded as the most important and the basis of these movements.

In order to prevent many environmental problems, the concept of sustainability has emerged in textile and apparel sectors as in all other sectors.

To answer the question of what to do against these problems, the concept of sustainability and its development process were explained. Then the relationship between fashion and sustainability is mentioned. Some brands and campaigns were given as case studies. Then, the Slow fashion approach, which is a sustainable trend in the sector, was defined and compared with Fast Fashion. Then, some international certificates on environmental and social issues are given as examples.

Turkey is one of country that experiences all of these negative impacts, which has become the production center of International, particularly European clothing brands. This country was examined as a case study in the second part of this research.

Under this title, the demographic structure of the country; population, birth rates, living conditions, unemployment rates, child labor, labor and export figures by sectors were examined in detail. As a result, the importance of textile for the country was shown in figures. Turkey is one of the leading countries in the production of raw materials, clothing and textiles, although it is, mostly doing contract labor for fashion brands of other countries.

Consequently, territorial valorisations of the country were made and a new model project has been designed to raise awareness about sustainable fashion in third part.

Knowear, derived from the words know and wear, platform was designed in which the negative impacts of fashion were explained in an easy to understand language to create awareness. It is aimed to encourage the people of the region to sustainable fashion with its “not like that you wear” slogan.

For the first part of project, as a solution, adhering to the principles of slow fashion, minimal, oversize, timeless, genderless, organic certified cotton clothes were designed with a local and transparent production chain. The clothes in this collection have a longer life cycle thanks to their special features. Because of being genderless, clothing sharing will increase, they will not be out of fashion because they are timeless, they will not be thrown away even when more weight is gained because they are oversize, they can be transformed in another product after their clothing life because they are minimal.

The aim of this collection is to increase the importance given to local designers, manufacturers and brands and to raise awareness about environment and human rights through a sustainable and transparent production chain, and to set an example for other entrepreneurs and brands in the region.

In addition, as a systemic approach on this platform, all local designers, manufacturers, vendors, second hand stores and recycling companies were marked on the map. The aim was to ensure the development of the product from the raw material to the final product in the local supply chain, to strengthen relations between them and to reduce environmental and social impacts. It was also aimed to ensure that consumers could easily reach the local supply chain.

With this platform, where slow fashion related activities, news and blog posts will be held, is aimed to make numerous events on sustainable fashion, to reach public by cooperating with well known fashion designers and to set an example for other local brands, to reduce environmental damage and human rights violations of this sector by emphasizing the importance of local designers and their transparent and local production chains.





FIRST PART

TODAY'S FASHION

1. Fashion

Fashion can express the styles of clothing that appear in some time periods in a society; but it can also cover many subjects such as general behavior, art, architecture, literature and food. A social appreciation that has been active for a while is generally defined as “fashion”. Fashion isn’t just about clothing. Makeup also has a fashion, even the bags...All kinds of activities such as music, literature, cinema, theater, art, and shopping are also fashionable or come to life from fashion. Certain clothing styles have been called “fashion” in history.

Famous Turkish writer and poet Ahmet Hamdi Tanpınar said, *“It is understood that many things we think of fashion come from life itself.”* (1)

According to the Turkish Language Association: *“Fashion is a temporary behavior, clothing and way of life that spread through emulation, is shorter than tradition.”* (2)

Fashion, which is used as a clothing style in the minds, is known as trends reflecting the clothing styles of the high society and the bourgeoisie.

The main purpose of fashion is not that clothes or accessories are necessary, but that they are different. Fashion is a distinctive and continuous trend in clothing and other products that people use in every day life.

Although fashion trends are feminine or masculine, some trends appeal to both men and women; that is, androgenic. Clothing protects people from the weather, it is the camouflage of their bodies. It makes people differentiate from others, they are veils that express emotions. It is a reflection of characteristic and aesthetic features. This is generally referred to as fashion.

Although the textile world is the first thing that many of us think of, fashion is actually a trend that expresses and influences more than clothing. It refers to transient innovations that meet the need for change, increasing in popularity over a period of time.

Although this need for change is shown to be just a need in the world of clothing, people have long been fashionable not only for their clothes, but also for their homes, cars, belongings, and even the places they go.

In the course of time, fashion has shifted away from the need for innovation and has become a sector based on commercial expectations.

The need for change, which we call fashion, is based on BC, although it has gained momentum in recent years. Under the name of tradition, many nations have their own sense of fashion. It is possible to talk about the effects of fashion in many fields such as art, architecture, music, painting and so on. In addition, the economic situation, morality, religion, customs and traditions, age, gender, environment, and so on, affect the scope and content of fashion.

The concept of fashion, which has expanded its influence in many societies over the years, has gone through an inevitable rise as people set an example for each other.

People's enthusiasm for change made fashion effective in many areas. It has led to drastic changes in fields such as music, art, architecture and textiles. Fashion, which has become a sector in the 20th century, is mostly seen in the field of clothing. As the clothing sector meets a constant need, it has become the leader of fashion to meet people's expectation of innovation. With the changing understanding of clothing every year, commercial and economic sense has reached saturation.

Cities such as Milan, New York, London and Paris, which have become the number one in the clothing industry in the world, have become known as the heart of fashion and they have become the shopping cities that many women and men who have the opportunity to visit in order to follow the fashion and shopping only.

In addition, celebrities are known as fashion icons and are followed by many people for everything they do and wear. This is the most important proof of how much fashion affects people.

2. Fast Fashion

Recently, and always more often, the term "fast fashion" has been used to describe the production models adopted by those clothing companies that quickly produce and sell inexpensive and fashionable garments, continually proposing new ones: among the most famous brands, there are Zara, H&M and Primark.

The term means the fast production of cheap clothes inspired by what parades on the catwalks of the great fashion houses, and which dictate new trends, not season after season, but almost week after week.

Fast fashion is born to satisfy consumers' desire to buy a garment that is apparently similar to a high fashion item, but at a price range that is really accessible to everyone. This trend allowed everyone to build an even bigger wardrobe with clothes purchased after the current trend.

"How can it cost so little?" How many times have we asked ourselves when losing aimlessly between the glittering mega stores that populate our cities? What's the big trick of the fast fashion? Simple, these garments cost so little that we can buy and throw them or forget them on the back of the wardrobe without too many regrets. The strategy that plays a key role in this mechanism is to make fashions last a short time in order to continually create new trends, and push people to buy impulsively. This model is destroying not only the planet, but also wardrobes.

2.1 When, How and Where was it born?

The New York Times used the term "fast fashion" for the first time in late 1989, when Zara opened the doors of her store in New York: the article described a new model of doing business, where 15 days were enough because for a garment to pass from the creative mind of a designer to the actual sale in the store.

"Fast fashion" is considered a process of democratization of fashion, an economic phenomenon that has allowed everyone to dress well following the latest trends. However, the production rates of these companies are sustainable only by producing in countries where labor costs are low and, consequently, where it is easy for workers to be exploited and underpaid.

2.2 How Does it work?

"Making catwalk fashion accessible to all" is the motto. This system, in fact, proposes to sell to the consumer the latest trends coming from the sparkling world of fashion at easily accessible prices, where the focus is to respond to the needs and requests of the public in the shortest possible time: it quickly produces a series of products that satisfy consumers' tastes.

The Quick Response system, for example, is widely used by Zara, the fashion retailer considered among the most efficient and valid in this high-speed circuit, which delivers new clothing to its own stores at least once every two weeks. Everything starts from the base, where the focus is on reducing the time between the design and production of a garment: designers and creative minds within the company constantly search for new trends and create new garments, which they are promptly sent to the production department that takes care of making them as quickly as possible, and then deliver them to the store later.

2.3 What are the brands involved?

This model has its roots already in the second half of the 1900s, although it is a very recent phenomenon and everyone knows the meaning now.

H&M has existed since 1947. The company was founded that year when Erling Persson opened his first shop in Västerås, Sweden. The store called Hennes (Swedish for "hers") only sold women's clothing which proposed cheap and fashionable clothes. In 1964 a store was opened in Norway. "M" has been added to name in 1968 when Persson acquired Mauritz Widforss, the hunter's clothing retailer; this led to the inclusion of the men's clothing collection in the assortment and changed the name to Hennes & Mauritz.

Zara, on the other hand, was founded in 1975 in Spain where it sold cheap copies of famous brands of clothing and from the 1980s onwards applied the "instant fashion" production model, with a team of designers who designed entire collections very quickly.

The British Topshop and the Irish Primark were both opened in the 1960s. Topshop in 1964, as part of some shopping centers, while Primark was founded in Dublin in 1969. Mango, Forever 21, River Island, Uniqlo and Berskha are just some of the most famous and well-known chains that have and continue to open new stores in Europe and around the world, supporting the phenomenon of fast fashion and high turnover.

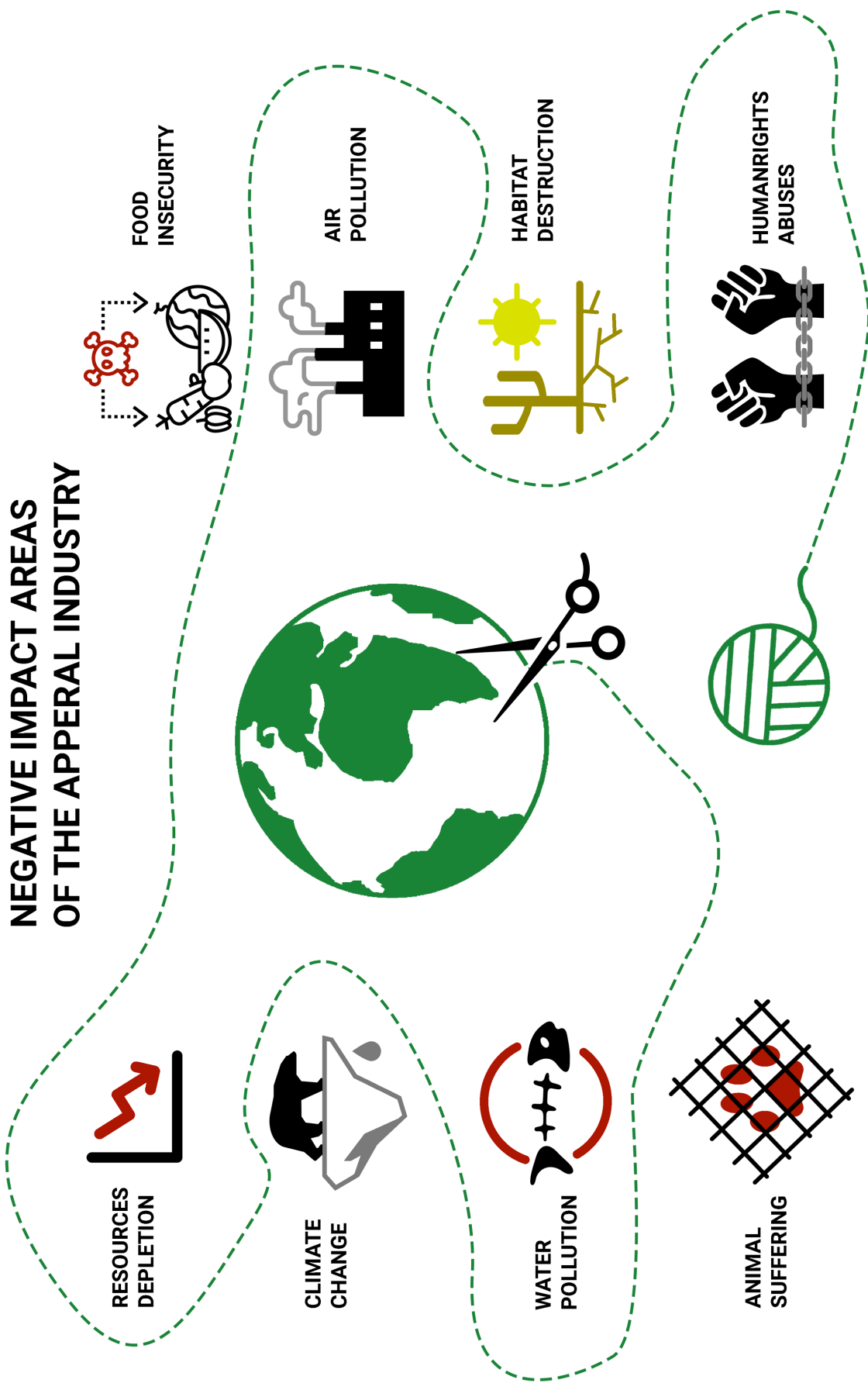


Figure 1

3. Fast Fashion's Negative Impact Areas

The rapid consumption of fashion leads to the rapid and excessive consumption of raw material, energy, water and manpower resources and to environmental pollution of industrial and post-use wastes. Negative effects can be reduced to a few headings: the pesticide used by farmers in agriculture harms the natural life, contamination of pesticides with other products and the harm to human health by passing on the structure of eaten foods, damaging human health by the chemicals used in bleaching and dyeing process, waste of old garments occupying space in garbage dumps, textile machinery causing noise and air pollution, damage to ecological balance by excessive use of natural resources such as plants, water, in the fabric and garment producing industries working conditions and wages are substandard, degradation of ecological balance by intensive agricultural activities and exploitation of animals for their fibers.

3.1 Social Impacts

Even though the rate of clothing consumption and variety of clothes are normal for today's people, trends in fashion consumption and production have undergone a major change in the last 20-30 years. As production began to shift to Asian countries in the 1980s, the fall in clothing prices accelerated, and today the fashion industry has become one of the largest sectors in the world.

It is not considered how clothes go through the process until they come to the colorful shop windows, but when this process is viewed backwards, the image is not as good as the products in the shop windows. Since the 1990s, there have been many protests against the exploitation model of fashion brands in Asia, especially in China. As a result of these protests, these criticisms were mitigated by the fact that brands developed control mechanisms and promised more transparency in their production chain.

As conditions in China improved slightly and wages rose, production centers began to shift to countries with cheaper production and worse conditions such as Bangladesh, India and Vietnam. Although China still leads the clothing export, Bangladesh and Vietnam follow it in exports.



Photo 1 – BBC - Rana Plaza Collapse 2013 - Bangladesh.

In 2013, as the result of the collapse of Rana Plaza, which produced apparels for international brands in Bangladesh, 1138 textile workers lost their lives, all eyes were turned into the fashion sector again. Although there have been significant improvements in production and working conditions in the last 15 years, the demolition of Rana Plaza, the fourth largest industrial accident in history, has shown how insufficient these developments have been.

Today almost none of the brands make their own production. Before the clothes become the final product, they go through many different manufacturers. The processes such as production of cotton, yarn and fabric, and then dyeing and sewing take place in many different plants.

It is much cheaper to use labor intensive production in subcontractors in countries such as Asia. Brands focus only on design, marketing and sales. However, under pressure that the brand should be responsible for the conditions in the entire supply chain, brands now control their suppliers and expect their suppliers to adopt and implement certain principles.

Some of the major fashion brands have an environmental and social compliance check mechanism. With this, from child labor to occupational health and safety, from hygienic working conditions to chemicals and treatment plants, the compliance of production sites with certain standards are monitored. However, there are still many brands that do not perform these audits. The effectiveness of these audits is also another topic of discussion.



Photo 2 – UGF - A girl in a cotton field – Uzbekistan.

The most commonly used raw materials in the textile sector are cotton and polyester. Cotton is a plant that requires more watering and uses more pesticides and chemicals in its production. Before mentioning the environmental impact of cotton, it should be noted that it poses a serious danger to the health of workers. Today, still many child laborers work in cotton farming.

Approximately 8000 kinds of chemicals and dyes used in subsequent processes such as yarn production, weaving, knitting, fabric production and dyeing also pose a danger to both worker and consumer health.



Photo 3 - Jodi Hilton - A Sirian boy in a textile atelier 2016 - Turkey.

In the following process, textile and clothing production mainly consists of cutting and sewing applications. Child labor, long working hours, harassment and violence are among the problems encountered in these production facilities. The salaries of the workers are below the “living wage”. Because of this workers have to work with long hours, endure bad conditions and cannot get out of poverty.

A textile worker in Bangladesh earns 197 dollars per month. This wage is one-fourth of the wage required to meet the basic needs of a worker. There are 215 million child workers worldwide, most of them in the clothing supply chain. The situation will be better understood when the ILO statistics on Child labor and forced labor are examined.

3.1.1 Global Estimates on Child Labor by International Labor Organization (ILO)¹

Based on the Sustainable Development Goals, the global community pledged to end child labor by 2025 and to force labor and human trafficking by 2030. According to recent estimates, 152 million children are still in child labor and

25 million adults and children are being forced to work, including global supply chains. In order to achieve these goals, governments, trade and finance sectors and civil society should come together and identify the root causes of these human rights violations and take steps to resolve them. The ILO periodically publishes this report to inform public and business policies and to prevent child labor, forced labor and trafficking in global supply chains, and to develop practices to protect these victims.



Photo 4 - Lisa Kristine - A man works at a brick factory in Kathmandu - Nepal.



Photo 5 - Jan Sochor - A boy works at a brick factory in Istahua El Salvador.

¹ The International Labor Organization (ILO) is an organization established with the aim of developing and improving standards in labor laws and practices in this field. Headquartered in Geneva, Switzerland.

3.1.2 Child Labor Statistics (3)

Child labor refers to children under the age of a law or tradition. This practice is considered humanitarian exploitation by many countries and international structures. Child labor is integrated with unregistered employment in sectors where production takes place intensively, especially in subcontracted production where there is pay per piece. The use of child labor instead of someone who is mature to work is a method of minimizing labor costs.

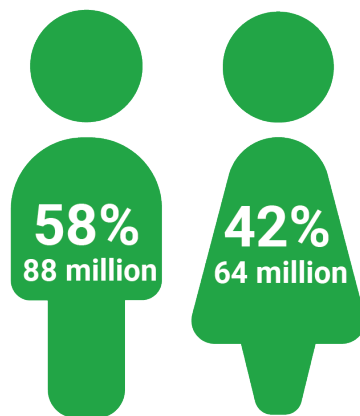
AGE PROFILE

48%
5-11 years-olds

28%
12-14 years-olds

24%
15-17 years-olds

GENDER



ECONOMIC ACTIVITY



70.9%
Agriculture



11.9%
Industry



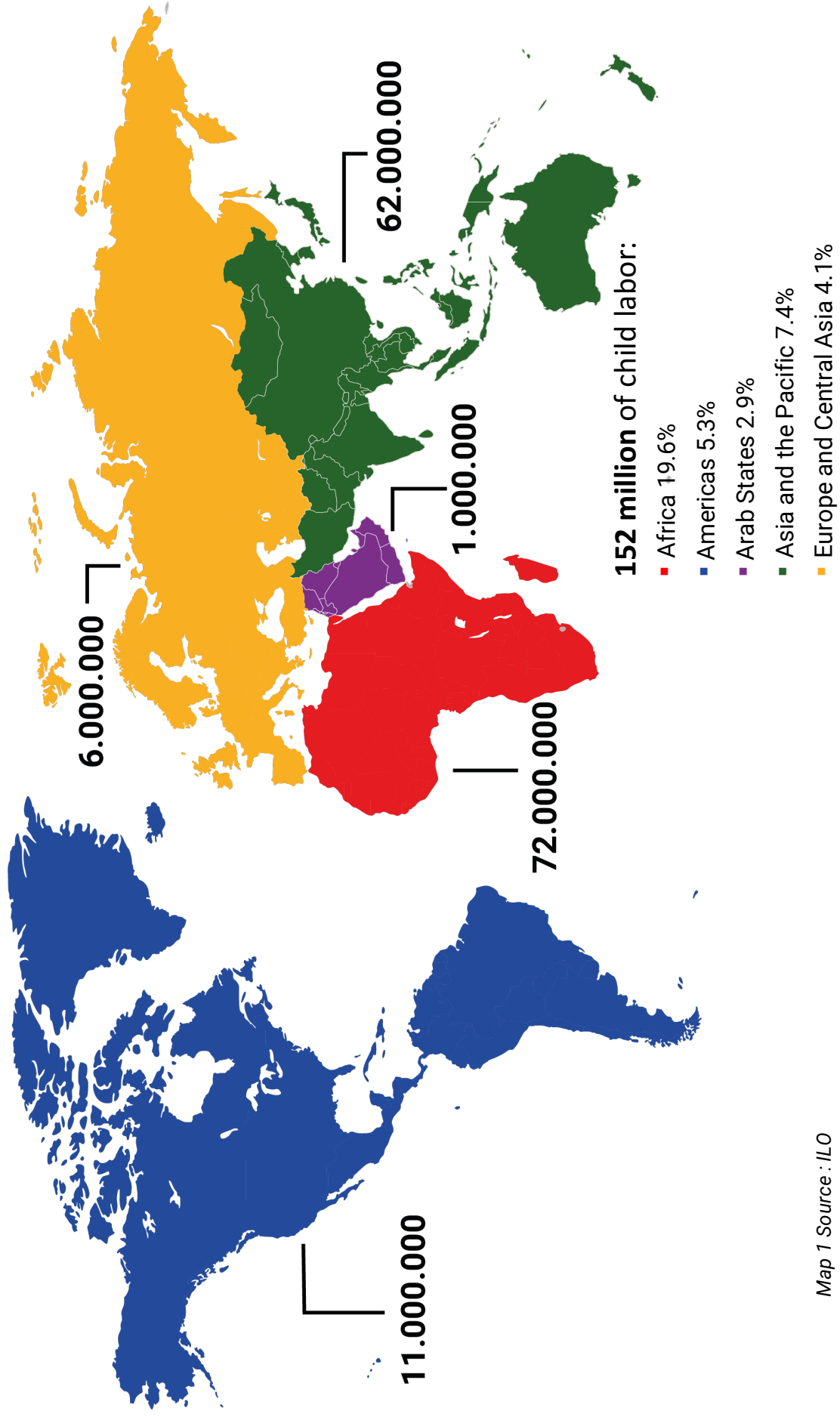
17.2%
Services

Figure 2 Source: ILO

Of the **152 million** children in child labor in 2016:

- **73 million** were in hazardous work
- Over **70 percent** worked in agriculture
- **48 percent** were under age 12
- **58 percent** were boys

Regional Prevalence of Child Labor



3.1.3 Regional Prevalence of Child Labor ⁽⁴⁾

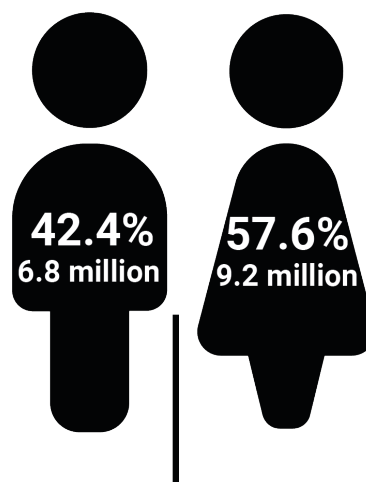
It is estimated that there are 152 million child labors in all around the world, 64 million of these children are girls and 88 million are boys. This figure corresponds to 1 in 10 children around the world. Almost half of this figure, 73 million children, works in dangerous jobs. These are the works that prevent children's health, safety, physical, psychological and moral development. In child labor, children between the ages of 5-11 have a higher rate with 48 per cent. These children are also more involved into dangerous work. 28 percent of child labor were seen between the ages of 12 and 14, and 25 percent were between 15 and 17 years of age.

When the sectoral distribution is analyzed, it can be seen that 70.9 percent of child labors are in agriculture sector, 17.2 percent in service sector and 11.9 percent in industry. These figures correspond to 108 million, 26 million and 18 million children, respectively.

Africa was the region with the highest intensity of child labor with a rate of 19.6 percent in terms of regional intensity. This corresponds to 72 million children. Africa was followed respectively by the Asia and Pacific region with 7.4 percent and 62 million children, America with 5.3 percent and 11 million children, Europe and Central Asia with 4.1 percent and 6 million children and Arab countries with 2.9 percent and 1 million children.

3.1.4 Forced Labor Statistics (5)

Forced labor is any work or service which people are obligated to perform against their will, under intimidation or threats. In Forced Labour, the method of physical and psychological coercion is the same as in slavery.



51%

in debt bondage

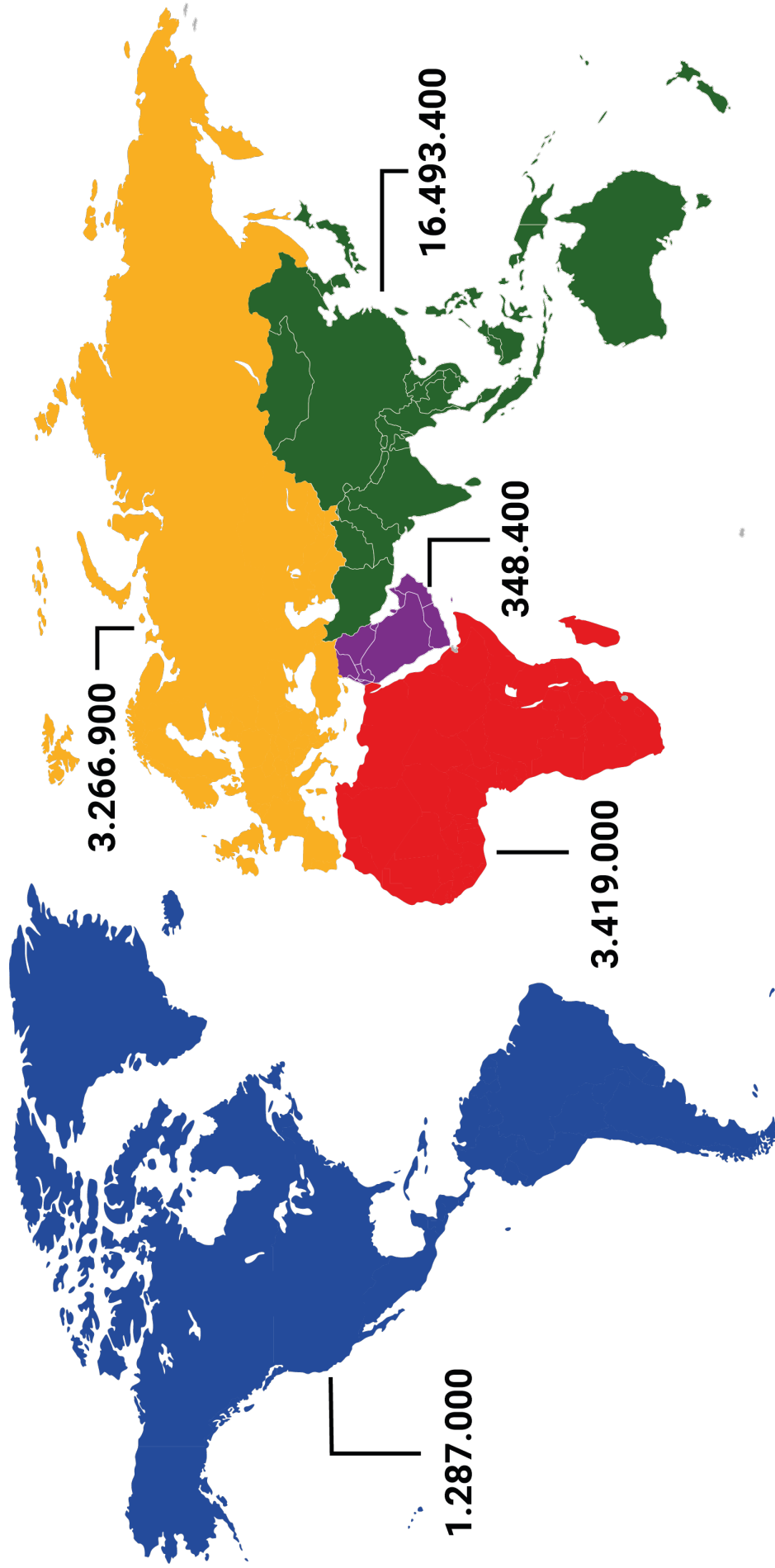
This proportion rises above 70 per cent for adults who were forced to work in: agriculture, domestic work, or manufacturing.

Figure 3 Source: ILO

Of the **24.9 million** victims of forced labour,

- **16 million** were in the private economy,
- another **4.8 million** were in forced sexual exploitation,
- and **4.1 million** were in forced labour imposed by state authorities.

Regional Prevalence of Forced Labor



3.1.5 Regional Prevalence of Forced Labor (6)

According to ILO 2016 data, an estimated 24.9 million people were exposed to forced labor in the world. Women were exploited more than men. In figures, 9.2 million females with 42.4 per cent and 6.8 million males with 57.6 per cent were forced to work.

Approximately 65 percent of this is 16 million people who are forced to work in the private sector, such as housework, construction and agriculture.

Whether men or women, 51 percent of these workers were in debt bondage. It was easier for employers to force these people for work. In some cases, people were expected to work in return for paying off the debt. For example, the debt slavery rate of the employees in the agricultural sector goes up to 70 percent.

An estimated 4.8 million people, including 3.8 million adults and 1 million children, have been victims of sexual exploitation. In 2016, there were over the 4 million people involved in forced labor imposed by the states.

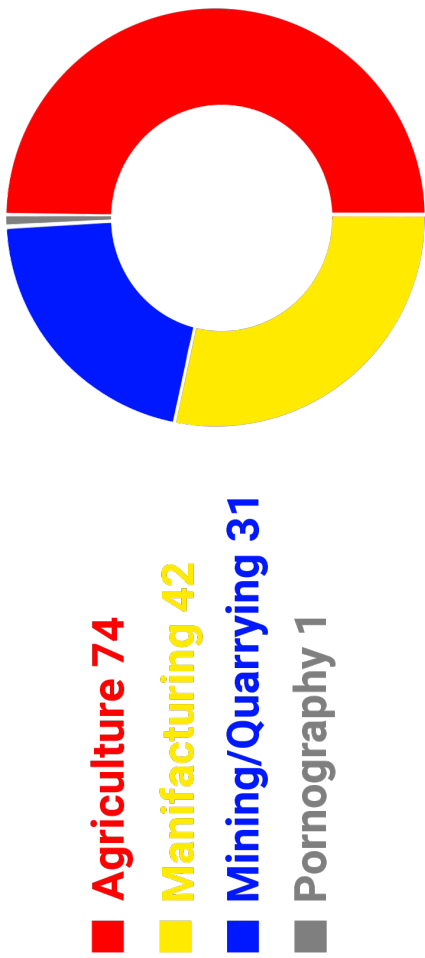
In other words, forced labour is a kind of modern form of slavery which includes related indicators which are stated below by ILO. The following indicators of the ILO represent the most common signs or clues that point the possible presence of a forced labor case: (7)

- Exploitation of vulnerability
- Deception about the facts of work
- Limitation of movement and communication
- Isolating from external effects
- Physical violence and sexual harassment
- Intimidation and threats to report to authorities
- Confiscation of identity and travel documents
- Withholding of salaries or paying them in delay
- Debt slavery
- Poor working and living conditions
- Extremely long working hours

Asia an Pasific was the region with the highest number of forced labor with a rate of 67% per cent. This corresponds to 16,5 million people. This region was followed respectively by the Africa with 13,9 per cent and 3,4 million people, Europe and Central Asia with 13.3 per cent and 3,2 million people, Americas with 5,2 per cent and almost 1,3 million people and Arab countries with 1.4 per cent and 348 thousand people.

• NUMBER OF GOODS PRODUCED GLOBALLY BY CHILD LABOR OR FORCED LABOR, BY PRODUCTION SECTOR

148 GOODS
76 COUNTRIES



• GOODS WITH MOST CHILD LABOR AND FORCED LABOR, BY NUMBER OF COUNTRIES

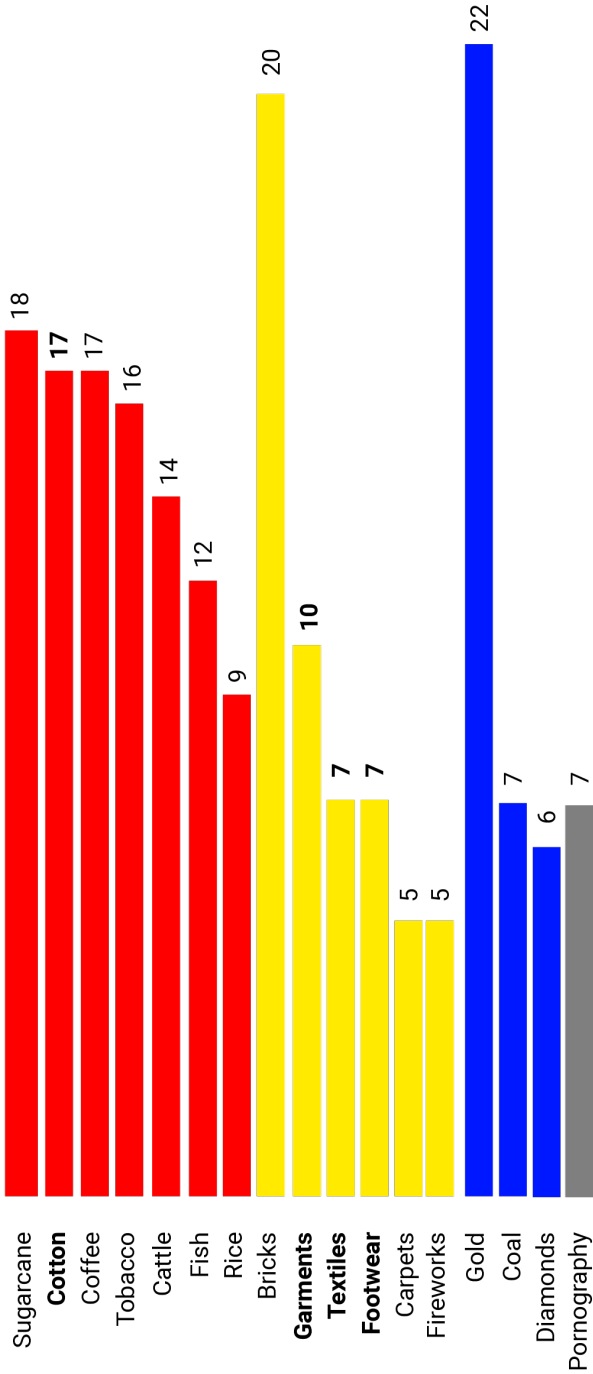


Figure 4 Source: ILAB

Figure 5 Source: ILAB

3.1.6 Goods Produced Globally by Child or Forced Labor

As ILAB states “Child labor and forced labor are global realities, increasingly documented by researchers and the media, understood by consumers, and acknowledged by governments. The numbers are clear and striking: the International Labor Organization (ILO) estimates that at least 152 million children are in child labor and 25 million people are in forced labor worldwide.”

The Bureau of International Labor Affairs (ILAB) of the US Department of Labor (DOL) states that some of the most demanded goods of modern society are carried out on production lines where children and forced labor are intense.

This report, obligated by the Trafficking Victims Protection Reauthorization Act (TVPRA), provides a list of countries and their goods in which the International Bureau of Labor believes that they are produced by forced labor or child labor contrary to international standards. The list updated in 2018, consists of 148 goods and 76 countries. (8)

When these goods are grouped according to the production sector, it is easily seen that 74, ie the highest number of goods, are in the agricultural sector. 42 of the goods are in the manufacturing sector, 31 in mining, quarrying and 1 in pornography.

As shown in the figure, the most produced goods by children and forced labor are listed by country number. According to this, sugar cane with 18 countries, followed by cotton and coffee with 17 countries, tobacco with 16 countries, cattle with 14 countries, fish with 12 countries and rice with 9 countries.

Returning to manufacturing sector; In 20 of the 76 countries listed, children and forced labor are employed in brick production. This is followed by clothing with 10 countries, textile and footwear with 7 countries in each, carpet and fireworks with 5 countries in each. As mentioned above, 31 countries have child and forced labor in the mining and quarrying sectors. Gold production comes first with 22 countries. Then coal with 7 countries, and diamond with 6 countries. In addition, unfortunately, forced labor and child labor still persists in the pornography industry in 7 countries.

The other graph shows the number of goods produced by production sectors worldwide, separated by child labor and forced labor. Child labor is seen in the production of 66 goods in the agricultural sector, while 29 goods are produced by forced labor. 38 of the products in the manufacturing sector are produced by child labor, while 15 are produced by forced labor. 31 products in mining and quarrying are provided by child workers, 12 of them by forced labor. And in the pornography sector, both child labor and forced labor are seen.

• NUMBER OF GOODS PRODUCED GLOBALLY BY PRODUCTION SECTOR, DIVIDED INTO CHILD LABOR AND FORCED LABOR

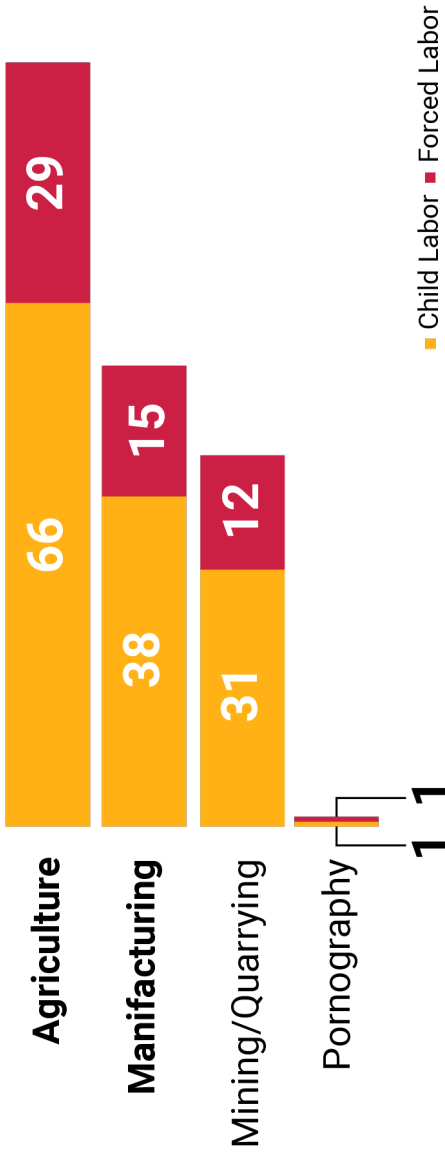


Figure 6 Source ILAB

• GOODS WITH THE MOST CHILD LABOR, BY NUMBER OF COUNTRIES • GOODS WITH THE MOST FORCED LABOR, BY NUMBER OF COUNTRIES

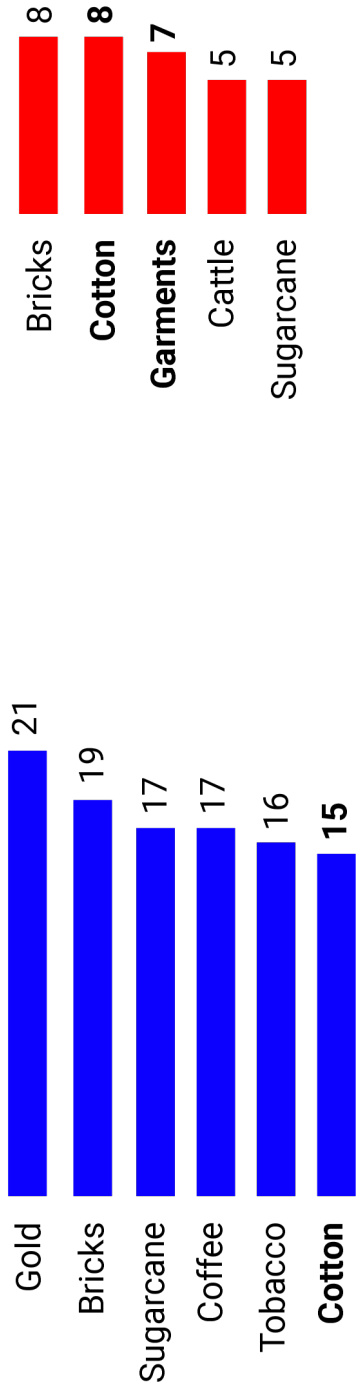


Figure 7 Source ILAB

The last graph shows the goods produced mostly by child labor, by number of countries. Accordingly, child labor is still used in production of gold in 21 countries, of brick in 19 countries, of sugarcane in 17 countries, of coffee in 17 countries, of tobacco in 16 countries and of cotton in 15 countries. On the other hand, forced labor is seen in production of brick in 8 countries, of cotton in 8 countries, of garment in 7 countries, of cattle in 5 countries and of sugarcane in 5 countries.

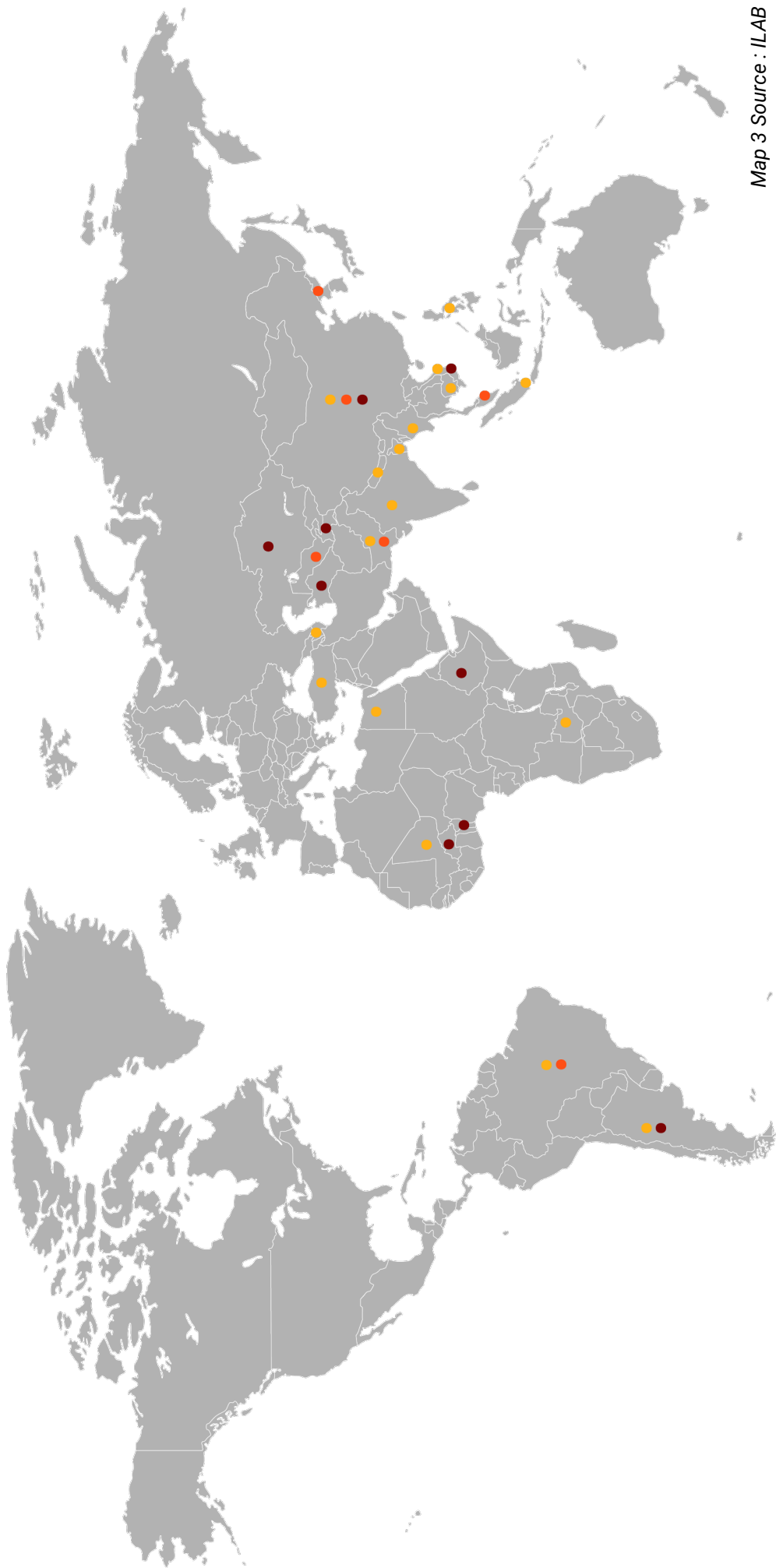
Based on all these details, we can say that child labor and forced labor are frequently encountered in the agricultural and manufacturing sectors where fashion is deeply connected. In the agricultural sector, cotton ranks second after sugar cane in the list of goods produced by child labor and forced labor. In the manufacturing sector, garment, textiles, footwear comes after bricks production, but in total, the most child labor and forced labor are seen most in these fashion goods.

In addition, in 15 countries child labor is seen in the production of cotton which is one of the indispensable raw materials of the fashion sector. While brick production appears first in the list of goods produced by forced labor, in reality forced labor is more seen in cotton and garment production.

3.1.7 Fashion Goods Produced Globally by Child Labor or Forced Labor

The main fashion goods produced by child labor and forced labor are cotton, embellished textile products, fashion accessories, shoes, clothing, leather, silk and textiles. The countries where child labor in cotton production is seen are Argentina, Azerbaijan, Brazil, Egypt, India, Kyrgyzstan, Mali, Turkey, and Zambia. There is forced labor in cotton production of Pakistan and Uzbekistan. In Benin, Burkina Faso, China, Kazakhstan, Tajikistan and Turkmenistan, both child labor and forced labor are seen. The countries where child labor and forced labor are seen in the production of embellished fabrics are Nepal and India. In the production of fashion accessories, child labor is seen in the Philippines, while forced labor in China. Countries with child labor in the footwear production are Bangladesh, Brazil, India, Turkey, Vietnam and Indonesia. The countries where forced labor is seen in the production of this product are China, Brazil and Malaysia. Argentina, India, Thailand and Vietnam are the countries where both child and forced labor are seen in footwear production. The production of leather employs child workers in Bangladesh, India, Pakistan and Vietnam, while child labour is also seen in silk production in India. Child labor in textile production is seen in Bangladesh, Cambodia, China, India and Vietnam, while forced labor for this good occurs in Ethiopia and North Korea.

FASHION GOODS PRODUCED BY CHILD LABOR OR FORCED LABOR



Map 3 Source : ILAB

GOOD

- Cotton
- Embellished Textiles
- Fashion Accessories
- Footwear
- Garments
- Leather
- Silk
- Textile

CHILD LABOR

- Argentina, Azerbaijan, Brazil, Egypt, India, Kyrgyzstan, Mali, Turkey, Zambia
- Philippines
- Bangladesh, Brazil, India, Turkey, Vietnam, Indonesia
- Bangladesh, Burma, Turkey
- Bangladesh, India, Pakistan, Vietnam
- India
- Bangladesh, Cambodia, China, India, Vietnam

FORCED LABOR

- Pakistan, Uzbekistan
- China
- Brazil, China, Malaysia
- Ethiopia, North Korea

BOTH

- Benin, Burkina Faso, China, Kazakhstan, Tajikistan, Turkmenistan
- India, Nepal
- Argentina, India, Thailand, Vietnam

3.1.8 Wages of Garment Sector by Countries

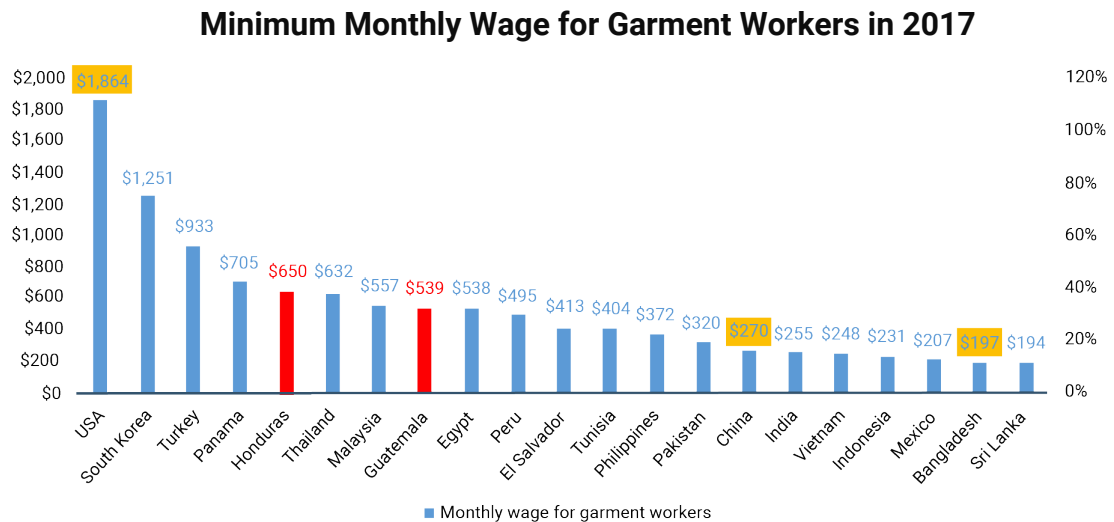


Figure 8

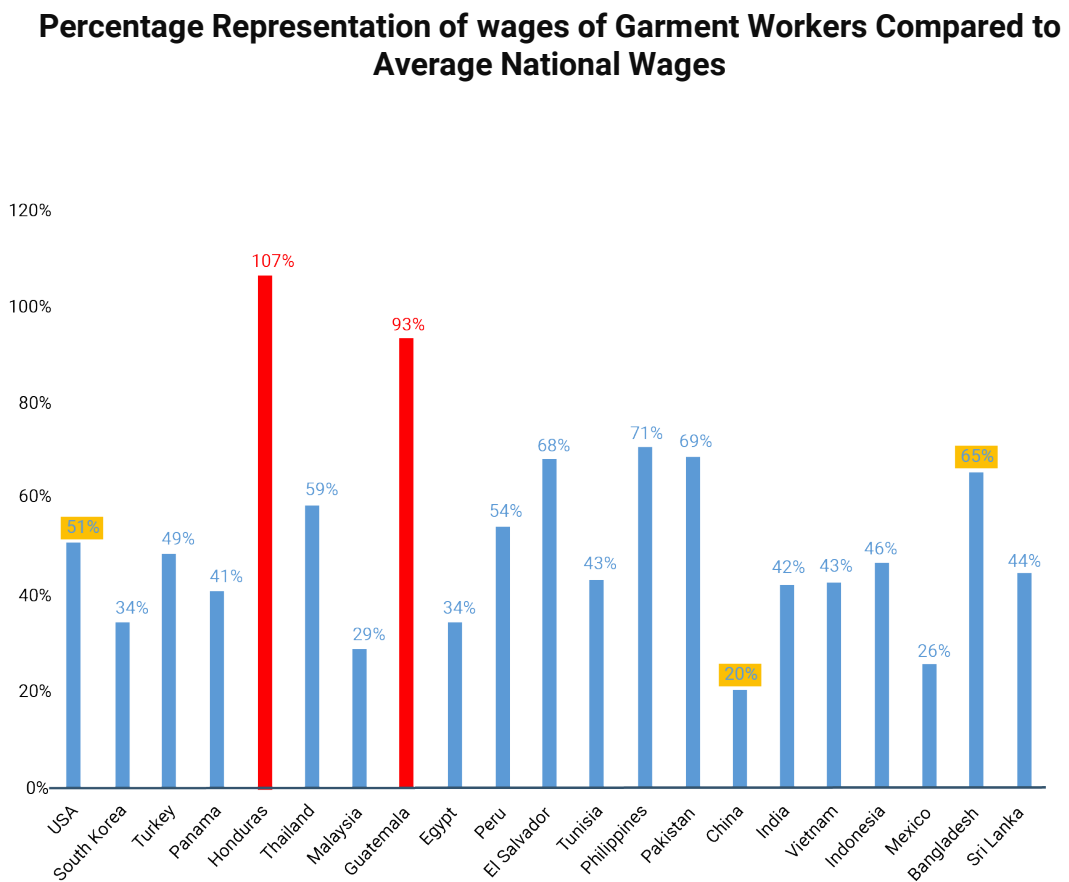


Figure 9

Wages on the poverty line are one of the most important issues for employees worldwide and have been systematically applied in the global garment industry. These garment companies have based on the wages in poverty line and exploitation system for many years. They continued to use cheap paid resources and labor, giving consumers a reason to supply cheaper priced products.

Governments have kept minimum wages too low, under the pressure of corporations, and aimed to create jobs and benefit to the their state economy. The minimum wage and the living wage are not the same thing. Because the minimum wage set by governments is not sufficient to meet the basic needs of workers and their families in almost all production countries.

In addition, while the minimum wage itself is insufficient, in many countries the wages in the textile sector are far below the minimum wage.

Workers who receive low wages feel compelled to work long hours to earn overtime or bonuses. Even if they have unsafe working conditions, they cannot refuse the job and have to work even when they are sick. Workers often apply for bank loans to meet their needs. Then, if they become unemployed or encounter unexpected costs, they will suffer even deeper poverty.

In such cases, a number of problems arise, such as inadequate housing, malnutrition, inadequate access to health services, the risk of child labor, work accidents and violence against women.

According to the PRI data above, regardless of which country it is, workers in the textile sector generally earn much lower than the national average wage.

From the twenty-one countries surveyed, wages of the garment workers varied from the highest monthly wage of 1,864 dollars to the lowest of 194 dollars in 2017. However, as can be seen from the table, a better payment does not necessarily mean a higher wage level.

To explain with examples, garment workers in USA, apparently gaining much more money than their counterparts in other parts of the world, but was still only 51 percent of the wage level of USA national wage.

On the contrary, garment workers in Honduras earned only 650 dollars per month, which amounted to about 107 percent of the national average wage of the country. Similar in Guatemala, the figure was only 539 dollars per month which meant 93% of the national wage. When looking at China and Bangladesh, the situation is even more deplorable. Because in China, the monthly wage of textile workers was only \$ 270, which corresponded to only 20 percent of the national salary. Finally, in Bangladesh, the monthly wage was \$ 197, which was 65 percent of the national wage.

3.2 Economic Impacts

Especially in urban culture, people need the support of some symbols which are known by societies in order to express themselves to the other party very quickly in a limited time. Clothing and accessories are the first ones that come to mind. In the 14th century, the fashion used to indicate the difference in status around the palace of France, has actually occupied an important place in the economy throughout the history of Europe.

It can not only be restricted to Europe, fashion trends have spread to America and other countries, but Fashion and capitalism are entirely of European origin.

The relationship between the capitalist system and fashion is much greater than expected, because both are fed by constantly renewed consumption. While products in fashion used to change seasonally in the past, now with the concept of fast fashion, it started to change every 52 weeks in post-modern consumer society. Fast and cheap, this trend has accelerated consumption and imposed the society to buy more clothes, accessories and shoes than necessary.

The value created by the global textile and clothing sector for 2017 is \$ 1.7 trillion (9), which is an important figure in the world gross national product of \$ 80.9 trillion (10). Even the pharmaceutical industry is behind the textile sector with 1.1 trillion dollars.

The value of brands created worldwide, subcontracting, noname sales, second-hand, vintage, online sales, accessories, R & D expenditures for technological fabrics, investments in the system ranging from cotton cultivation to weaving, sewing, ironing, distribution and sales staff and accessories and the number of people working helps to understand the size of the textile economy.

The industry, which is now worth about \$ 1.7 trillion in sales in 2017, is expected to show this growth over the coming years. The size of this market, which was \$ 1.05 trillion in 2011, has so far grown by 60%.

At the same time, while the world economy grew by an average of 3.2% (11), textile expenditures increased by close to 6% (12) in 2017, which means that the composition of consumption is changing and more expenditure was being made on fashion and derivatives.

In other words, this fast growth means that the average consumer in the world is now buying more than 1.5 times the amount of clothing they made only 6 years ago. Statistically, it is clear that people are more interested in shopping than in previous years. As the apparel market grows faster than the global

economy, wardrobes continue to be filled with increasing clothing spending of consumers.

Recently, more than 100 billion clothes are sold in a year around the world. The wardrobes in developed countries are full of clothes. Retailers who want to sell more products should always have a new appeal for consumers and convince them to buy new clothes. Nowadays, people go to shopping centers because it is cheaper to buy new ones instead of taking them to the tailor and repairing them.

Growth of Clothing Sales and Decline in Clothing Utilisation Since 2000

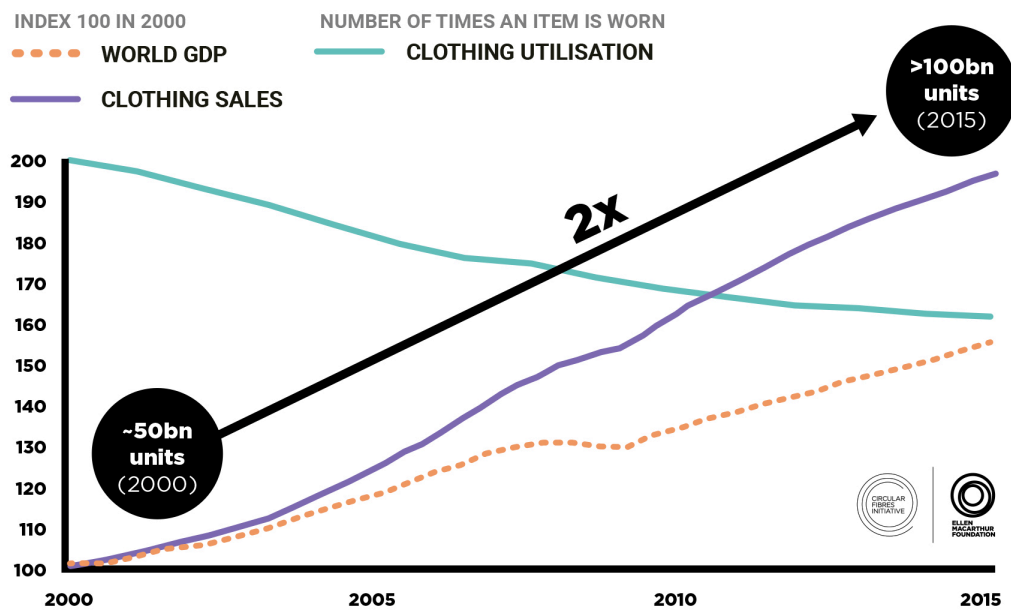


Figure 10 Source : tiny.cc/fibres

According to data from the World Bank, analysed by the Ellen MacArthur Foundation (13), while clothing sales have risen steadily since the year 2000, clothing utilisation has fallen at roughly the same rate. That means for every extra t-shirt that is sold, it will be worn roughly half as much as it would have been 20 years ago.

As a result of all these situations, a rapidly growing textile waste problem arises.

12 million tons of textile waste are generated from the USA and 6 million tons are generated from Europe. Developed countries do not want to keep these wastes within their borders, including harmful chemicals. Developed countries do not want to keep these wastes, which includes also harmful chemicals, within their borders. Only some of them are used for recycling, and the rest are sent to African and Asian countries in the form of donations.



Photo 6 - Daily News - Kariakoo Market in Dar es Salaam - Tanzania.

For many years, second-hand clothes from charities in North America and Europe have been sent to countries such as Tanzania, Burundi, Kenya, Rwanda, South Sudan and Uganda. These charities choose to convince their citizens that donating their clothes is an effective way to help those in need. In fact, the truth is different. In Nigeria and Mozambique, these second-hand clothes are called "the clothes of dead whites" and "the clothes of disaster."

Local people are quite uncomfortable with this situation. Second-hand clothes do great harm to African countries in two ways. The first is waste textile products that are insoluble in nature and contain active chemicals, causing great harm to human health and the environment.

The second is the damage to the economy. Second-hand clothing dominates the local markets in Africa. For sellers in African markets, the variable quality of these clothing is a risky livelihood. The fact that the majority of used clothing is in poor condition on the one hand, and does not fit into the local

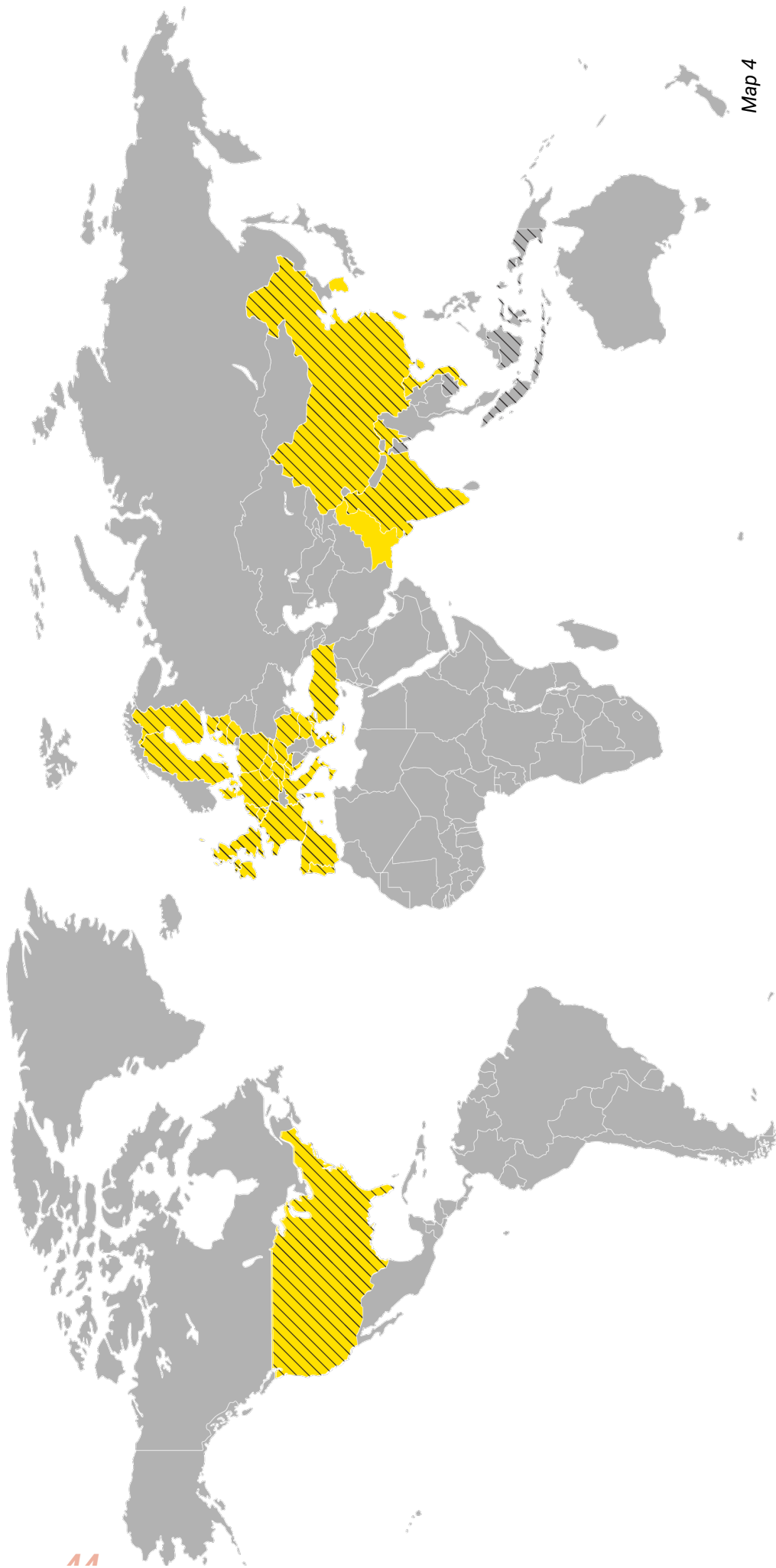
fashion and body shapes on the other hand causes problems for the sellers. Second-hand clothes have not only economic but also social and cultural effects in this region. Zimbabwe, for example, banned the sale of donated and worn underwear that were perceived as an insult to human dignity.

For all these reasons, the countries of the East African Community plan to introduce a prohibition law on second-hand imports. (14)

According to African media reports, the US and European countries are preparing new proposals against this law, which is planned to come into force in 2019, and planing to prevent it become law.

It does not seem possible for these countries to ban the second-hand clothing industry, which is about 3.7 billion dollars.

TOP TEN EXPORTERS IN TEXTILE & APPAREL



TEXTILE (US\$ Billion)

CHINA	: 109.9
EU28	: 69.3
INDIA	: 17.2
USA	: 13.6
TURKEY	: 11.4



APPAREL (US\$ Billion)

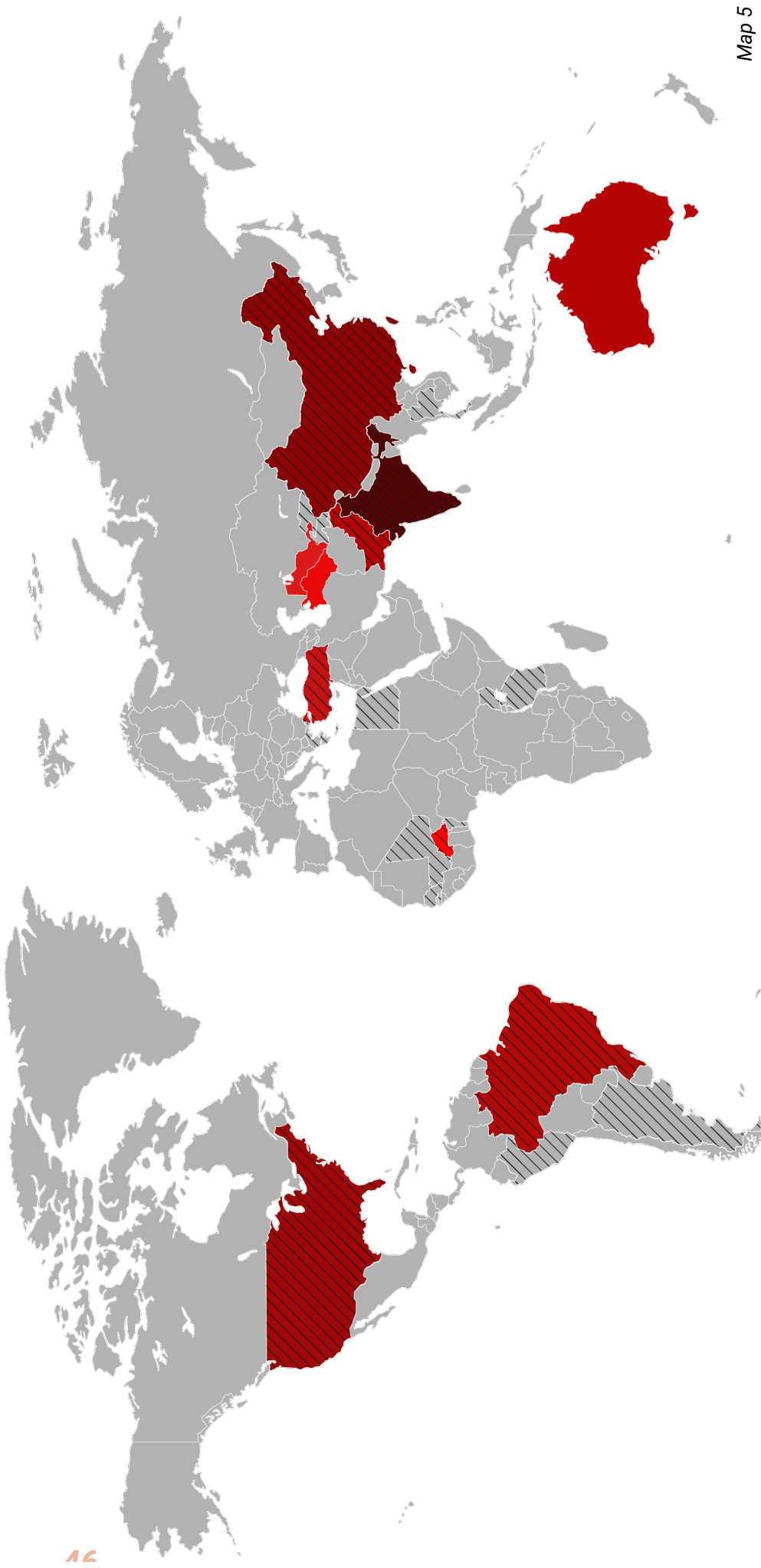
CHINA	: 158.4
EU28	: 129.8
BANGLADESH	: 29.3
VIETNAM	: 26.7
INDIA	: 18.4

TURKEY	: 15.1
HONG KONG	: 14.5
INDONESIA	: 8.2
CAMBODIA	: 7.2
USA	: 5.7

3.2.1 Top Ten Exporters in Textile and Apparel

Due to the globally increasing import demand, the value of world goods exports increased by 4.7% in 2017 and reached 17.43 trillion dollars with the strongest growth in six years. In 2017, textile and apparel exports accounted for 6% of the world manufacturing industry exports. According to the World Trade Statistics Review published by the World Trade Organization in 2018, textile and garment exports accounted for 6% of the world manufacturing industry exports in 2017. The value of world textile and apparel exports increased by 4.2% and 2.8% in 2017 compared to the previous year and was realized as 296.1 billion dollars for textile and 454.5 billion dollars for garment. China was the country that exported the most textile products with 109.9 billion dollars. While China had a 10% share in world textile exports in 2000, this ratio increased to 37% in 2017. The share of EU countries has decreased from 37% to 23% in the same period with 69.3 billion dollars. India, the third largest exporter, increased its market share from 3.6% to 5.8% with 17.2 billion dollars. Altogether, these top three accounted for 66.3% of world textile exports in 2017. All of these top three had export growth in 2017: China with 5%, EU with 6% and India with 6%. The United States remained the fourth largest textile exporter with 13.6 billion dollars in 2017, with the same market share rate of 4.6 percent as in the previous year. Turkey was ranked 5th in the list of textile exports with its export 11 billion dollars in 2017. Compared with 2000, Turkey's share in world textile exports in 2017 increased from 2.4% to 3.8%. Exports of these countries were followed by North Korea with 9.9 percent, Taipei with 9.2 percent, Pakistan with 8 percent, Hong Kong with 7.6 percent and Vietnam with 7.4 percent, respectively. In 2017, China, the European Union, Bangladesh and Vietnam took first four place in the list as the largest exporters of garment in the world. In total, these four exporters accounted for 75.8 percent of world market share in 2017, a significant increase compared to 68.3 percent share of 2007. Even if China, which has recently drawn a rising trend, exports less garment and more textiles than before, has become the largest garment exporter again in 2017 with 158 billion dollars. In particular, China's market share in world garment exports declined from the highest level of 38.8 per cent in 2014 to the lowest level of 34.9 per cent in 2017. At the same time, China accounted for 37.1 per cent share of the total textile export in 2017, which was a new record. Because China has become a critical textile exporter for other garment producing countries in Asia. Trends in the region have started to change and countries such as Bangladesh, Vietnam, Pakistan, Malaysia, Indonesia, the Philippines and Sri Lanka, which are on the rise in garment production, make the majority of textile imports from China. The share of EU countries in garment exports did not decline much as in textile. The share, which was 28.7 percent in 2000, was almost the same in 2017, 28.6 percent. Turkey has made 15 billion dollars in exports of garments. Turkey's market share, as it was in 2000, was realized as 3.3 percent in 2017. Countries such as Vietnam and Bangladesh increased their shares. Labor costs have been very effective in these developments.

GLOBAL COTTON & ORGANIC COTTON PRODUCTION



Map 5

COTTON (1000 metric tons)

INDIA	: 6205
CHINA	: 5987
USA	: 4555
PAKISTAN	: 1894
BRAZIL	: 1785
AUSTRALIA	: 1045
TURKEY	: 871
UZBEKISTAN	: 838
TURKMENISTAN	: 296
BURKINA FASO	: 158



ORGANIC COTTON (117.525 MT which is less than 1% of global cotton production)

INDIA	: 51%
CHINA	: 19%
KRYGRZSTAN	: 7%
TURKEY	: 7%
TAJIKISTAN	: 5%
USA	: 4%
TANZANIA	: 3%
EGYPT	: 1.5%
GREECE	: 0.7%
UGANDA	: 0.7%

3.2.2 Global Cotton Production

Cotton is important for humanity with its widespread and compulsory usage areas and it is a product of great economic importance with the added value and employment opportunities it creates for the producing countries. In terms of processing, cotton is the raw material of the gin industry, of the textile industry with its fiber, of the oil and feed industry with its seeds, and of the paper industry with its linter. As an alternative to petroleum oil, the oil obtained from the cotton seed is used as a raw material for the production of biodiesel in an increasing amount. In addition, the increase in population and living standards increases the demand for cotton plants. In this respect, the need for cotton is increasing all over the world and the production and consumption values, which have decreased due to the recent economic crisis, are expected to increase in the coming period. Since the climate of few countries in the world is suitable for cotton agriculture, almost 80% of the world cotton production is carried out by these few countries.

Cotton Cultivation Areas in the World (1000 Ha)

	Countries	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
1	India	11.650	12.846	11.638	10.845	12.235
2	USA	3.053	3.783	3.291	3.848	4.616
3	China	4.700	4.310	3.793	2.923	3.157
4	Pakistan	2.914	2.958	2.670	2.496	3.097
5	Uzbekistan	1.275	1.298	1.272	1.250	1.208
6	Brazil	1.010	976	1.007	939	1.155
7	Burkina Faso	644	661	631	740	770
8	Turkmenistan	545	545	534	545	534
9	Turkey	451	460	440	420	462
10	Argentina	506	456	447	247	305
	Others	5.934	5.619	5.440	5.418	5.069
	Total	32.682	33.912	31.163	29.671	33.148

Table 1

World Fiber Cotton Production (1000 Tons)

	Countries	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
1	India	6.770	6.562	6.240	5.865	6.205
2	China	6.929	6.500	5.260	4.900	5.987
3	USA	2.811	3.553	2.820	3.738	4.555
4	Pakistan	2.076	2.305	1.610	1.663	1.894
5	Brazil	1.705	1.563	1.550	1.530	1.785
6	Australia	890	528	470	931	1.045
7	Turkey	760	724	640	703	871
8	Uzbekistan	940	885	860	789	838
	Others	3.402	3.581	1.624	2.975	3.041
	Total	26.283	26.201	21.074	23.094	26.221

Table 2

When the data of the International Cotton Advisory Committee (ICAC) for the 5-year period between 2013-2017 are examined; it is seen that cotton is cultivated on an average of 32.1 million hectares in the world and an average of 24.5 million tons of fiber cotton is obtained from this planting. While China is the country with the largest cotton production area in the world for many years, India has surpassed China with the increase in production in recent years. The top 5 cotton producing countries in the world in 2017/18 season are; India, China, USA, Pakistan and Brazil. On the other hand, the first five consumer countries respectively, China, India, Pakistan, Turkey and Bangladesh.

World Fiber Cotton Yields (Kg / Ha)						
	Countries	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
1	Australia	2.136	2.228	2.196	1.670	1.936
2	Israel	1.810	1.786	1.786	1.761	1.892
3	Turkey	1.419	1.573	1.475	1.674	1.817
4	China	1.506	1.503	1.427	1.676	1.693
5	Mexico	1.625	1.668	1.449	1.575	1,587
6	Brazil	1.520	1.507	1.506	1.629	1.399
7	South Africa	1.172	1.205	1.208	850	1.098
8	Greece	1.120	997	997	1.009	1.028
9	Siria	976	981	883	983	954
10	USA	921	939	963	983	876
	World Average	804	781	765	778	765

Table 3

Respectively, Australia, Israel, Turkey, China and Mexico were the first five countries for the yield per unit area obtained in cotton production, in the 2017/18 season.

According to the International Cotton Consultative Committee (ICAC); Between 2013/14 production period and 2017/18 season, an average of 32.1 (32.115) million hectares of cotton was produced in the world. In 2017/18 season, 37% of the 33 million hectares of cotton cultivation is in India. India is followed by USA, China, Pakistan and Uzbekistan in the width of the cultivation areas. Turkey ranks 9th in terms of cotton planting area.

As can be seen in the table, Australia has the highest fiber yield in the world. According to the ICAC data, Turkey has risen to third place in the cotton yield in the 2017/18 season. Countries such as India and Uzbekistan, which are among the major cotton producing countries, produce below the world average yield level.

World Fiber Cotton Consumption (1000 Tons)						
	Countries	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
1	China	7.531	7.520	7.330	8.000	8.115
2	India	5.042	5.360	5.520	5.148	5.302
3	Pakistan	2.271	2.510	2.220	2.147	2.346
4	Turkey	1.400	1.486	1.500	1.455	1.481
5	Bangladesh	1.146	1.204	1.324	1.409	1.437
6	Vietnam	673	875	1.007	1.168	1.308
7	USA	773	780	780	420	435
8	Brazil	879	800	800	690	728
	Others	5.599	3.815	5.911	4.076	5.317
	Total	23.495	24.350	24.360	24.513	26.469

Table 4

When the table is examined, it is seen that the countries that consume the most cotton are the same countries that produce the most. World cotton consumption in the last 5 periods has been around 24-26 million tons. China accounts for the largest share of world cotton consumption with 8.1 million tons (31%), which is followed by India and Pakistan. Turkey ranks 4th on the list with a 1.48 million tons of cotton consumption.

As can be seen from all these tables, the leading producer countries in the textile sector are also leading in cotton production and consumption. It is obvious that these two issues are closely related. How do these countries show an attitude towards organic cotton production?

3.2.3 Organic Cotton Production

Organic cotton; is a cotton which is produced from non-genetically modified plants without the use of toxic substances such as insecticide, chemical fertilizer. This method is more costly than conventional cotton production.

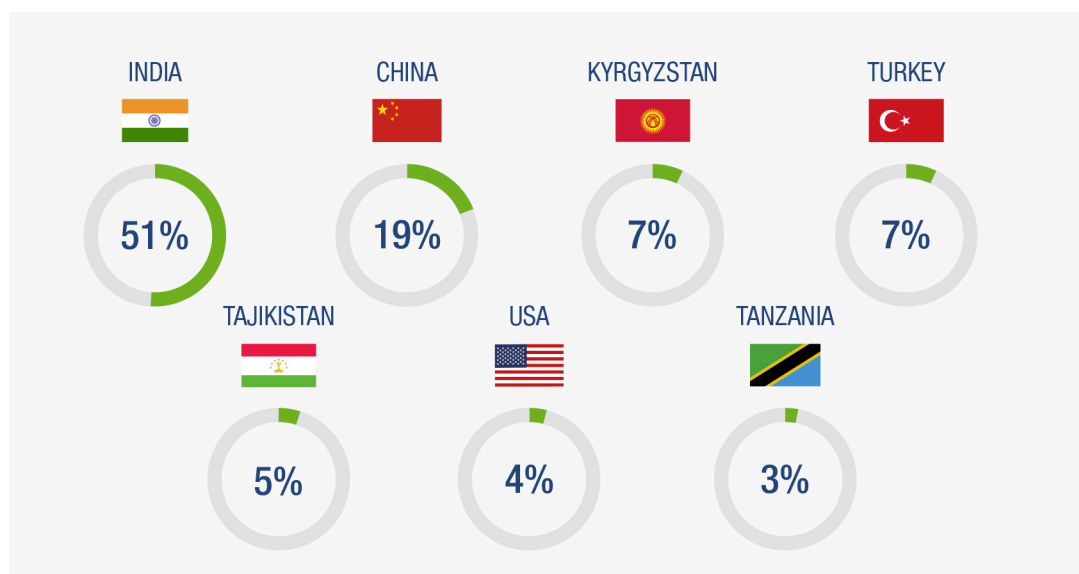


Figure 11 Source Textile Exchange (15)

Therefore, it is not preferred to produce. However, there has been a rapid increase in organic cotton production due to the increasing awareness and demand recently. In the 2016-2017 period, a 10 percent growth was seen in organic cotton production globally - mostly provided by China - due to an increase in demand from organic dairy products and domestic textile sectors. Other countries who contribute significantly to the global growth of the organic cotton production are USA, Turkey, Tanzania, Uganda, and Benin.

A total of 117,525 mt of organic cotton fiber was produced globally. Although it is a rapid increase in this sense, this figure corresponds to only 0.5% of the total cotton production.

Another important development in this period was the transformation of 214,863 hectares of cotton field into organic cotton growing area. This figure is almost 50 percent of the currently certified 472,999 hectares. This means that more organic cotton will be produced in the future. 80 percent of the land in this transformation is in India, and the remaining 20% is in China, Turkey, Pakistan and Tanzania.



Figure 12 Source Textile Exchange (15)

Globally, 97 percent of organic cotton production comes from 7 main countries. From 51 percent in India, 19 percent from China, 7 percent from Turkey, still 7 percent from Kyrgyzstan, Tajikistan 5 percent, 4 percent from the US, 3 percent from Tanzania. Other 11 countries and their market share: Egypt 1.5%, Greece 0.7%, Uganda 0.7%, Benin 0.6%, Burkina 0.4%, Peru 0.29%, Mali 0.1%, Brazil 0.04%, Senegal 0.004%, Thailand 0.004%, Argentina 0.0003%.

3.3 Environmental Impacts

Nowadays, the fashion industry provides jobs and income to millions of people. It is a living industry in almost everywhere, in contact with everyone. Since the twentieth century, now clothing is designed in one country, then produced in another country and sold all over the world. As the demand of the middle class in the world increased, the term of "fast fashion" has emerged, and then it gained power with the doubling of production.

The fast fashion industry, that is, the fast production and consumption of clothing, just like fast food restaurants, causes irreversible damage to the world. Approximately 100 billion clothes are produced annually, which means 14 clothes for every person in the world. 30% of them will never be sold. 73 percent of these clothes produced in the same year find themselves in garbage dumps. People no longer wear these clothes until they become old. In fact, these low quality products wear out quickly, so they cannot be used for a long time.

People buy clothes now and wear them for a season or less, and then often dump them in landfills or incinerated. 60% more clothes were bought and their usage decreased to half time. In 2015, a Barnardo study found that a woman wears every garment in her wardrobe on average seven times before it called as "old". (15)

However, the harm that fashion causes to nature is not only related to garbage produced in large quantities.

The fashion industry is responsible for 10% of gas emissions worldwide. In terms of carbon footprint, the textile industry causes more carbon emissions than international ship and air travel around the world. By 2030, the world population is estimated to be 8.5 billion (16). In addition to this rapid growth, total gas emissions must be reduced by 55% in 10 years to prevent global warming. (17) By the Global Fashion Agenda, clothing consumption is estimated to increase by 63% to 102 million tons by 2030 if the current trend continues. (18)

In order to keep up with the fast fashion industry, cotton farming has also been modified at an incredible speed. Genetically modified (GMO) cotton production has reached an extremely high level in order to obtain more and faster crops. The pesticides and chemical fertilizers used cause irreversible damage to the soil and the health of the farmers. According to the famous environmental activist and author Vandana Shiva, more than 250,000 farmers have committed suicide in the last 16 years.

The villagers, who have destroyed their land with toxic substances for years, can never catch up with the raw materials demand of big brands and cannot

earn enough money to live on. Moreover, toxic chemicals have greatly increased birth anomalies, cancer and neurological diseases, while workers without health insurance are completely vulnerable to the system that makes them sick. Not only those who work in cotton fields or in the production of clothing, but also those who wear these clothes are at risk of being affected by the same chemicals. It is thought that some types of skin cancer that have increased in recent years may be related to chemicals used in fabrics.

At the same time, the amount of water used in fabric production is much higher than known. The fashion industry is the second largest water-consuming industry in the world. The amount of water a person can drink for 3.5 years is used in the production of a single cotton T-shirt. The Aral Sea, in Uzbekistan, is expected to dry completely in 50 years due to the cotton producing fields along its coast.



Photo 7 - Carolyn Drake - The Aral Sea 2013 - Karakalpakstan, Uzbekistan

Aside from the depletion of groundwater, toxic wastes released into the nature after dyeing and bleaching have also dried or ravaged many rivers in 'third world countries'. The fashion industry is responsible for 20% of water pollution worldwide.



Photo 8 - Rafiquar Rahman - Tannery Factory - Dhaka, Bangladesh

The harm that fashion causes to the environment does not end with the problems that arise during production. Microfibers, especially in polyester fabrics, mix with wastewater when clothes are washed in washing machines; they pass through the wastewater treatment plants without dissolution and reach the seas, causing pollution of the water and the destruction of water organisms. There are even new studies showing that microfiber remains are found in the systems of some fish that humans eat. The harmful substances released into the nature without thinking by human beings, as usual, come and find them again. Around 100 billion clothes are produced in a year around the world. 85% of the textile products produced go to landfill. It is known that only 10% of the clothes donated to charities can be delivered to the needy, while the garbage of Western countries is mostly stacked in undeveloped countries like Haiti.

Garbage left to nature can be dissolved in hundreds of years as they carry the chemicals used in dyeing and bleaching, as well as the cotton, polyester and petroleum-based substances they contain. In this process, of course, the harmful substances carried by the garments are mixed with soil, air and water.

3.3.1 Today's Linear System

The production and consumption structure of the apparel sector, which currently exists, is excessive wasting and polluting. The production, distribution, use and post-use stages of garments are progressing almost entirely at the linear level. During the production of these short-lived garments, largely non-renewable resources are used, and more than 50 percent of these garments go through landfills or incineration during the same year.

In this linear system, possible economic opportunities are not evaluated, resources are consumed rapidly, the natural environment and ecosystem are damaged and social impacts are created at local, regional and global levels.

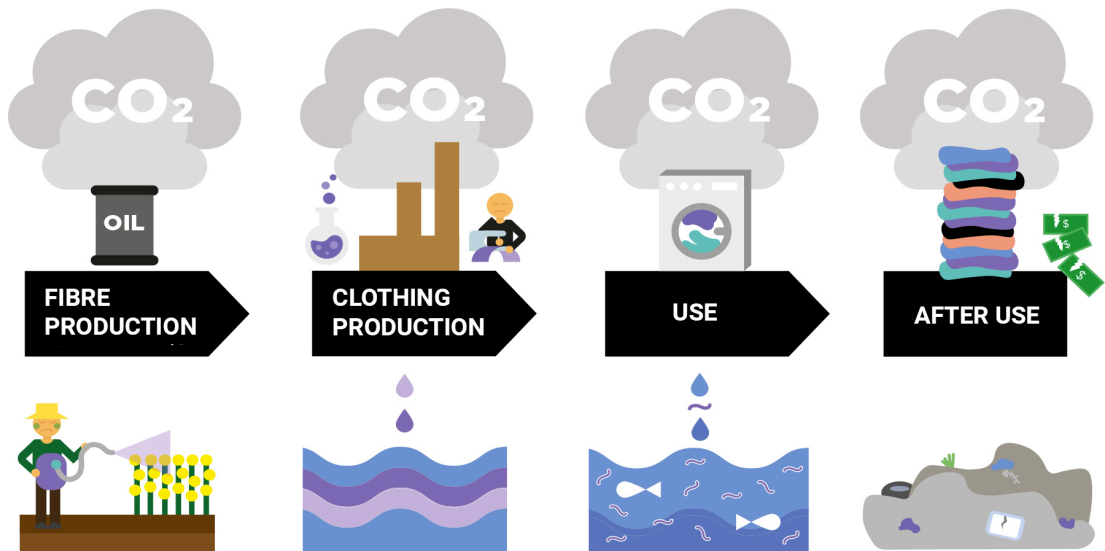


Figure 13 - Source: <http://tiny.cc/fibres>

The clothes are now much less utilized than before. While clothing usage is less in high income countries, it is of course higher in economically poor countries. For example, in the US there is a much lower usage rate than the global average, and in China there has been a 70 percent decrease in clothing use recently. Every year, consumers lose 460 billion dollars worldwide by throwing away clothes that can be still used. It is estimated that some garments are disposed only after being worn seven to ten times. Clothing consumers recognize this as a problem, for example, most consumers in high-income countries agree that they have more clothes than they need.

The materials commonly used in textile production are preferred in terms of their cost and specific functions. However, these materials have major disadvantages in terms of environmental issues. It is the same for the two dominant materials in this sector, cotton and polyester.

For example, polyester production requires a lot of resources and energy use, while cotton production involves large amounts of fertilizer and pesticides as well as water. For example, up to 3 kilograms of chemicals are used for the production of 1 kilogram of cotton garments (19), and 200,000 tons of dyeing is poured into the waste each year due to inefficiencies in dyeing and finishing. (20)

In addition, textile production has a high rate of greenhouse gas density, 1 kilogram of textile production emits around 20 kilograms of CO₂. In

comparison, 4 kg CO₂ is emitted in 1 kg of plastic production and less than 1 kilogram of CO₂ is emitted for the same amount of paper. (21)

More specifically, for example, in 2015, polyester production was alone responsible for the emission of more than 700 million tons of CO₂. (22) In addition, 4,300 liters of water are used to produce 1 kilogram of cotton fiber. Dyeing and finishing can use about 125 liters of water for kilogram of cotton fibers. (23)

3.3.2 Chemicals in Fashion Industry

Chemicals are used intensively in textile production, including substances of very high concern. (24) In textile production, 43 million tons of chemicals are used annually from fiber production stage to dyeing, processing and finishing processes and to provide specific properties to the materials. Chemicals market in textile sector has reached a large figure of 21 billion dollars in 2015 and is expected to reach 29 billion dollars by 2024. (25)

The chemicals used in all stages of the textile production process, whether willingly or unwillingly, but ultimately remain on the textiles. (26) This affects human health as well as the lives of other species and brings about negative effects on the environment. Some of the effects that have occurred so far are allergic reactions, respiratory diseases, increased cancer cases in humans and losses in aquatic life. (27) Some of these chemicals remain in the environment for a long time and multiply as time passes. It is estimated that over 8,000 different chemicals are used to convert raw materials into textiles. (28)

The most common hazardous chemicals used in textile manufacturing, where and why they are used and which problems may cause are explained below (29):

Pesticides are used to protect plants from damage from insects, molds or weeds. Thus, these pesticide residues can be found where cotton is sown. Although some hazardous pesticides are globally prohibited by the Stockholm Convention, many are still used in cotton production in some countries.

Solvents are used to dissolve substances such as dye pigments in different steps of textile production. Many may have hazardous effects by inhalation or in contact with skin. Solvents are used in the production of cellulose-based fibers.

Surfactants can be used in many steps of the textile production process as a detergent, dispersant, wetting agent, foaming agent, softener, emulsifier and anti-pilling or anti-static agent. Surfactants, which are used commonly, are problematic because they can be metabolised, could interfere with the hormone systems of mammals and fish.

Dyes and pigments are used to color garments are generally applied in large quantities and then discharged into waste water. Some dyes have the property of permanence which is desirable for the fabric but which is very harmful to the environment. Heavy metals such as lead or cadmium may be present in these dyes. Some dyes may decompose into carcinogenic compounds under certain conditions and others may cause allergic reactions.

Plasticizers are used to soften plastics such as polyvinyl chloride, which are used in screen printing designs and coating fabrics in textiles. The most commonly used plasticizers are phthalates used in large quantities in printing. Some phthalates have dangerous properties such as being harmful to hormonal systems and reproductive health.

Water repellents are generally desirable, especially for outdoor textiles. The most common way to achieve this is to impregnate the fabric with fluorinated or perfluorinated compounds. Some of these agents include perfluorooctanoic acid and perfluorooctanesulfonic acids. They are persistent in the environment, capable of bioaccumulation, and now exist even in areas remote from where they are used. These substances have hormonal disrupting properties due to their effects on reproductive and immune systems.

Flame retardants are used to make a textile product less flammable. Due to national regulations, flame retardants may be required in some products, such as protective clothing, curtains and furniture. It has been found that some flame retardants currently used, especially halogenated versions, have dangerous properties. Perfluorohexane sulfonate, used as flame retardant, has strong persistence and biological accumulation potentials in human body.

Biocides are used to ensure that living organisms do not develop on textile products during storage or transport, and in particular to provide anti-odor properties in sportswear products. In fact, they are designed to be dangerous only to target organisms, but it is difficult to develop biocides that do not harm other organisms, including humans. For example, the mold protection can be released when the package containing the textile products is opened and spread to the storage container. Problematic biocides such as triclosan, triclocarban and nano-silver may be present in textile products. There is increasing concern about the possibility that bacteria will develop resistance to released antibacterial agents and thus will also begin to develop resistance to antibiotics.

Global Material Flows for Clothing

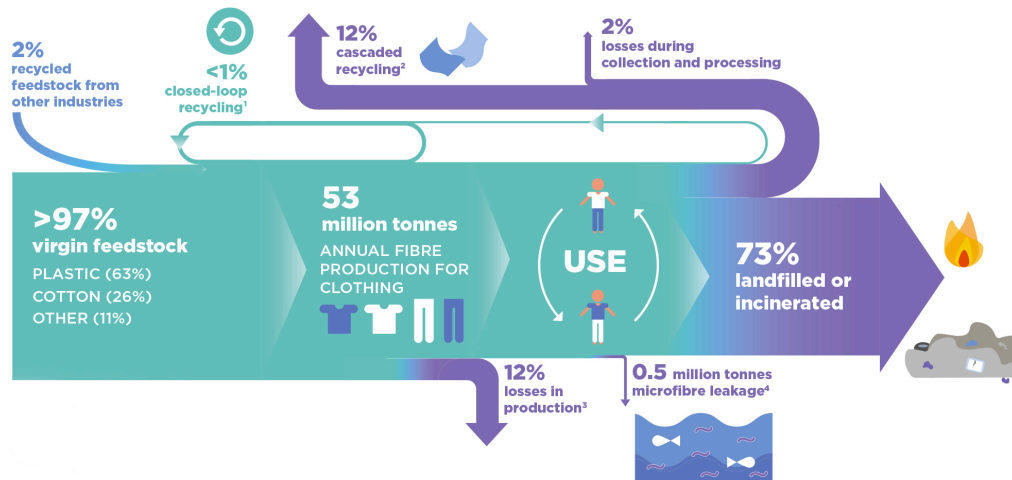


Figure 14 - Source: <http://tiny.cc/fibres>

If the above figure is examined, it can be seen that almost all of the value of the material they are produced is lost after the garments are used due to today's linear system. 87 percent of the total fiber input used for garment production is landfilled, or destroyed by incineration. The numerical equivalent of this is 100 billion dollars annually. 10 percent of the losses occur during the production of clothing, the other 2 percent of the loss that never comes to the market is landfilled or incinerated again. Additionally 2 percent of loss emerges in the collection and sorting of discarded garments.

Every second, the equivalent of one garbage truck of textiles is landfilled or incinerated. Trashing the clothes is also a huge waste of money. For example in New York City, it costs \$20.6 million annually to ship textiles to landfills and incinerators. Across the country, a municipality pays 45 dollars per ton of waste sent to landfill. (30) Another example, potential clothing and home textiles that can be landfilled or incinerated annually in the UK are 820 thousand tons. Calculated at 100 pounds per ton, the annual cost becomes 82 million pounds. (31) Less than 1 percent of the material used in clothing production is recycled as new garment. Recycling of used clothing and production offcuts are included in this amount. Looking at the Figure 16, the last thing to say is that only 13 percent of the total material input is recycled after the use of garment and as a result of this recycling, low-value applications such as insulating material, wiping cloths and mattress or quilt filling are made. After using recycled materials in these applications, it is difficult to re-extract the materials and therefore is now completely discarded. (32) After the discussion of all these negative impacts, "Is environmentally friendly fashion possible?" question comes to mind.

To answer this, first of all it is necessary to explain sustainability and then its possible relationship with fashion.

4. Fashion & Sustainability

Sustainable life, sustainable planet, sustainable cities, sustainable future ... Recently we have started to see the word "sustainability" very often. When asked "what is sustainability?" it is not possible to not hesitate for a moment; because the word sustainability can be used in different fields and it is actually a bit complicated concept.

4.1 Sustainability

When something is sustainable, it means that it can either maintain its current state or renew itself. From this meaning of the word, the concept of sustainability; "to leave future generations a world where ecological, economic and social conditions can be sustained." has been used in the sense.

Although the concept of sustainability has become an agenda for the last 30 years, it has actually emerged as a result of much longer accumulations. This concept has become increasingly important due to the destruction of human being to nature and environment. As a result of the economic and social developments in the 20th century, the ecosystem was damaged and it was understood that alternative approaches should be taken. Therefore, sustainability and environmental development were aimed.

The basic idea of sustainable development was shaped by international conferences and initiatives between 1972-1992. The United Nations Conference on the Human Environment took place in Stockholm in 1972. This conference is the first international meeting to discuss sustainability in the global arena.

With the Stockholm Declaration adopted at the conference in question, the carrying capacity of the environment was emphasized and the basic pillars of the concept of sustainable development were laid down with the principles that emphasize intergenerational equity in resource use, linking economic and social development with the environment and emphasizing the unity of development and environment.

Recommendations from the conference in Stockholm were developed and the World Conservation Strategy was published in 1980. In the first part of this report, development is discussed. Thus, for the first time in the history of the world, Sustainable Development has been included in this report as follows:

"The modification of the biosphere and the application of human, financial, living and non-living resources to satisfy human needs and improve the quality of human life. For development to be sustainable it must take account of social

and ecological factors, as well as economic ones; of the living and non-living resource base; and of the long term as well as the short term advantages and disadvantages of alternative actions."

The concept of sustainability as it is today; It is described in "Our Common Future" report published in 1987, (known as 1987 Brundtland Report) in which the Commission's decisions were collected by the World Commission on Environment and Development established by the United Nations.

According to this report, sustainable development is defined as:

"development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This is a phrase with great meanings in a few words. More specifically, the concept of sustainability is a holistic approach encompassing ecological, economic and social dimensions. In essence, it is to leave a livable world to future generations in every respect. That is, a clean natural environment that can renew itself, social conditions based on equality and prosperity, and an economic system that takes care of society and the environment.

The report includes the differences between the beginning and the end of the 20th century and the impact of local human activities on ecosystems on a global scale and socio-political issues. In the Brundtland Report, criteria for sustainable development are referred to as 3E (Ecology, Economy and Equality).

The transformation of Sustainable Development into a globally active policy took place on June 3-4, 1992, at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, with the participation of heads of state or government of 178 countries. At the conference, it was acknowledged that human beings are at the center of sustainable development and have the right to a healthy, harmonious and productive life with nature. At the conference, two main documents, the Rio Declaration and Agenda 21, were adopted. With this conference, the concept of Sustainable Development has expanded considerably and has been used frequently in many disciplines.

The Kyoto Protocol implemented the objective of the UNFCCC to reduce the onset of global warming by reducing greenhouse gas concentrations in the atmosphere to "a level that would prevent dangerous anthropogenic interference with the climate system" (Article 2). The Kyoto Protocol applies to the six greenhouse gases listed in Annex A: Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulphur hexafluoride (SF₆).

All 191 United Nations member states at that time, and at least 22 international organizations, committed to help achieve the following Millennium Development Goals by 2015:

- To eradicate extreme poverty and hunger
- To achieve universal primary education
- To promote gender equality and empower women
- To reduce child mortality
- To improve maternal health
- To combat HIV/AIDS, malaria, and other diseases
- To ensure environmental sustainability
- To develop a global partnership for development

In 2002, the World Sustainability Development Summit (WSSD) was held in Johannesburg. For the first time, Sustainable Development has been mentioned in the name of a summit, and from this point of view it has historical value.

The last meeting under the leadership of the United Nations, “United Nations Conference on Sustainable Development”, also known as “Rio + 20”, was held on June 20-22, 2012 in Rio de Janeiro, Brazil. Again, the concept of Sustainable Development was used as a name in the conference.

At the end of the conference, the final declaration named “The Future We Want” was published. The Declaration renewed the commitment to implement the decisions taken at previous conferences, emphasized that human beings are at the center of sustainable development and that economic, social and environmental factors must be harmonized in order to achieve sustainable development, and that all segments of society should play an active role in achieving sustainable development.

While sustainability is often only associated with environmental protection, it focuses on the three main systems mentioned above:

- Environment
- Economy
- Society

In other words, sustainability means meeting today’s economic and social needs without stealing the possibilities of future generations and damaging nature.

The concept of sustainability has a close relationship with development. Development, in essence, aims at increasing the welfare of individuals. Unfortunately, until recently, “development” was only associated with economic growth. Now it is understood that development cannot be achieved only by economic growth and that many different factors need to be taken into consideration. Thus, the concept of “sustainable development” emerged. In

addition to economic growth, factors such as social equality, natural environment, gender equality, qualified education, health of individuals, responsible production and consumption have been taken into consideration in order to increase the level of prosperity through sustainable development.

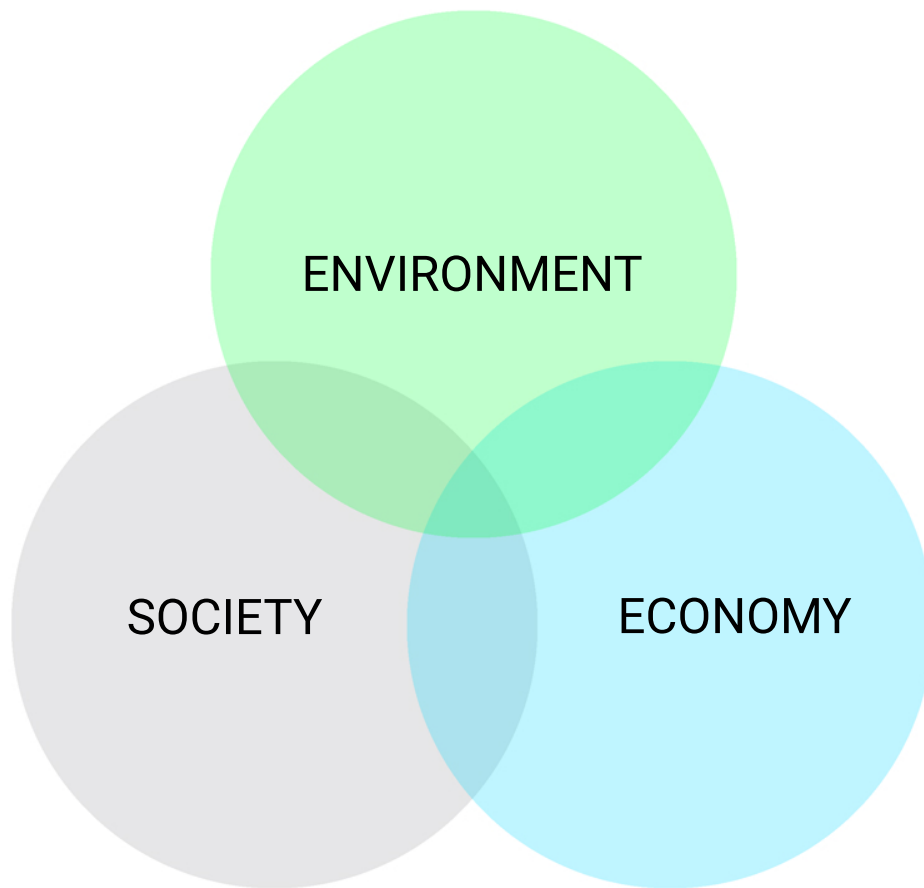


Figure 15

From this point of view, the concept of sustainability treats society, nature and economy as intertwined clusters. Each is interrelated, so the sustainability of each is interdependent. In other words, if natural resources are consumed at a non-renewable rate, a sustainable economy cannot be mentioned. Because natural resources necessary to maintain the economic system will be consumed. Or, if sustainability is evaluated from a social perspective, environmental sustainability will not be possible unless the necessary political arrangements are made and lifestyles are changed.

The aim of ecological sustainability is to protect the nature and the environment for future generations and to use non-toxic, transformative resources that do not harm the physical environment. Its environmental dimension envisages a system that can manage its own resources and does not harm the environment.

The aim of economic sustainability is to prevent excessive consumption of economic resources such as raw materials, energy and manpower. Sustainability in the economic dimension is to ensure economic growth with the protection of life and the environment. Excessive consumption of resources prevents economic sustainability

The social dimension of sustainability deals with the relationship between human rights and social development, institutional forces and environmental justice, global poverty and citizen action.

4.2 The relationship between fashion and sustainability

Activists' adoption of an environmentalist and ethical fashion understanding in the 1960s and 1970s and the developments related to this led to the foundation of sustainability in the field of fashion. Rachel Carson's book *Silent Spring*, published in 1962, is one of the first books to be written extensively in this area, which has stimulating effects on the destruction of ecosystems, pollution of spring waters, and the beginning of the destruction of natural resources. The issues Carson warns in his book draw attention to the environmental problems created by industries.

Among the issues discussed today are excessive use of water, mixing of factory wastes with natural water, the use of illegal water lines, the use of chemical drugs in agriculture, the presence of textile processes that cause the consumption of natural resources (water, oil, soil), greenhouse gases produced during the production of synthetic and cellulosic fibers, increase in pollution caused by textile wastes, decrease in the capacity of garbage dumps, violation of human rights in factories; well below the standards workers' salaries, the employment of illegal workers, the existence of conditions harmful to health, the excessive use of non-renewable natural and energy resources are problems of the textile and fashion sector.

Fashion, which is an international language, consists of a global commercial area as a system. Within the fashion system, it uses methods such as procurement of raw materials, production, keeping costs low in storage and retail processes. This development has led to the spread of the fashion system to the global arena. Since the fashion system has become a global market, the brand or name cannot give an idea of its production center and its location.

With the globalization, the production-consumption cycle of brands ceased to be local. Today, a brand with a design office in the European continent is able to produce in Asia and carry out sales operations in any store in the USA. The environmental problems in the production-consumption chain factories,

workplaces and workshops and various units serving this cycle have reached serious levels.

Clothing sector is one of the sectors where fast consumption is seen most. No matter how much it is consumed, there is a continuing dissatisfaction. Due to the idea of “use and throw” brought by fast consumption, the consumption craze has emerged today and due to this situation, the pile of unused or less used clothes has occupied the wardrobes of individuals. For example, Kate Fletcher, who contributed to the literature on sustainable fashion, said in an interview how clothes are used for a short period of time and an average of 40 kilograms of clothes thrown by a person to the garbage annually.

One of the factors that cause people to consume so much is the constant effort of fashion to create new ones. In order to change this situation, Fletcher argues that it is necessary to create conscious, sustainable and beautiful products by making intelligent designs with carefully produced fibers which are based on hand skills, in accordance with global ethical rules, and that treat cultures as a fascinating and very important element.

In a cultural context, clothing is used as a result of a concrete need. However, because of the need of human psychology for change and fashion is fed by change, clothes affect people. Fashion addresses the intangible needs of people. These needs include psychological needs such as emphasizing our identity, looking attractive, being understood, participating, creating, renewing and showing our free will. In this context, it is necessary to examine the relations of textile and fashion industries with the environment with the concept of sustainability and to mention alternative design models. When it comes to sustainability, trying to increase the positive effects of these needs in the fashion cycle should be one of the main researches.

Therefore, the role and actions of the fashion designer are important. It is thought that fashion designers can take part in a sustainable and ecological fashion cycle instead of a rapid and destructive fashion cycle in many ways.

4.3 Suggestions for sustainability in fashion and textile sector

In the field of fashion, from the production of raw materials, design, production, consumption and post-consumption stages, the following improvements can be applied for the sustainability (33);

1. To produce more organic cotton instead of cotton production which uses pesticides and chemicals that affect the environment and human health.

2. To calculate all environmental impacts of the products from the design to the final product and even to the disposal.
3. Using the upcycle method to convert used products into another product without destroying the material and quality
4. Reuse materials obtained by recycling, processed by industrial methods and converted into new products.
5. Taking steps to eliminate negative impacts by choosing organic products with small and simple applications
6. To prefer slow fashion rather than fast fashion. Slow fashion is an understanding that respects people's living conditions, differences and limited world resources.

4.4 Case Studies

In recent years, it is seen that world-renowned brands have started to use sustainable approaches. In addition, many events, campaigns are organized in this regard.

H&M, one of the ready-to-wear brands that have started to work effectively on sustainability, collects old textile products that will not be used and classifies them in special processing plants. Products in good condition are put into second-hand use, while those in worn condition are recycled and resurrected as other textile products. They are also used as filler or insulation material. In this way, H&M obtains raw materials for production and supports recycling. (34)

TRAID, a voluntary organization, transforms second-hand clothing into customized fashion pieces with a group of innovative young designers under the trade name TRADE Remade. (35)

Patagonia, a sportswear manufacturer with a long history of environmentalism, has been producing high quality recycled garments for more than 10 years with the waste generated by consumers. For example; made of special woven jackets with polyester fibers recycled from polyester automobile front panels. (35) This brand started a campaign a few years ago that warned its customers, "Don't buy this jacket." The message was intended to encourage people to become aware of the negative impact of excessive consumerism on the environment, to become conscious and to buy only what they really need. It especially targeted consumption on black Fridays.

DON'T BUY THIS JACKET



It's Black Friday, the day in the year retail turns from red to black and starts to make real money. But Black Friday, and the culture of consumption it reflects, puts the economy of natural systems that support all life firmly in the red. We're now using the resources of one-and-a-half planets on our one and only planet.

Because Patagonia wants to be in business for a good long time – and leave a world inhabitable for our kids – we want to do the opposite of every other business today. We ask you to buy less and to reflect before you spend a dime on this jacket or anything else.

Environmental bankruptcy, as with corporate bankruptcy, can happen very slowly, then all of a sudden. This is what we face unless we slow down, then reverse the damage. We're running short on fresh water, topsoil, fisheries, wetlands – all our planet's natural systems and resources that support business, and life, including our own.

The environmental cost of everything we make is astonishing. Consider the R2® Jacket shown, one of our best sellers. To make it required 135 liters of

COMMON THREADS INITIATIVE

REDUCE

WE make useful gear that lasts a long time
YOU don't buy what you don't need

REPAIR

WE help you repair your Patagonia gear
YOU pledge to fix what's broken

REUSE

WE help find a home for Patagonia gear you no longer need
YOU sell or pass it on*

RECYCLE

WE will take back your Patagonia gear that is worn out
YOU pledge to keep your stuff out of the landfill and incinerator



REIMAGINE

TOGETHER we reimagine a world where we take only what nature can replace

water, enough to meet the daily needs (three glasses a day) of 45 people. Its journey from its origin as 60% recycled polyester to our Reno warehouse generated nearly 20 pounds of carbon dioxide, 24 times the weight of the finished product. This jacket left behind, on its way to Reno, two-thirds its weight in waste.

And this is a 60% recycled polyester jacket, knit and sewn to a high standard; it is exceptionally durable, so you won't have to replace it as often. And when it comes to the end of its useful life we'll take it back to recycle into a product of equal value. But, as is true of all the things we can make and you can buy, this jacket comes with an environmental cost higher than its price.

There is much to be done and plenty for us all to do. Don't buy what you don't need. Think twice before you buy anything. Go to patagonia.com/CommonThreads or scan the QR code below. Take the Common Threads Initiative pledge, and join us in the fifth "R," to reimagine a world where we take only what nature can replace.

Photo 9 – NYTimes - Patagonia advertisement – 25 november 2011

Fashion Revolution is a movement that aims to share the behind the scenes of the fashion industry with consumers, to question of our consumption habits, to become conscious, and thus to invite those responsible of the effects of this huge sector on our environment and humanity to change this cycle. On April 24, 2013, 1,138 workers were killed and hundreds injured in a collapsing textile factory in Dhaka, the capital of Bangladesh.

On the first anniversary of the collapse, which will be called "Rana Plaza Disaster" in history, an international group that refused to be a spectator of this bad trend founded this organization called Fashion Revolution. The movement continues its activities around a day that is declared "Fashion Revolution Day", especially on April 24 of every year.

"Who made my clothes?"



*Who
made
my
clothes?*

This organization, which is active in more than 100 countries, announces its messages on social media and organizes many events on the anniversary of this collapse every year to transform the negative impact of the fashion sector on the world into positive. For example, the labels of the clothes worn on social media are photographed, shared with the #whomademyclothes tag, and brands and manufacturers are tagged. Then also brands and manufacturers share information about the production process with the #imadeyourclothes tag, thus find a chance of transparency with the consumer. (36)



Photo 10 – Fashion Revolution

5. Slow Fashion

It is also another way to choose Slow Fashion movement rather than Fast Fashion. With Slow fashion, it is also possible to support an understanding that respects people's living conditions, differences and limited world resources. The Slow Fashion movement was adopted by some designers and brands. It has emerged as the opposite view of the fast fashion approach with the understanding that less consumption should be realized, which adopts ethical trade, decreases the seasons, and produces long-lasting products with a balance of quality and cost. Slow design is an approach to create unique, personality products that respect human living conditions, biological, cultural diversity and limited world resources. However, recommendations such as supporting local production and minimizing the negative environmental impacts of the transport sector by using local resources and encouraging the use of second-hand products are guidelines for sustainable fashion design.

Slow fashion, within the concept of sustainability, is an approach to reduce the negative impact created by fast fashion on resources and the environment. This means the development of the concept of sustainable design in the fashion sector in terms of individual and socio-cultural balances and environmental needs. Fast fashion with Slow fashion can be compared as follows:

Fast Fashion	Slow Fashion
<ul style="list-style-type: none"> • Fast fashion responds quickly to fashion preferences and wishes of consumers • Lower quality, lower price • Highly profitable in global markets • Fast manufacturing leads to a disregard of working conditions. • Causes fashion trend to change rapidly • Low quality and low price lead to increased fashion pollution • Fashion for the latest trends • Fast and high quantity cheap products • Consumers are expected to buy single-use and multiple products 	<ul style="list-style-type: none"> • It reduces the consumption of resources and the amount of waste. • Improves the quality of life of employees • Improves product quality • Increases product lifetime • Small amounts of production cause slow fashion companies to fail to use economies of scale strategies. • Products are more expensive than standard products. • Individual styles reflecting individual identities • Small quantity, high quality products • Consumers are targeted to buy less but high quality products

Table 7

QUALITY

~~QUANTITY~~

The slow fashion trend in textile and apparel is a new and dynamic concept used against fast fashion. Therefore, authors use the concept of slow fashion to meet concepts such as environmentally friendly, sustainable and socially responsible fashion. The aim of slow fashion is not to slow down textiles and ready-to-wear garments, but to provide a more sustainable production chain design plan, efficient use of production resources and consumer

education. Rapid consumption has become an indispensable element of today's economic production circulation. Rapid production and rapid consumption have inevitably caused rapid consumption of resources and increased environmental costs. For this reason, slow fashion is of revolutionary importance due to its product quality and connection with the environment. Fast fashion is based on consumption, price competition and exploitation of labor, while Slow fashion adopts quality and long-term thinking.

With Slow Fashion, a balance between production, consumption and design speed can be achieved and the transformation in fashion can be slowed down. The slow fashion process leads textile companies to pursue sustainable, environmentally friendly and ethical practices.

While slow fashion slows down the whole process with the values it proposes, it supports human, nature-oriented creation, production and consumption.

5.1 Values of Slow Fashion (37)

Seeing the whole picture

Slow fashion argues that all actions are linked to larger ecological and social systems. Because of this commitment, it envisages to look at the whole system and take decisions in a holistic way, that is to see the big picture.

Slower consumption

Reducing textile consumption, thus reducing production and the pressure on the ecological cycle and providing less raw material input to the system can lead to a production rhythm that is more compatible with the cycle of nature. And a slower rhythm will also improve the working conditions of textile workers.

Cultural, ecological and social diversity

Slow fashion promotes the continuity of cultural, ecological and social diversity. The understanding of ecological diversity emphasizes that all living species live together in a healthy way. Independent designers, fair trade,

second-hand clothes, recycled products, dress change, traditional textile production methods or innovative business models can be presented as some methods to create or increase the social and cultural diversity in the field of fashion.

Human values

Being a part of fair trade, establishing cooperatives, producing in accordance with Code of Conduct rules, allows textile workers to work under fair conditions. It ensures that the rules set out to protect workers on fair trade, wage policies, social rights and working conditions are applied.

To touch emotions while designing needs

The concept of slow fashion attaches great importance to ethical and human values in the production stage. At the same time, it includes people's creativity and identity in the process of designing and identifying needs. By telling them the story behind the product, making customers part of the design process, sharing information, creating a common story, provides an emotional relationship with the product.

Strong relationships

The establishment of transparent and lasting relationships between designers, institutions, manufacturers and suppliers involved in the entire production process enables a stronger structure for the slow fashion movement.

To be full of resource

Slow fashion aims to use local resources, skills and materials. It supports the repair of existing old clothes, the purchase of second-hand clothes or the redesign of old clothes.

Quality, attentive, well-maintained products

Timeless designs, quality materials and careful production techniques can be used to create permanent and long-lasting products. Slow fashion brands also offer repair and recreation methods. Thus, the products can be renewed and used without losing quality over time.

Price and value

Slow fashion trend brands and manufacturers are more competitive in providing sustainable products and increasing their visibility in the market. The prices of these products are priced higher than normal products because they are based on fair pricing and real value payment.

Conscious choice

The decision of people who buy a Slow Fashion product is a decision about their demands on the environment and human values and how much responsibility they want to take.

5.2 How to adopt Slow Fashion? ⁽³⁸⁾

- by slowing down the purchase speed, thinking twice before buying the product
- by selecting organic or environmentally friendly, renewable fabric types
- by giving importance to quality, not quantity
- by simplifying the wardrobe and sharing clothes when needed.
- by paying attention to maintaining clothing and prolonging their life
- by washing clothes as less as possible
- Shopping in second hand and vintage stores
- Shopping from local and sustainable brands and designers.
- By being curious and learning who makes the products under which conditions.
- by choosing products with sustainable trade methods that have fair trade labels
- by being more brave about sewing and repairing their own clothes or going to the tailor to have them repaired.
- by re-designing an old garment, creating a new garment or product
- by telling their surroundings and raising awareness while researching or working in slow or sustainable fashion.

5.3 Certifications for Textile Industry

As environmental problems increased, the number of certificates related to sustainability on the fashion and textile sectors increased. Here are some of the key international certificates: ⁽³⁹⁾

Environmental Certifications



The Global Organic Textile Standard (GOTS) is one of the most reliable and holistic certifications in the world. It covers all production stages from raw materials to final products of all textiles made from organic natural fibers. Textiles must comply with certain environmental standards (such as toxicity, waste water) and the social criteria of the International Labor Organization.



OEKO-TEX 100 is a worldwide certification system for raw materials, intermediates and end products in all stages of textile products. It documents that the textile products are free of health-damaging substances or are present in quantities that do not harm human health.



Better Cotton Initiative (BCI) is a non-profit organization that promotes a more sustainable way of supplying cotton according to established standards.



Bluesign is a certificate given to textile manufacturers who produce safely for human and environment. It covers all matters from the production of toxic substances and wastes to the safety of workers and consumers.



Cradle to Cradle (C2C) deals with the circular life cycle of products. Everything that grows, of course, returns to the soil. It focuses on the organic health of the material, its recyclability, the use of renewable energy, the quality of water efficiency and the social justice behind its production. In short, it is an indicator for both ethics and sustainability.



The Organic Content Standard (OCS) is a standard for monitoring and validating organically grown content in end products. OCS is applied in products containing between 5% and 100% organic material other than food products. It monitors the raw material from its source to the final product.



National Sanitation Foundation (NSF) was founded many years ago in the United States; has become a competent, independent, international top authority in the determination, testing and certification of health, hygiene and cleaning standards of water, food, environment and consumer products.



Forest Stewardship Council (FSC) is issued to firms as a result of audits conducted by FSC accredited independent certification bodies in accordance with the relevant FSC standard in order to show that CoC (Chain of Custody) management system is applied in a company producing, processing, distributing or transforming forest products.



Ecocert is one of the most important organizations providing international organic certificates, is the institution that controls the whole production at every stage and has strict standards rules. It covers all stages from cultivation to the final product and packaging. It is an independent inspection and certification company that specializes in organic agriculture products



PETA – Approved Vegan is the certificate which is obtained as a result of the verification of a vegan brand or product by signing the PETA assurance declaration. It is based entirely on self-reporting, no auditing. On the other hand, it does not mean that all of the vegan products are environmentally good, for example vegan leather PU is toxic to humans and environment.



Leather Working Group (LWG) is a certificate issued to leather tanners and leather traders in terms of approval or degree by examining how their production processes affect the environment. In this certification, issues such as waste management, energy consumption, water use, traceability, and limited substances are considered.

Fair Labor Certifications



Fair Trade is a certificate that deals with fair wages, safe working conditions and supply chain transparency, to support small farmers, producers and traders facing stringent standards all over the world.



Worldwide Responsible Accredited Production (WRAP) is a social compliance certificate especially for companies working in sectors such as textiles, fashion and footwear. These factories are inspected in categories such as forced labor, social rights and discrimination, and then are awarded platinum, gold or silver certificates.



SA8000 is a social certificate for factories and organizations all around the world, founded by Social Accountability International. Its standards comply with ILO conventions and deal with issues such as child labor, forced labor, health and safety, discrimination, working hours.



NEST is a certificate that guarantees ethical work standards for all the work done within the houses. In fact, until the arrival of the NEST, although there were so many certificates to protect the workers in factories, the second largest female employment which is within the homes in the developing economies was not protected.

Holistic Brand Certifications



B Corp is the only certificate that measures social and environmental performances, by addressing all aspects starting from supply chain and materials on the production line to the employee benefits.



Eco-Age is a certificate issued to fashion brands that adhere to ethical, social and environmental behaviors according to the principles of Sustainable Excellence such as fair work, community, diversity and inclusion, environmental management, leadership, animal welfare.





SECOND PART

TURKEY AS A CASE STUDY

6. Holistic Diagnosis of Turkey

Textile industry is an important economic resource for Turkey. The country has an important position in the world in this regard and plans to increase production and export figures further to maintain this position. In order to understand the effects of this sector on the environment, social structure and economic areas, demographic structure of the society, labor force and employment figures by sectors were examined. When the export figures came out, the result was quite clear.

6.1 Demographics Of The Country

6.1.1 Population

Population refers to the total number of people living in a country, a region, at a given time. One of the most important features of Turkey's population is its high young population ratio. Another noteworthy feature is the increasing urbanization rate, which is the shift of the population from rural areas to cities. Especially in recent years, while the population in city and district centers has been increasing, it can be observed that the population in villages and towns has decreased rapidly. This migration in Turkey is seen mostly from rural to urban and from east to west. And not only from villages and towns to cities; it can be seen that migration from small cities to metropolitan cities has also increased. These migrations lead to an increase in the number of elderly people living in rural areas.

Turkey's population, as every year, usually in late January, is announced by Turkey Statistical Institute (Turkstat)². TurkStat has announced its census since 2007 on the basis of the Address Based Population Registration System (ABPRS) (40). Prior to this, the censuses were carried out in 5 year periods and then started to be published every year.

According to the Turkey Statistical Institute, Turkey's population as of December 31, 2018 reached 82 million 3 thousand 882 people (41). The population of the country was 1 million 193 thousand 357 people more than


² Turkish Statistical Institute (known as TurkStat; in Turkish: TÜİK) is the Turkish government agency commissioned with producing official statistics on Turkey, its population, resources, economy, society, and culture. It was founded in 1926 and has its headquarters in Ankara.

TOTAL POPULATION

82.003.882

50,2%  49,8%

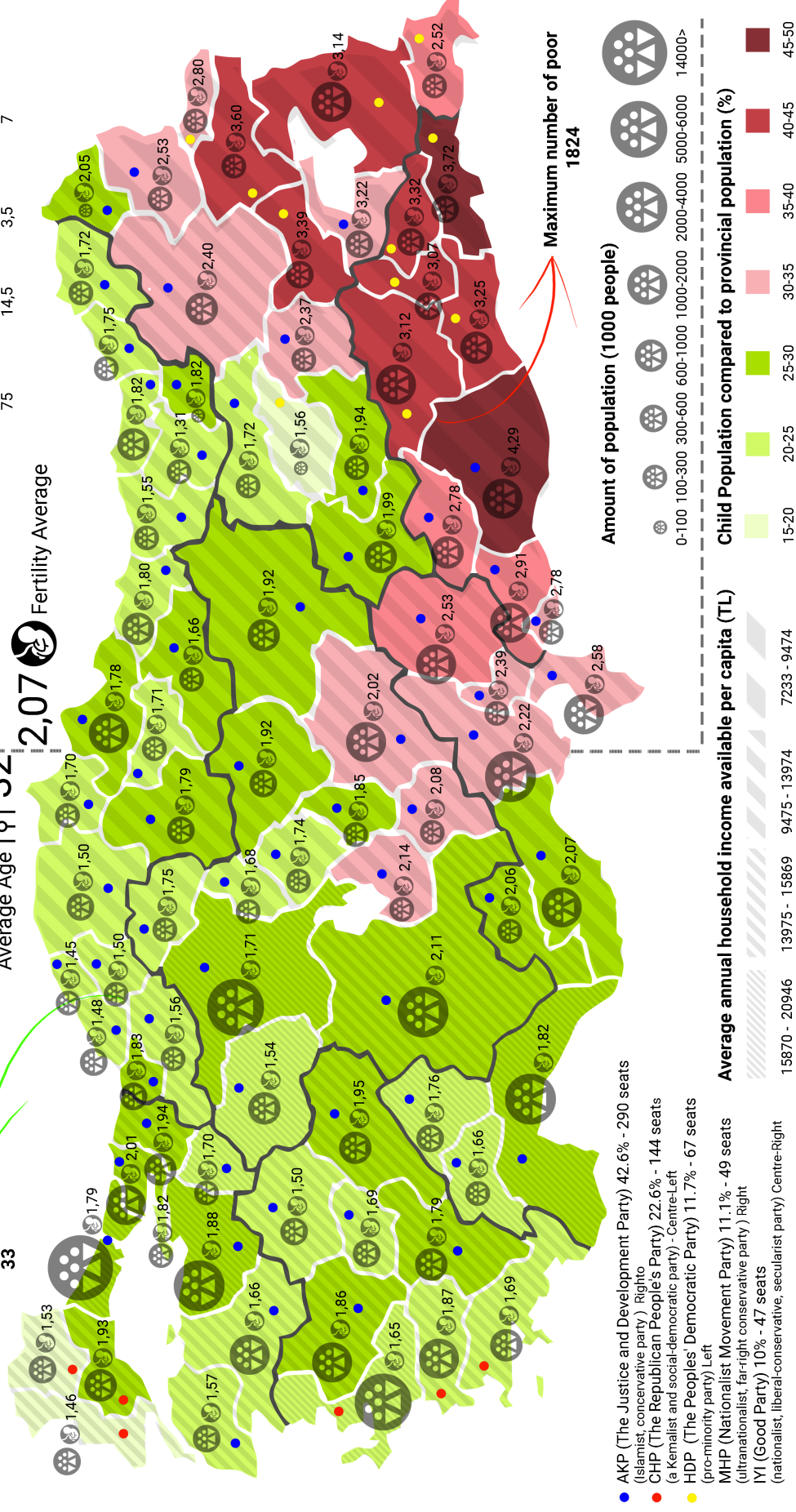
Minimum number of poor
33

Average Age  32

2,07  Fertility Average

Estimated rates of ethnic groups in Turkey (%)

Turkish 75
Kurdish 14,5
Zaza 3,5
Others 7



thousand 980, while the number of females was 40 million 863 thousand 902. In other words, 50.2 percentage of the total number was male and 49.8 percentage was female.

While the ratio of the population living in city and district centers was 92.3% in 2018, this rate remained only 7.7% for those living in towns and villages.

The country's most populous city, Istanbul with 15 million 67 thousand 724 inhabitants, which makes up more than 18% of the total population and was also selected as the 2010 European Capital of Culture. The population of mega city Istanbul, which has been the capital of many empires throughout history, is followed by Ankara with 5 million 503 thousand 985, İzmir with 4 million 320 thousand 519, Bursa with 2 million 994 thousand 521 and Antalya with 2 million 426 thousand 356 became the cities with the highest population respectively. Bayburt was the city which has the lowest population with 82 thousand 274 of people.

The average age of the population in Turkey was 32 in 2018. While the average age was 31.4 for the male population, it was 32.7 for the female one.

The cities, respectively, with the highest average ages were Sinop with 40.3, Balıkesir with 39.9 and Giresun with 39.6. On the other hand Şanlıurfa was the first city with the lowest average age with 19.8, which was followed by Şırnak with 20.7 and Ağrı with 21.4.

The city with the highest population density (the number of people for 1 square kilometer) was Istanbul with 2 thousand 900. Highest population density was followed by Kocaeli with 528, and İzmir with 360. On the contrary, Tunceli was the city with lowest population density with 12 people in 1 square kilometer. There were 57 people in 1 square kilometer in Konya city which has the largest surface area and 310 people in every 1 square kilometer of Yalova city which has the smallest surface area.

6.1.2 Ethnic Groups in Turkey

Turkey is a country with many ethnic groups. Since ethnicity has not been asked in the censuses since 1965, it is not possible to determine exactly how much the population of an ethnic group is. Although some estimates are made, they are generally not objective. With the collapse of the Ottoman Empire at the beginning of the 20th century, some ethnic groups have continued to live in Turkey. Turkey, located between neighboring countries that are different from each other in every sense as culture, language, religion. Although each trading, commerce and exploration activities have been carried out with these neighbors for hundreds of years, and a large number of different ethnic and races who migrated to Turkey, the Turkish ethnic origin are still dominant in the region.

Estimated ethnic groups in Turkey are Turks with 70-75% , Kurds with 13-19%, Zaza with 3-4% , Others with 5-7%.

6.1.3 Fertility Rate

“The total fertility rate in a specific year is defined as the total number of children that would be born to each woman if she were to live to the end of her child-bearing years and give birth to children in alignment with the prevailing age-specific fertility rates. (42)”

The “total fertility rate” which represents the average number of children a woman can have during her fertile period was 2.07 children in 2017, Turkey. This shows that fertility took a place below the level of population regeneration of 2.1. (43)

Accordingly, the highest total fertility rate was seen in Sanliurfa with 4.29 children. This province was followed by Şırnak with 3.72 children, Ağrı with 3.6 children and Muş with 3.39 children. In contrast, the province with the lowest total fertility rate was Gümüşhane with 1.31 children. This province was followed by Bartın with 1,45 children, Edirne with 1,46 children, and Zonguldak with 1,48 children.

6.1.4 Proportion of Children in Total Population

According to the results of the Address Based Population Registration System (ABPRS); By the end of 2018, there were 22 million 920 thousand 422 children in the 0-17 age range in Turkey. According to the ABPRS results; When the ratio of child population in total population of provinces is examined; In 2018, Şanlıurfa had the highest child population with 46.3%. Şanlıurfa was followed by Şırnak with 43.9% and Ağrı with 42.5%. The three provinces with the lowest rate of child population are; Tunceli with 16.7%, Edirne with 18.1% and Kırklareli with 18.7%.

6.1.5 Income and Living Conditions Rate

According to Income and Living Conditions Survey of Turkstat, the poverty rate in Turkey was 15 percent. According to this; 16.1 percent of the poverty was in Sanliurfa and Diyarbakir with 1824 thousand people. On the other hand, Zonguldak, Karabük and Bartın have the lowest share of the poverty with 0.3 percent, namely 33 thousand people. (44)

The average annual equivalent available individual income households was 14 thousand 553 TL in Turkey. Ankara had the highest average annual equivalent household income for individuals which is 20 thousand 446 TL. It was followed by Istanbul with 19 thousand 62 TL and İzmir with 16 thousand 935 TL. Whereas; The average annual equivalent household income is the lowest in the cities with 7 thousand 233 TL in Mardin, Batman, Sirnak, Siirt, and with 7 thousand 570 TL in Sanliurfa, Diyarbaki

6.2 Labor Force Statistics

According to Labor Force Statistics of Turkey Statistical Institute (Turkstat), the unemployment rate has rose by 1.3 points percentage and has emerged as 11.6 percent in October 2018.

In Turkey, the number of unemployed for 15 and older ages increased by 501 thousand people compared to those in the same period of 2018 to October period last year, and reached to 3 million 788 thousand people.

In the same period; The non-agricultural unemployment rate was estimated at 13.6 percent with an increase of 1.3 percentage points. While the unemployment rate in the young population (15-24 years) was 22.3 percent with an increase of 3 points, this rate was realized as 11.9 percent with an increase of 1.4 points in the 15-64 age group.

The number of employed people increased by 225 thousand people in October 2018 compared to the same period of the previous year and reached 28 million 870 thousand people and the employment rate decreased by 0.1 points to 47.5 percent.

Although the number of people working in the agricultural sector decreased by 187 thousand in this period, the number of people working in non-agricultural sectors increased by 414 thousand.

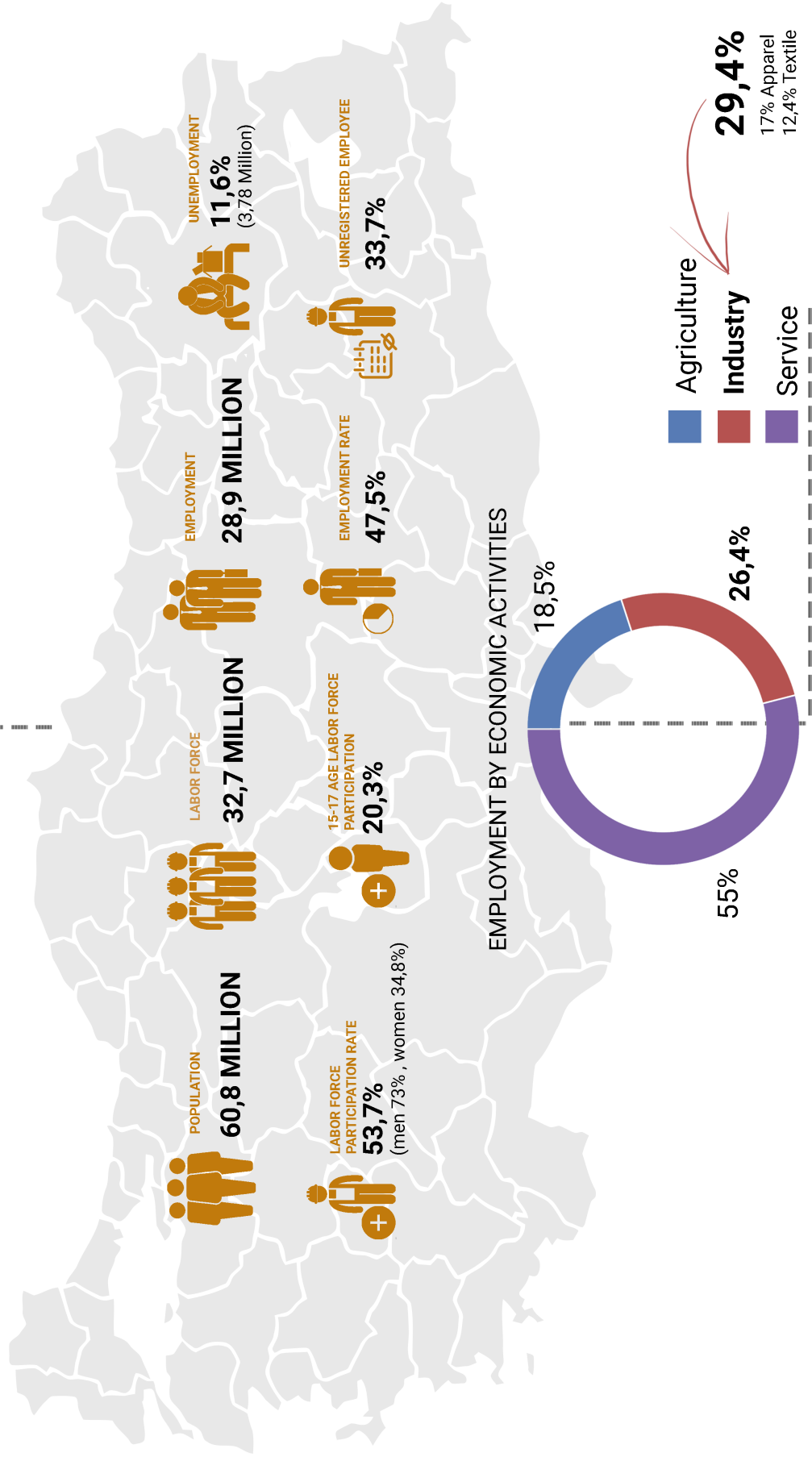
6.2.1 Employment by Economic Activities

Employment is divided into 3 main groups according to economic activities: 18.5 percent of those employed were in agriculture, 26.4 percent in industry and 55 percent in services.

29.4 percent of the employment in the industry consists of employees in the Apparel and Textile sector. (17 percent in apparel, 12.4 percent in Textile)
According to the September 2018 data of the Social Security Institute, the textile and garment industry, which constitutes 29.4 percent of the industry in employment, also has a rate of 40 percent female employment.

If a comparison is needed with the same period of the previous year, the share of the agricultural sector in employed people decreased by 0.8 points and the share of construction sector decreased by 0.9 points; the share of the industrial sector increased by 0.6 points and the share of the service sector increased by 1 point can be seen.

LABOR FORCE STATISTICS (>15 age)



In October 2018, labor force increased by 726 thousand people when it is compared to the same period of the previous year and reached 32 million 658 thousand people, at the same time the labor force participation rate increased too by 0.6 points to 53.7 percent. According to the comparisons made for the same periods; labor force participation rate for males increased by 0.6 percentage points to 73 percent, it increased by 0.6 percentage points to 34.8 percent for females too.

According to the statistics examined for the same period, the proportion of employees not protected by any social security institute decreased by 0.2 percentage points compared to the same period of the previous year, and realized as 33.7 percent (unregistered employment).

6.2.2 Turkey's Export Figures By Sector

According to export figures achieved in 2018 announced by the Turkey Exporters Assembly³, Turkey has the highest export in its history last year with 168 billion 88 million dollars (45). These figures indicate a 7.1 percent increase when compared to 2017. On the sectoral basis, the automotive industry exported goods with 18.8 percent of total export, which means 31 billion 568 million 469 thousand dollars in 2018. With this result, in 2018, the automotive sector had the highest export volume with 18.8 percent of total exports.

Automotive industry was followed respectively by **Clothing and Apparel Sector with 10,5 percent (17 billion 642 million 157 thousand dollars)**, Chemical Materials and Products sector with 10,3 percent, Steel sector with 9,3 percent, Electrical and Electronics sector with 6,7 percent, **Textile and Raw Materials sector with 6,2 percent (10 billion 509 million 682 thousand dollars)** and other sectors.

83.4 percent of Turkey's total exports in 2018 provided by the Industry group. 136 billion 325 million 297 thousand dollars of exports were made with the group in question with an increase of 12.4 percent compared to 2017.

Agriculture group provided 13.8 percent of total exports, with an increase of 6.7 percent and 22 billion 645 million 609 thousand dollars of exports realized, Mining group with 2.7 percent share of total exports with a decrease of 2.7 percent realized 4 billion 561 million 662 thousand dollars of exports. There is 2.7 per cent share for unregistered export.

³ Turkey Exporters Assembly (TIM briefly) is the umbrella organization representing 13 Exporters Union General Secretariat and 61 Exporters Association and more than 67,000 exporting companies registered to them throughout the country. It is the highest private sector representative in Turkey's exports.

TURKEY'S EXPORT FIGURES BY SECTOR (1000\$)

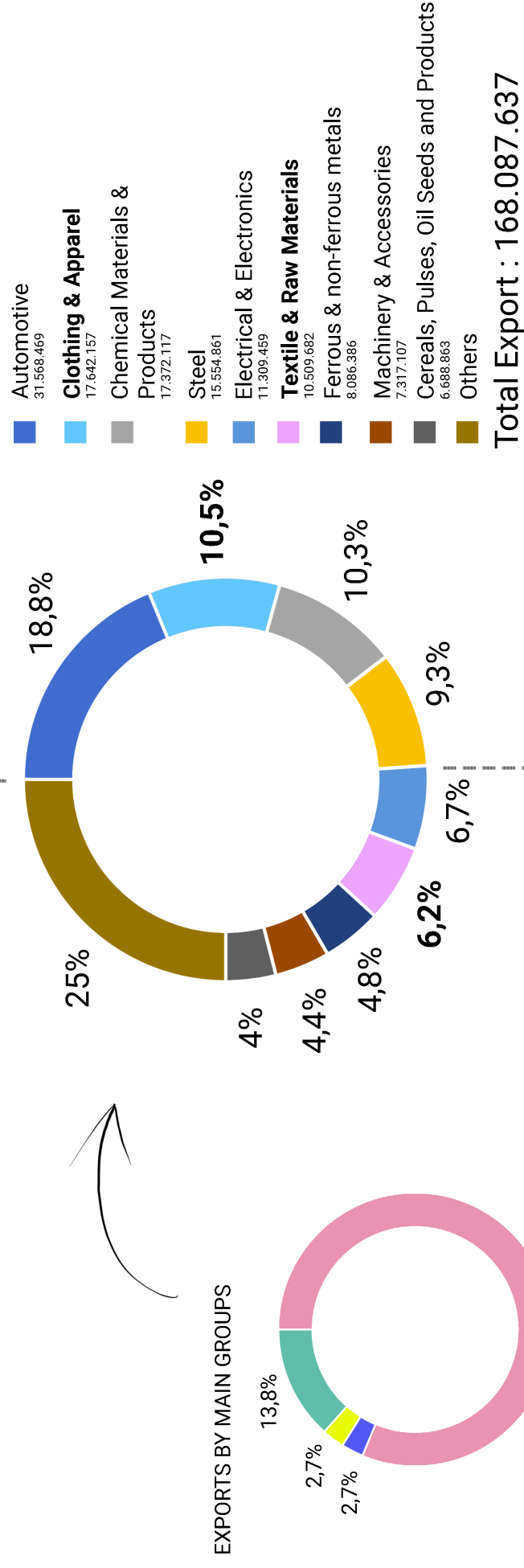


Figure 16 Source : TUIK

7. Textile Sector in Turkey

Textile is one of the oldest production activities in the world, which consists of the production of end products by converting various types of fibers into fabrics and then combining them with specific patterns and colors. Textile, ready-made clothing, leather and leather products sectors are in close relations with each other, consisting of products reaching the consumer with the concept of fashion. In particular, the textile sector has become a part of the supply chain of the garment sector. Both sectors are often considered as a textile sector under a single name.

After the industrial revolution, the textile sector played a leading role in the economic development of developed countries. Then, it has become a leading sector in terms of economies of developing countries such as Turkey and China. Today, China is the world's largest textile apparel exporter. Besides this, Turkey is also playing a leading role.

In Turkey, textile industry started to develop based on the cotton agriculture and has become an industry which exports a significant level with the help of liberal economic policies adopted in the 1980s. In the 39 years from 1980 to 2019, production and exports of the sector have transformed from low value-added products to high value-added products. The products have also become more fashionable.

In addition, many years of experience and knowledge of the sector, modern machinery and equipment with the latest technology, creative design capacity have been the factors that increase production and export performance. Over the years, Turkey has become one of the world's leading textile suppliers by providing increased capacity and export success.

7.1 Turkey's Textile Export in 2018

Today, Turkey is the 6th largest apparel supplier in the world, is the 3rd largest exporter to Europe. Moreover, Turkey ranks 4th among the world's jeans suppliers. It also ranks first in the supply of yarn, denim and home textiles to the EU.

In 2018, the total exports of clothing and garments with textile and raw materials has reached 28 billion USD which is equal to 16.7 percent share of 168 billion dollars which is Turkey's total exports. More specifically, 62.7 percent of Turkey's total textile exports is in clothing and garment with 17.6 billion dollars and 37.3 percent is in textile and raw materials.



TURKEY'S TEXTILE EXPORT IN 2018 (1000\$)

The majority of Turkey's garment production (65%) consists of **cotton products**, as well as an even larger majority of exported products (80%)

EU28 70,9%

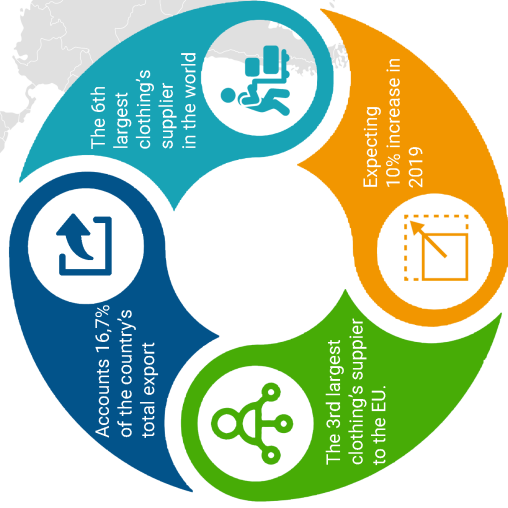
51,3%

STRATEGIC POSITION

Proximity to markets

Quality and technical competence

3-7 days of delivery



37,3%

10.509.682

62,7%

17.642.157

4th denim supplier in the World
1st largest yarn, denim, home textile supplier to the EU

According to the data released by the Turkey Exporters Assembly, Turkey's apparel and garment exports in 2018, showing an increase of 3.6% compared to the previous year and reached 17.6 billion dollars. In 2018, the garment and apparel sector was the second largest exporter after the automotive industry which has an increase of 10.7% exports and reached \$ 31.6 billion dollars.

According to the latest figures from the official EU statistics agency Eurostat, Turkey ranks third in the list of countries that export more textiles to the EU in 2018. (46)

Accordingly, China ranked first with 27 billion euros and another Far Eastern country Bangladesh ranked second with 16 billion euros. India ranked fourth with 5 billion euros, while Cambodia was in the top 5 with 4 billion euros in exports.



Figure 17 Source : ec.europa.eu/eurostat

In 2018, EU countries imported a total of 166 billion euros of textile products. 51 percent of these products came from countries outside the EU. Turkey produced 12 percent of textile products which are in EU countries.

The proximity of the Turkish producers to the European market started to be perceived as a great advantage with their rapid procurement, quality production with technical competence and design features. Therefore, some European brands have begun to shift their production to Turkey because of its strategic position. While Far Eastern countries can export goods to the EU by ship in 30 days or by plane which is more expensive and causes carbon emission, these goods can be exported only between 3 to 7 days by Turkey.

Based on the above informations, the data in the following tables can be better understood. European countries stand out as the first market in Turkey's exports of textile products: 70.9 percent share of total clothing exports and 51.3 percent share of total textile and raw materials exports.

Turkey's Clothing Exports by Country Groups		
Country Groups	January – December 2018 (1000 \$)	Share %
European Countries (28)	12.163.513	70,9
Middle East Countries	1.917.543	10,8
Old Eastern Bloc Countries	808.376	5,0
American Countries	675.048	4,1
African Countries	612.729	4,1
Turkic Countries	340.078	1,9
Asia and Oceania Countries	253.923	1,6
Other European Countries	189.164	1,1
Free Zones	70.859	0,5
TOTAL EXPORT	17.642.157	100

Table 5 - Source : ITHIB

Turkey's Textile & Raw Material Exports by Country Groups		
Country Groups	January – December 2018 (1000 \$)	Share %
European Countries (28)	5.396.556	51,3
African Countries	1.033.713	9,8
Middle East Countries	1.020.785	9,7
Old Eastern Bloc Countries	989.660	9,4
American Countries	794.163	7,6
Asia and Oceania Countries	677.429	6,4
Turkic Countries	274.833	2,6
Free Zones	247.925	2,4
Other European Countries	74.614	0,7
TOTAL EXPORT	10.509.682	100

Table 6 – Source : ITHIB

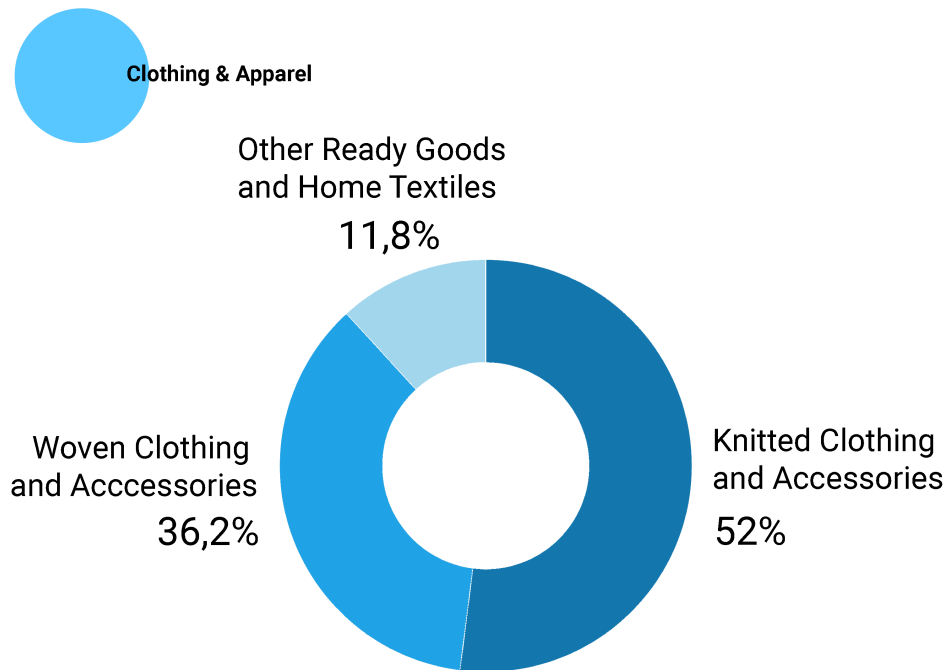


Figure 18 Source: ITKIB (Istanbul Textile and Apparel Exporter Associations) (48)

7.2 Exports of Clothing and Apparel by Basic Product Groups

Approximately 80% of the clothing exported is cotton clothing.

- Knitted Clothing and Accessories had a share of 52% in total clothing exports with a value of 9,1 billion dollars (T-shirts and pullovers are the most important export products),
- Woven Clothing had a share of 36,2% in total clothing exports with a value of 6.31 billion dollars (Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, etc." and "Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches, etc." are the most important export products)
- Other Ready Goods and Home Textiles had a share of 11,8% in total clothing exports with a value of 2 billion dollars in 2018.

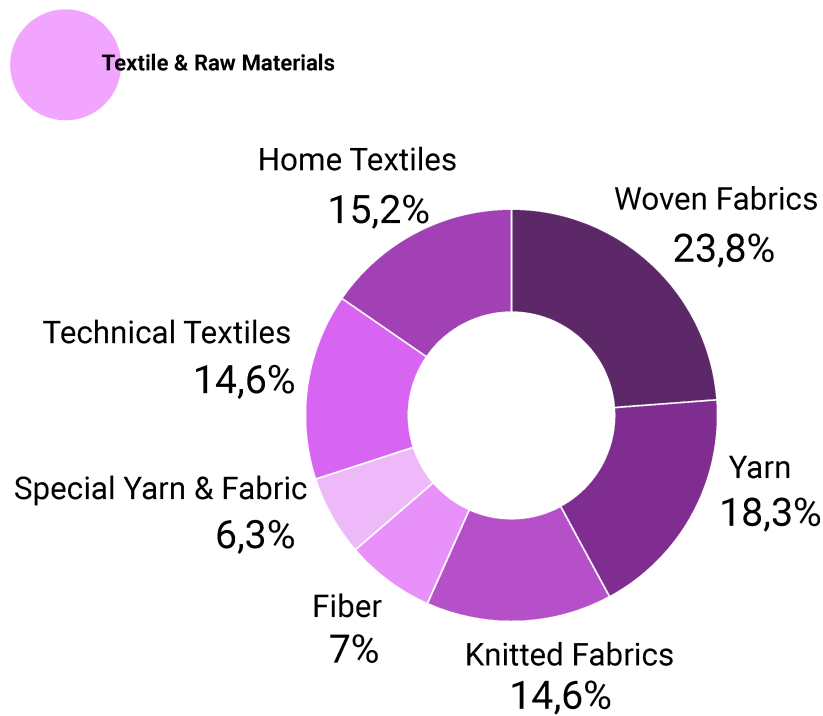


Figure 19 Source: ITKIB (Istanbul Textile and Apparel Exporter Associations)

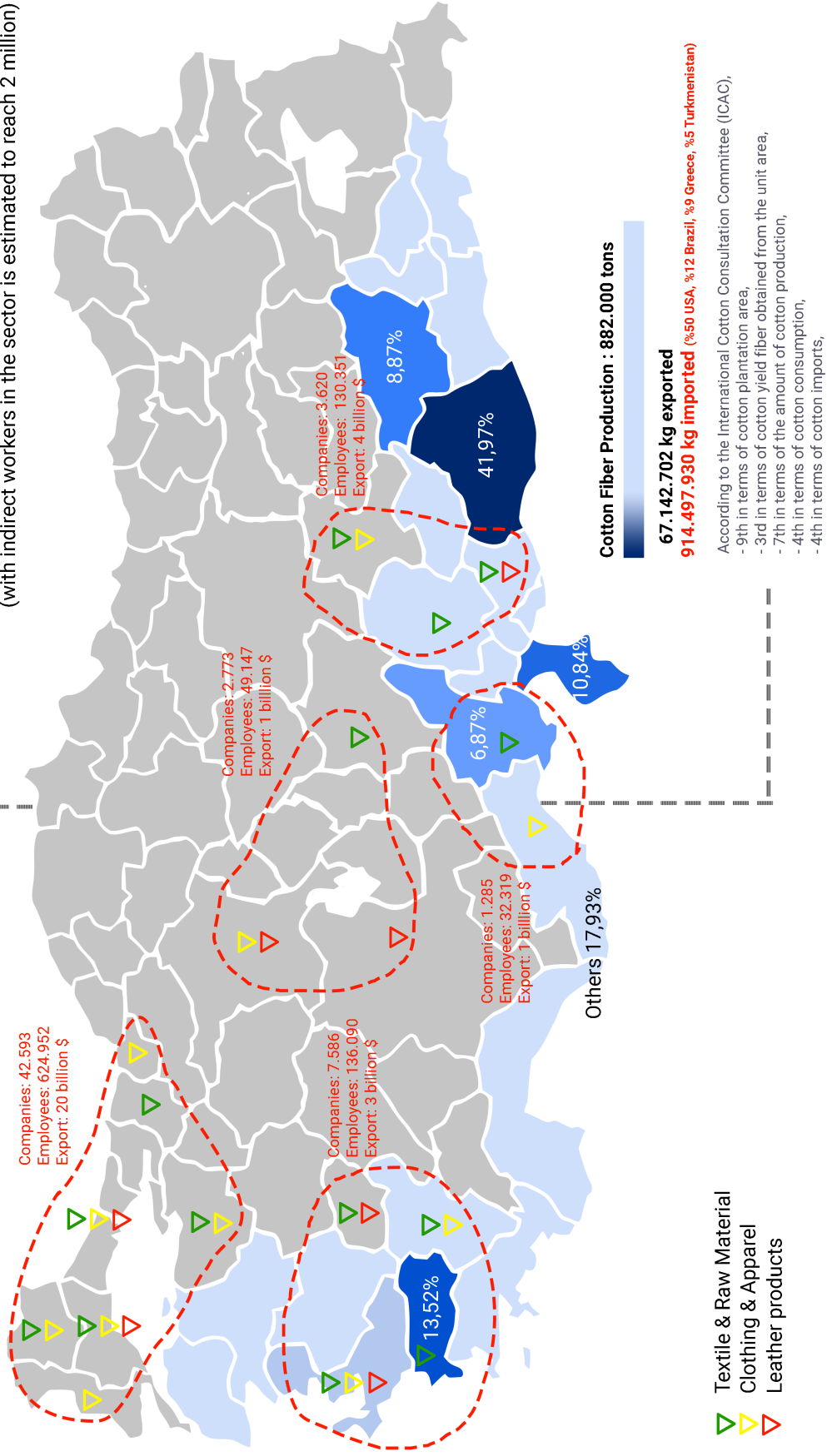
7.3 Exports of Textile & Raw Materials by Basic Product Groups

- Woven Fabrics had a share of 23,8% in total textile exports with a value of 2,5 billion dollars:
 - of cotton 39,1%
 - of synthetic filament yarn 35,5%
 - of synthetic staple yarn 21,6%
 - of wool and fine-coarse animal hair 2,3%
 - of herbal fiber 1,4%
 - of silk 0,4%
- Yarn had a share of 18,3% in total textile exports with a value of 1,9 billion dollars:
 - of synthetic filament yarn 38,1%
 - of cotton 31,2%
 - of synthetic staple yarn 28,3%
 - of wool and fine-coarse animal hair 1,9%
 - of herbal fiber 0,5%
 - of silk 0%

- Knitted Fabrics had a share of 14,6% in total textile exports with a value of 1,5 billion dollars:
 - with elastomeric or rubber yarn 53,6%
 - other knitted fabric 31,2%
 - warp knitted fabrics 12,4%
 - knitted pile fabrics 2,7%
 - with a width not exceeding 30 cm 0,1%
 - of herbal 0%
- Fibers had a share of 7% in total textile exports with a value of 7,4 million dollars:
 - of synthetic 58,4%
 - of cotton 33,2%
 - of wool and fine-coarse animal hair 8,3%
 - of silk 0%
 - of herbal 0%
- Special Yarn and Fabrics had a share of 6,3% in total textile exports with a value of 6,6 million dollars:
 - of plush velvet 26,7%
 - of embroidered fabrics 15,6%
 - of gipe yarn 6,3%
 - of denim 3,2%
 - of quilted fabrics 0,3%
- Technical Textiles had a share of 14,6% in total textile exports with a value of 1,7 billion dollars:
 - of non-woven 33,8%
 - of bags and sacks for packaging 19,8%
 - of tire cord 7,9%
 - of plastic laminated 6,5%
 - of glass fiber 6%
- Home Textiles had a share of 15,2% in total textile exports with a value of 1,9 billion dollars:
 - towels and cleaning cloths 34,3%
 - bed linens 27,5%
 - woven bathrobes 8,1%
 - frills for curtains and beds 6,3%
 - tulle and embroidery 4,4%

TEXTILE SECTOR REGIONAL CLUSTERING

1.000.000 Employment
(with indirect workers in the sector is estimated to reach 2 million)



7.4 Regional Clustering Map of Fashion Sectors

In the above map, the main clusters in Turkey's textile production (Clothing & Apparel, Textile & Raw Materials and Leather products) and cotton production regions are marked.

Accordingly, five main clusters are important in textile production. Number of companies, number of employment and export figures are given for each cluster. According to data of Official Gazette of the Republic of Turkey⁴, which has been transferred from the Statistical Yearbook of Social Security Institute, 1 million registered workers are employed in these sectors. Therefore, it can be seen that these five clusters contain 97 percent of total textile employment. (48)

In addition, the number of employment indirectly linked to these sectors is estimated to be 2 million.

The first cluster of Istanbul, Bursa, Sakarya, Duzce, Edirne, Kırklareli and Tekirdag cities, most of which are located in the Marmara Region, consisting of 42,593 companies, 624,952 employment and 20 billion dollars of exports.

In the second cluster of İzmir, Aydın, Denizli and Uşak cities, all of which are located in the Aegean Region, there are 7,586 companies, 136,090 jobs and 3 billion dollars of exports.

The third cluster at the intersection of Eastern Anatolia, Southeastern Anatolia and the Mediterranean Regions includes the cities of Gaziantep, Kahramanmaraş and Malatya with their 3,620 companies, 130,351 jobs and 4 billion dollars in exports.

The fourth cluster of Ankara, Konya and Kayseri cities, all located in the Central Anatolia Region, contains 2,773 companies, 49,147 employments and 1 billion dollars of exports.

And finally, the fifth cluster for the cities of Mersin and Adana, all of which are located in the Mediterranean Region, has 1,285 companies, 32,319 employments and 1 billion dollars in exports.

⁴ Official Gazette of the Republic of Turkey is the national and only official journal of the country that publishes the new legislation and other official announcements.

7.5 Cotton Production in Turkey

Cotton, which is one of the raw materials of the textile industry, is also used in medical and cosmetic fields. Cotton needs water during growth and drought and high temperature during ripening period. Cotton production is not possible in places where summer rainfall occurs and summer temperatures are low. Therefore, cotton is grown in Southeastern Anatolia, Mediterranean and Aegean regions of Turkey. Şanlıurfa, Aydın, Hatay and Diyarbakır are the places where cotton is grown most. Iğdır is also suitable for growing cotton because of its microclimate properties.

Sanliurfa has become an important center for cotton production with the Harran and Suruç plains opened for irrigation within the scope of Southeastern Anatolia Project (GAP)⁵. Therefore, in Turkey, most cotton production is carried out in Southeastern Anatolia. In more detail, 62% of the production area is in the Southeastern Anatolia, 20% is in the Mediterranean region, 18% is in the Marmara and Aegean regions in Turkey. Cotton production amounts of the regions are 58%, 22% and 18% respectively.

The total cotton production in other producing cities such as Aydın with 13,52% , Hatay with % 10,84, Diyarbakır with 8,87% and Adana with 6,87% was approximately the same as that of Şanlıurfa. The production rate of all remaining cotton producing cities was 17.93%. (49)

In 2017, Turkey produced 2,450,000 tonnes of unginned cotton on 501 853 hectares. The total fiber obtained after ginning process was 882,000 tons. According to the total cotton export and import figures, it is clear that Turkey is one of a cotton importing countries. In 2017, 914 thousand tons were imported against 67 thousand tons of exports in this field. Turkey has imported cotton respectively from United States with 43.22 percent, from Brazil with 12 percent, from Greece 9 percent and from Turkmenistan with 5 percent in 2017.

"According to the annual report of the ICAC for 2015-2016 season; Turkey is at the 9th place in the world cotton planted area list, at the 3rd place in the world highest cotton yield list, at the 7th place in the world cotton fiber output list, at the 4th place in the cotton consumer list and at the 4th place in the cotton exporting country list." (50)

⁵ It is a comprehensive project aiming to increase the income level and quality of life of the local people by using the resources of the region, to eliminate the difference in development between this region and other regions, to contribute to the economic development and social stability targets at the national level by increasing productivity and employment opportunities in the rural area. It covers the cities of Adiyaman, Batman, Diyarbakir, Gaziantep, Kilis, Mardin, Siirt, Sanliurfa and Sirnak.

7.6 Some Negative Situations in Turkey

One factor that is a disadvantage of the textile sector in Turkey, which has become the production center of the world famous brands, is also turning to cheaper labor markets together with the depreciation of the local currency. With the 26% increase in the minimum wage in 2019, companies have had greater difficulties in this regard. This situation also increases the rate of unregistered employment. In addition, it increased cheap labor employment with Syrian refugees approaching 4 million people from 2011 to 2019.

In cities where cotton production is intense, especially in Urfa, the rate of birth and children is high in the population, and these children are generally employed in cotton fields.

Turkey's cotton production remains at a very low level of need. And it imports cotton from countries such as America, Brazil and Greece. Organic cotton production is also made in very small amounts. It is even below 1% of total cotton production. In 2014, Turkey's industrial textile waste was 590,000 tons. The amount of household textile waste is 565,000 tons. There are 1.155.000 tons of textile waste in total. While all of these are recyclable, they generally find themselves in the landfill. And recycled textiles are often converted to low value products.

Non-organic cotton seeds are usually purchased from USA. 29 percent of the total pesticides in Turkey used in the production of cotton. Especially in regions such as Çukurova cause the destruction of species. In addition, nitrogenous fertilizers are used in cotton production which is involved in potable water and cause greenhouse gas.

Pulmonary diseases caused by dusts especially during ginning process, emissions during transportation of cotton, wastes during cotton harvesting, environmental effects of petroleum derived raw materials used in the production of polyester, and environmental problems caused by non-degradable polyester can be reduced by recycling of the wasted textiles. Even imported cotton could be decreased by recycling. (51)

Turkey is a generally contract producer for other western country's global brands such as Zara, Adidas, Nike. It has very few brands which are generally known in Asia and Arabic countries.

There is a general negative perception against second-hand products in Turkey. So second hand or vintage clothing shops are quite few. The ones there are really expensive.





THIRD PART

KNOWEAR PROJECT

*Design a new model for
territorial valorisation and increased
awareness*

NOT
LIKE
THAT
YOU
WEAR

8. Knowear

As a result, the importance of the textile sector in Turkey has proved to be indisputable with this research. Turkey is one of the leading countries in the textile industry. While the textile sector pollutes the environment, it is one of the sectors that exploit human rights the most. Therefore, Turkey is also quite affected by this situation.

In order to minimize the negative impacts of this sector on the environment and human rights in the country and to raise awareness of designers, manufacturers, sellers and consumers, a model project based on slow fashion principles was realized. The project is intended to serve as an example for others in the region.

The project took its Knowear name from the combination of the words "know" and "wear". which means "to wear knowingly, with awareness." In Turkish, the expression "bildiğin gibi değil!" (not as you know) means "you don't know the real face of this". Thus within this project, the brand's slogan "not like that you wear" evokes this expression in terms of sound and meaning. In other words, as it claims that the brand is different from others, it also emphasizes that we do not know the real face of fashion that we should question its environmental, social and economic impacts and become conscious.

The project consists of two main parts which will be explained under separate titles. The first part is the creation of a collection that is perfectly suited to the slow fashion approach. The second is the platform where this collection is sold, various information is provided to raise awareness of the negative impacts of the sector and the local and environmentally friendly supply chain is marked.

8.1 Target

Macro level: to reach all citizens of Turkey regarding the project and to increase the brand awareness of KNOWEAR.

Micro level: manufacturers, vendors, designers (especially well-known ones which are followed by fashion lovers and fashion design students) in the local production and supply chain.

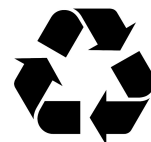
Future buyers of the collection to be marketed tend to consist of two sub-groups:

- **eco-social friends;** people who take care of social and environmental issues and are therefore more sensitive to the "value" content of the project
- **the radical chics;** people interested in the products because they are original, unique and alternative; more interested in the fashion factor than the values of sustainability and the social purpose.

8.2 Logo History



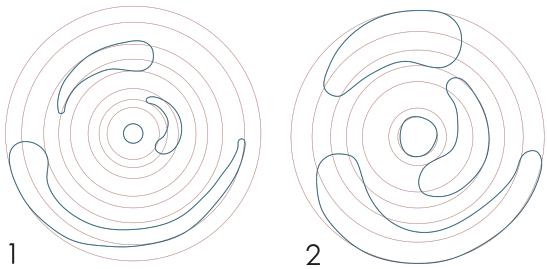
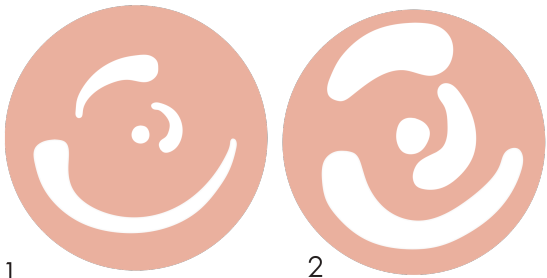
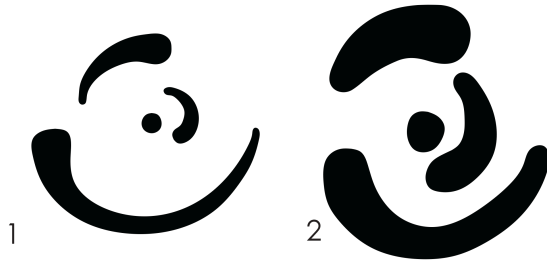
The Aztecs were a very rich culture in the 14-16th centuries with a population of 13 million that lived in today's Central Mexico region. (52) This symbol, which is from ancient Aztecs, describes a simple natural phenomenon with a deep philosophy. A drop of water that falls into the lake creates a huge change in the water mass, which is millions of times larger than itself, by expanding from ring to ring. In simple words; It symbolizes that a small action can have a much greater impact than itself. So they inductively thought that this small lake was a part of the universe and would act on the same principle.



"The Mobius Loop is a triangle composed of three arrows looping back on themselves in clockwise direction. This symbol indicates that a product can be recycled, but not necessarily that it has been itself produced from recycled materials." (53)

These two symbols are the starting point for the logo of this project. It is a kind of surrealization of three chasing arrows that symbolize recycling, resembling ripples in the lake.

LOGO



LOGO TECHNICAL

Font: Roboto

knowear
knowear
knowear
knowear
KNOWEAR
KNOWEAR
KNOWEAR
KNOWEAR

Claims:

not like that you wear
no wear if there is Knowear
wear Knowear
Knowear, wear never worn
do you know who wear Knowear
nowhere to wear like Knowear

LOGO ALTERNATIVE

KNOWEAR 

KNOWEAR 


KNOWEAR


KNOWEAR


KNOWEAR KNOWEAR

  
KNOWEAR knowear knowear

KNOWEAR
 

  
knowear KNOWEAR KNOWEAR

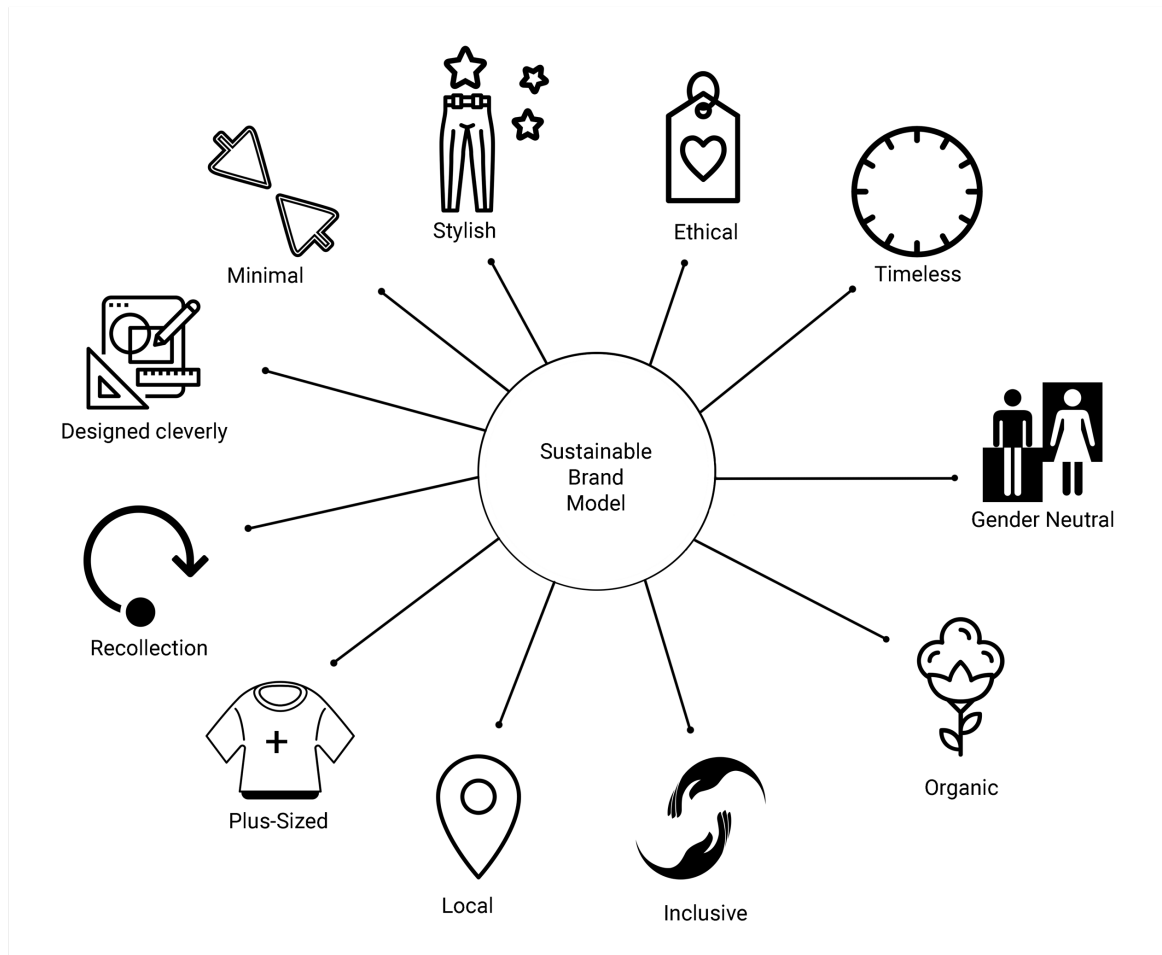
8.3 Branding Design

based on recyclable paper and FSC / sewing

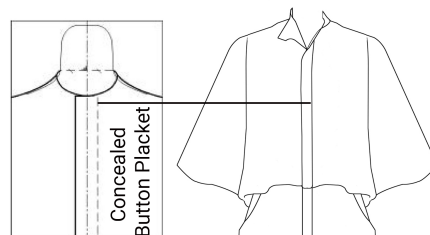
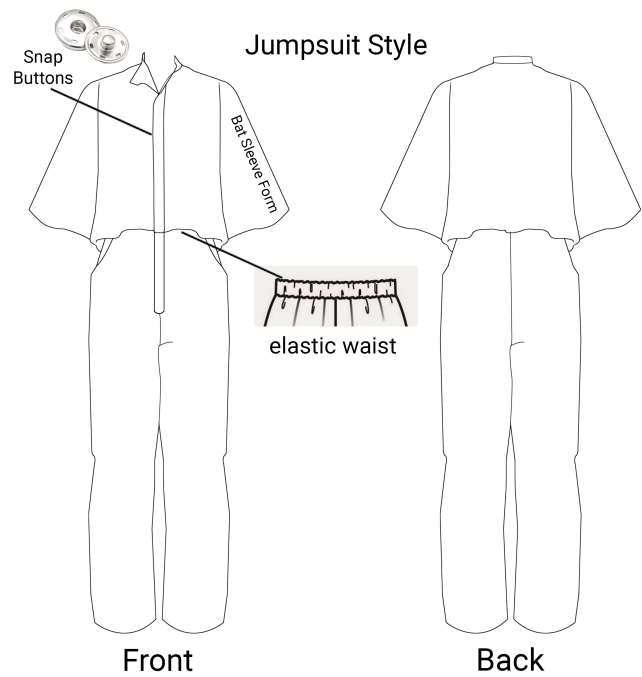
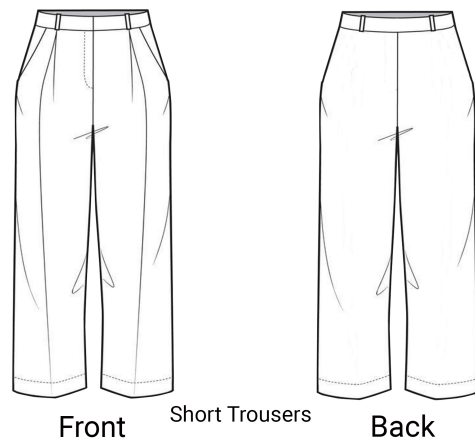
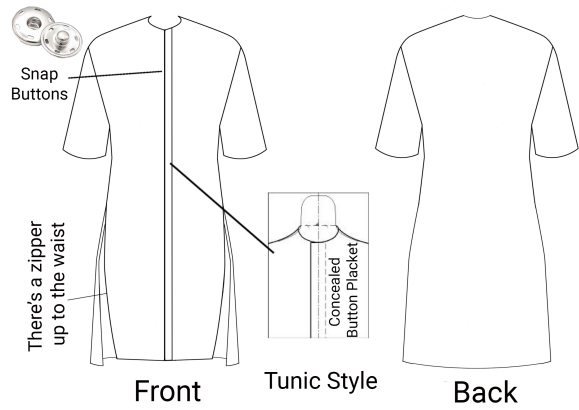
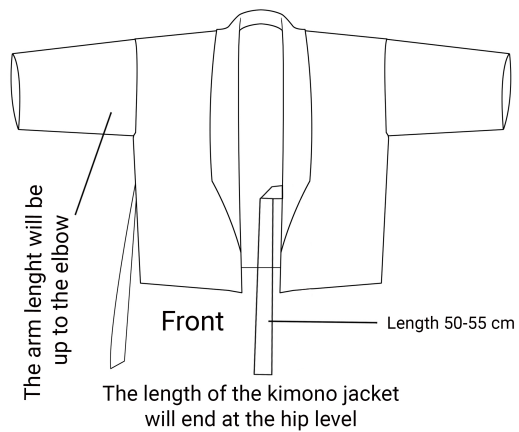
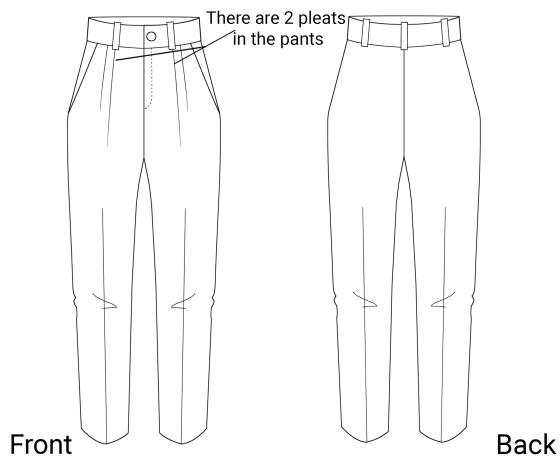
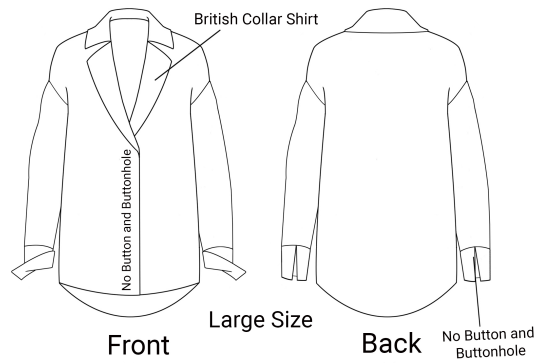


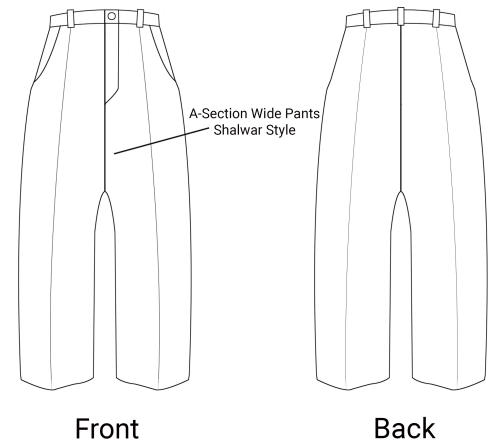
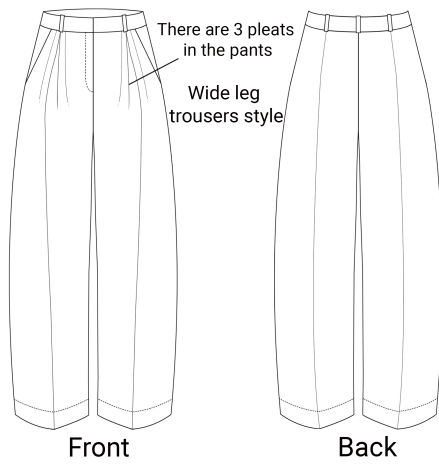
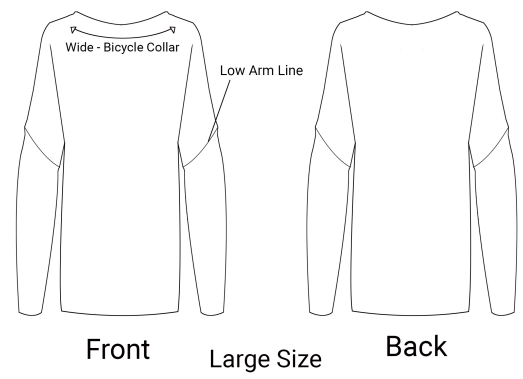
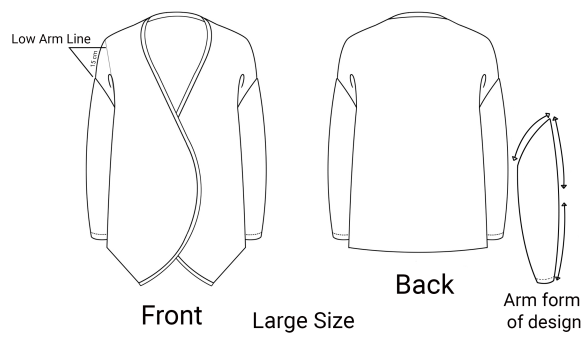
8.4 Knowear Collection

In the first phase of the project, 6 outfit capsule collection consisting of 12 pieces of clothes were realized. The designs were made by me and collaborator Emre Bayhan after long researches and studies. These designs have passed through a completely local and transparent supply and production chain. GOTS certified organic cotton fabrics obtained from sponsoring companies Bezsan Tekstil and Yeniceri Tekstil were sewed by U&S Haute Couture. Characteristic features of this collection designed with full adherence to the principles of Slow Fashion are as follows:



8.4.1 Technical Drawings





8.4.2 Collection Preview



8.4.3 Features and Photos of the Collection



Organic: GOTS certified organic cotton textiles were used to eliminate environmental pollution and damage to producer and consumer health.

Plus-sized (oversize): people will not have the problem of not being able to fit into clothing due to weight gain or loss, it will also contribute to sharing clothes.

Gender Neutral: No gender separation for the target buyer of the product. Thus sharing between people (especially for couples) will increase and when the product is disposed, the target buyer in the second hand store will become more.

Minimal: As products are minimal, they are easier to match with each other, and preferred by more people. In addition, minimal clothing has a longer wearing time. These clothes can be transformed to other products after use.

Timeless: They do not go out of fashion with their timeless features, they can be worn for many years. As they have a long lifespan for their first buyer and also can easily find buyers in second hand stores.

Local: Products have passed through a completely local and transparent supply and production chain. The aim was to provide support to the local economy.

Ethical: Through an organic, local and transparent production chain, an ethical path was followed from employees, producers, vendors and consumers.

Designed Cleverly: Designs include buttons, pockets, zippers and other additional parts as little as possible. The fabric was intended to remain intact and not to be damaged. This will allow it to transform to another product at the end of clothing life.

Inclusive: As mentioned above, these clothes with oversize, sexless, minimal, timeless features can be worn by various people.

Recollection: These clothes are planned to be re-collected after use, transformed into new products, or delivered to second-hand stores, or recycled. These places are also shown on the platform.





Photos were taken by
Alessandro Crivellaro
at the Castle of Valentino
03.11.2019

8.5 Knowear Platform

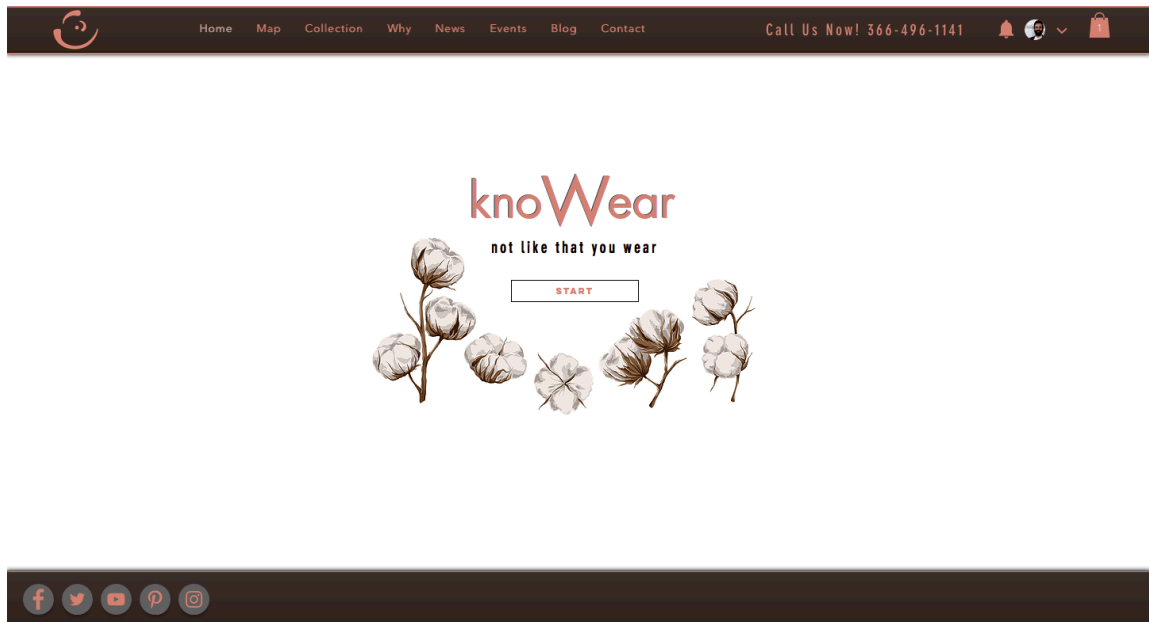
In this platform, which is the second part of the project, which will be explained in more detail below step by step, aimed to raise awareness by explaining the negative impacts of the fashion and textile sector on environmental, social and economic issues in a language that people can easily understand. At the end of the sense of awareness created on people with the all information provided, there are 2 main options offered by the platform :

The first option is to shop from the sustainable Knowear collection, which is the first part of the project,

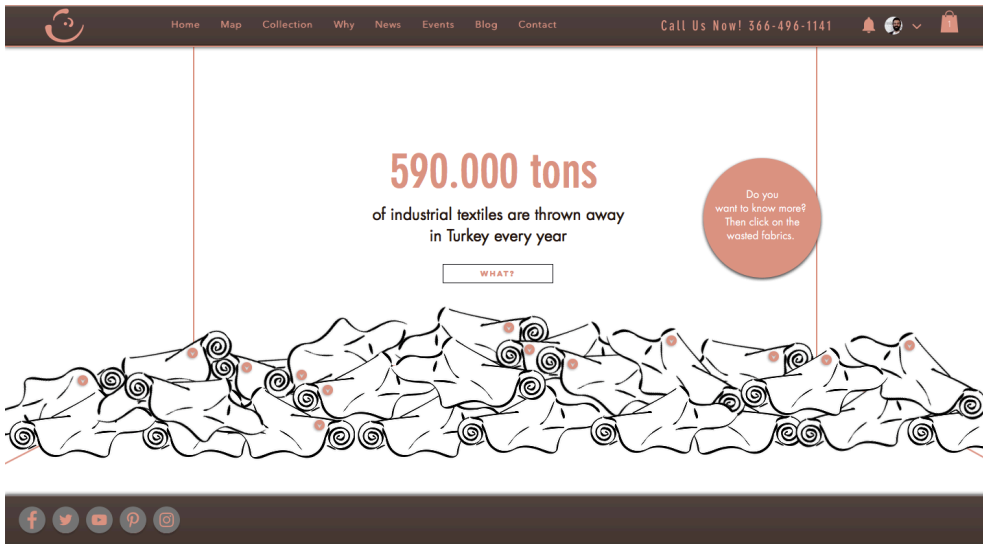
The second option is to see the local supply chain in the region (designers, manufacturers, vendors, second hand stores, vintage stores, recycling companies etc.) which are already marked on the map.

Throughout the platform, black, white, gray, brown, and the brick color of the logo were used. The colors inspired by the nature of cotton and soil were dominant.

The demo version of the platform was created via Wix.com
It is planned to be published on www.knowear.com.tr domain.

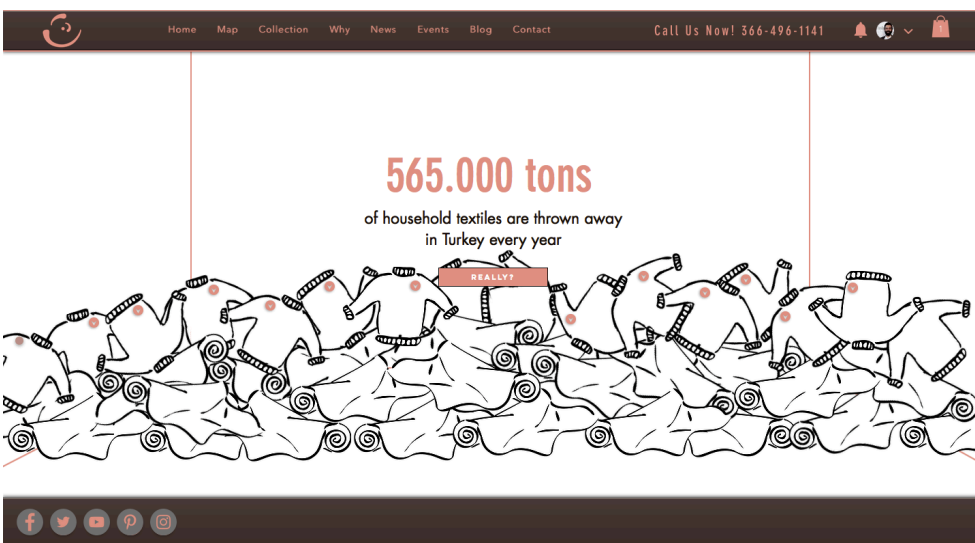
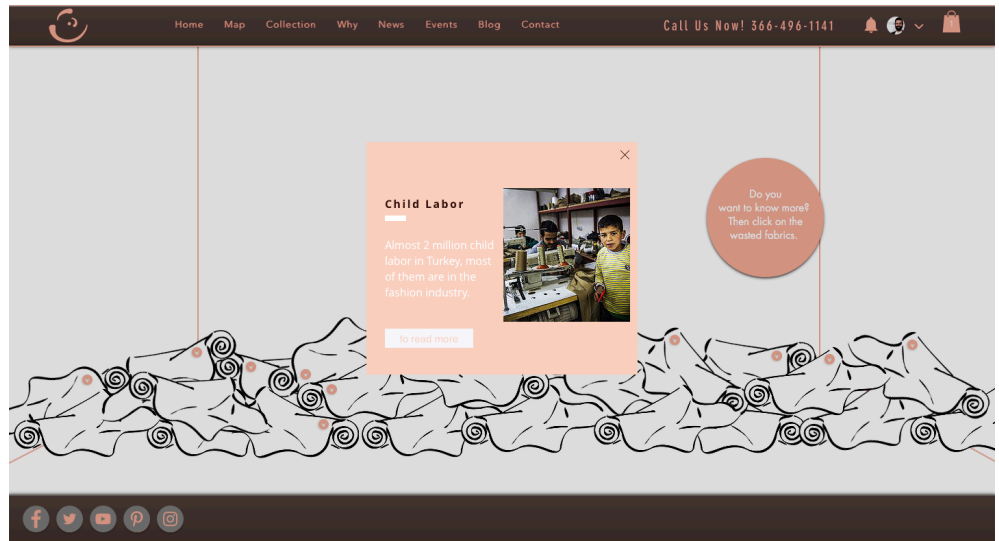


On the first page, first the brand name appears in the middle of the screen, then the cotton plant illustrations that start to fall from the top are positioned around the brand name. This compliance gives the user the first preview of the project: knoWear should be a combination of know and wear, and if there are cotton plants around it, yes this platform should be for sustainable clothing.

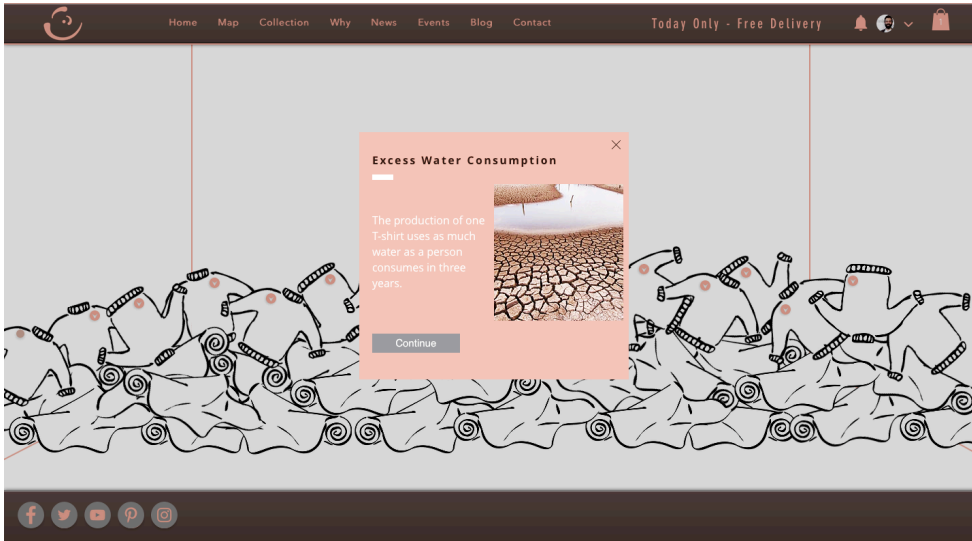


In the first part, the fabric rolls start to fall. Then, given the amount of industrial textile waste in Turkey. Then the note on the right shows that extra information can be obtained from the small points on the rolls.

When the points are hovered, a preliminary information is given on what information the point contains. When clicked, message boxes will appear and brief information about **social** issues will be provided. Links to other sites are provided on the boxes for more detailed information.



In the second part, the garments start to fall on fabric rolls. Then, it is given the amount of household textile waste in Turkey. And again small points appears on garments to obtain extra information.

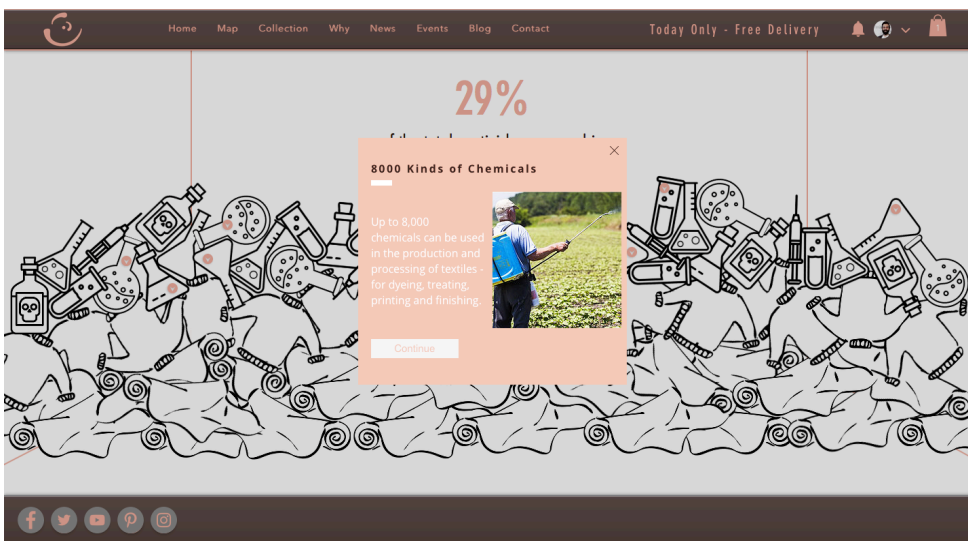


When the points are hovered, a preliminary information is given on what information the point contains. When clicked, message boxes will appear and brief information about **environmental** issues will be provided. Links to other sites are provided on the boxes for more detailed information.

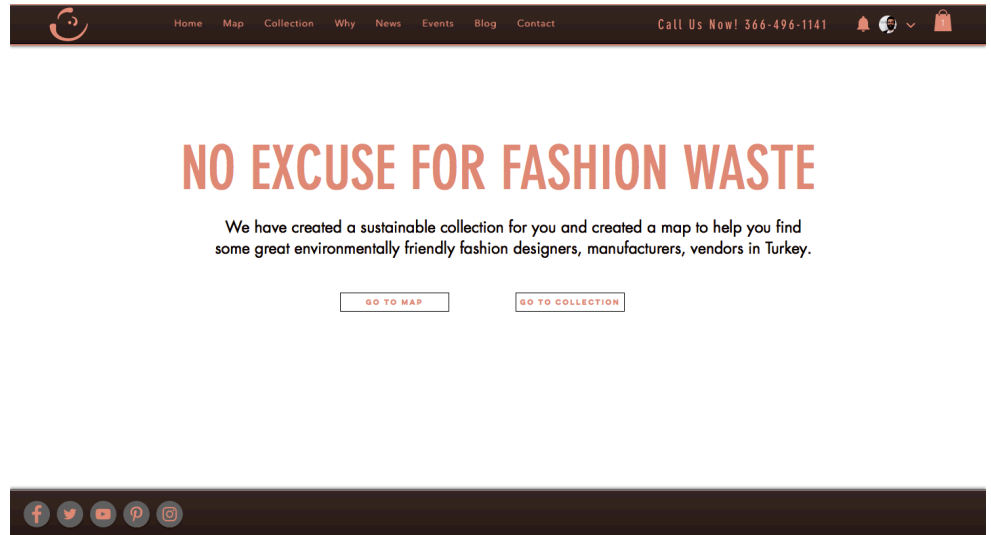
In the third part, the chemicals start to fall on garments. Then, it is given the amount of chemicals used in textile sector in Turkey. And again small points appears on garments to obtain extra information.



When the points are hovered, a preliminary information is given on what information the point contains. When clicked, message boxes will appear and brief information about **chemicals and health** issues will be provided. Links to other sites are provided on the boxes for more detailed information.



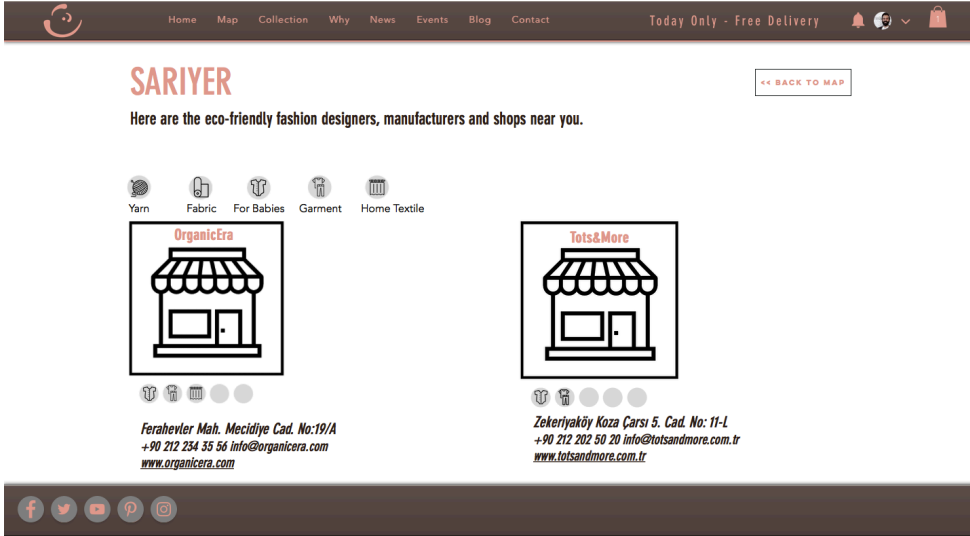
The next page will warn users as "No Excuse For Fashion Waste" at the end of all of these informations that provided to create awareness, and then provides 2 main options: See the local sustainable supply chain on the map or buy directly from Knowear's sustainable products.



The first option "Go to Map", users will be transported to Turkey's map. Here, everyone will be able to reach the city of interest. For now, Istanbul, the pilot and most important city, is active.

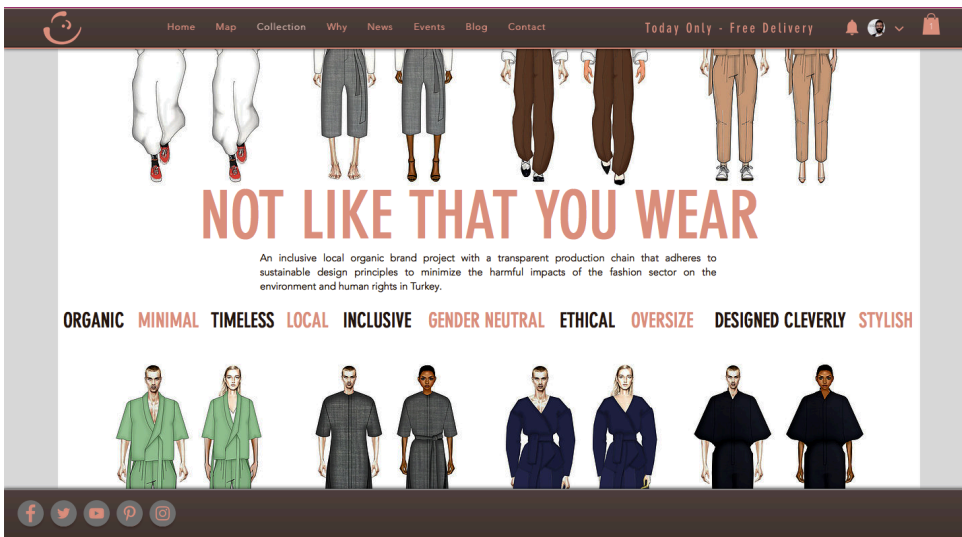
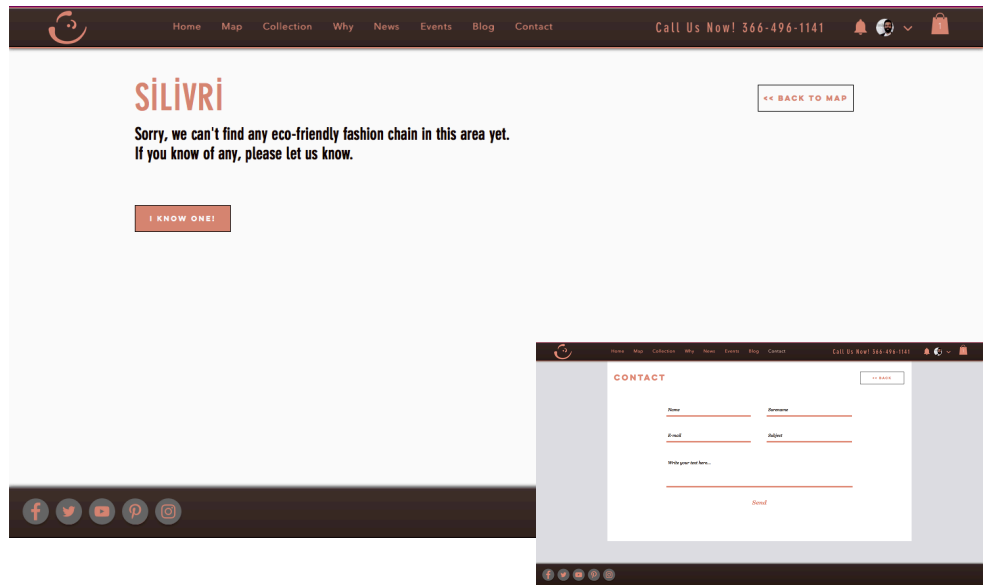
In the next stage, on the map of Istanbul divided into districts, users will be able to select the districts of interest. The name of the district, appears when hovering over the point.



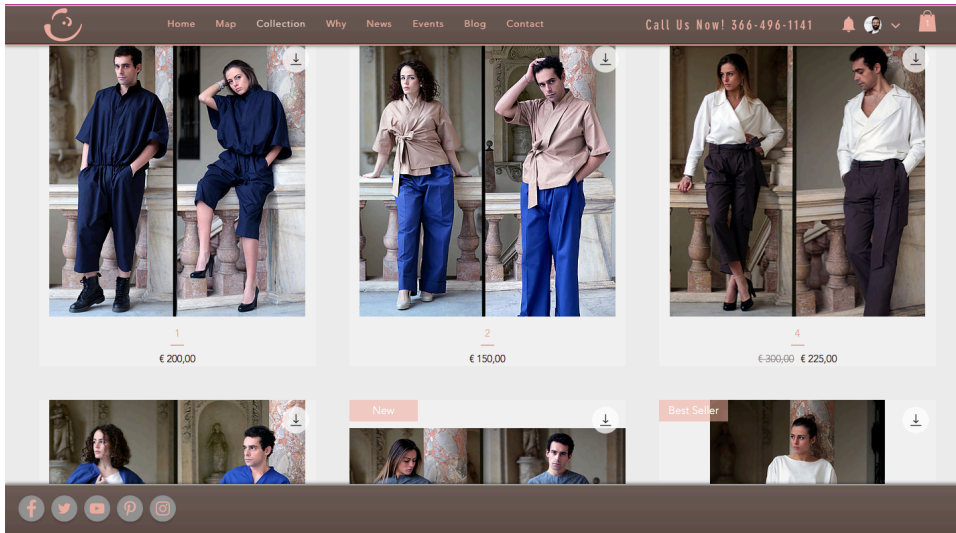


When a district will be selected, the entire local sustainable supply chain of fashion sector in the related district will appear. Designers, brands, manufacturers, sellers, second hand stores, vintage shops or even recycling companies.

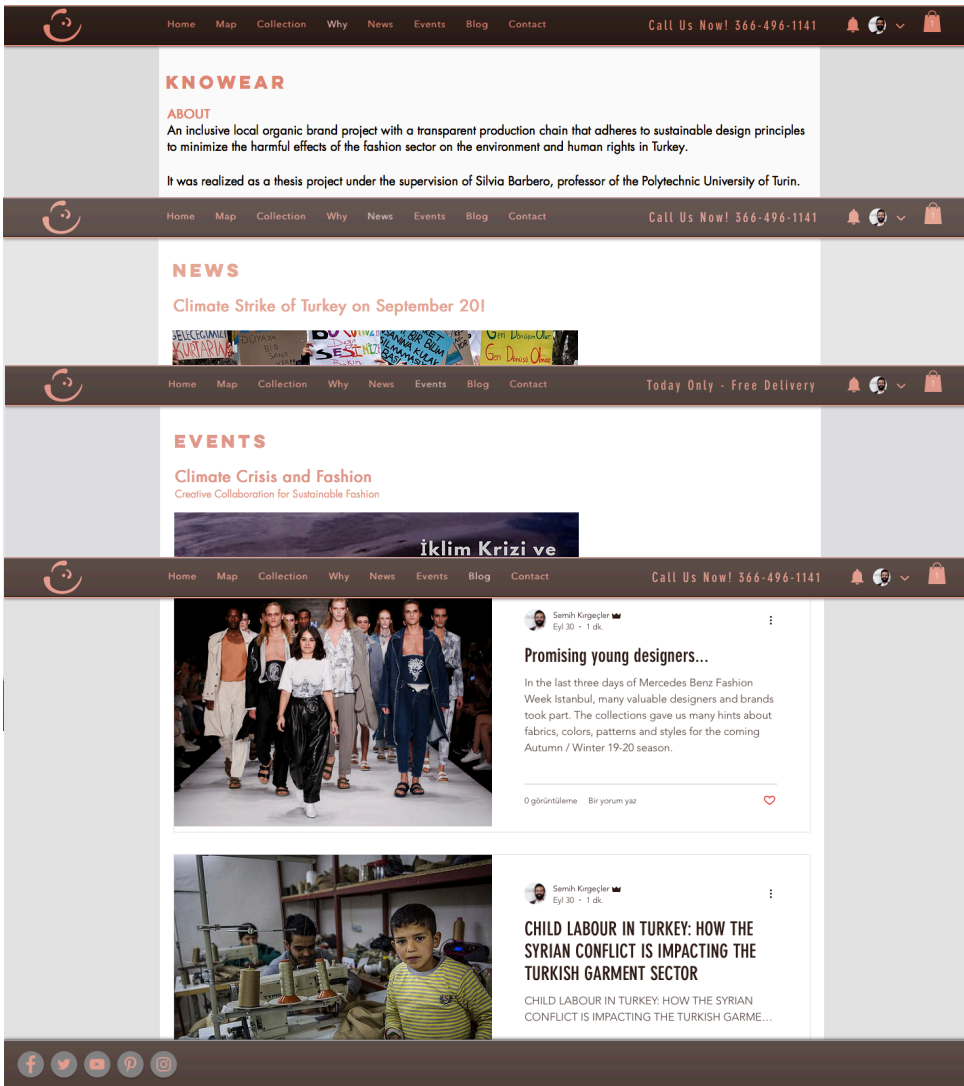
If a district does not yet have a supply chain, and users know that it exists, they can request to add it with the I know one option. When this option is clicked, they can fill the related form.



When second option "Go to Collection" is selected which is offered also by the platform, the claim "Not like that you wear" will appear in the middle of designs, and the collection is introduced briefly with highlighted words on this page.



In the sales section where the final product photos are displayed, users can navigate and zoom to the products, check if they are in stock and add them to the cart.

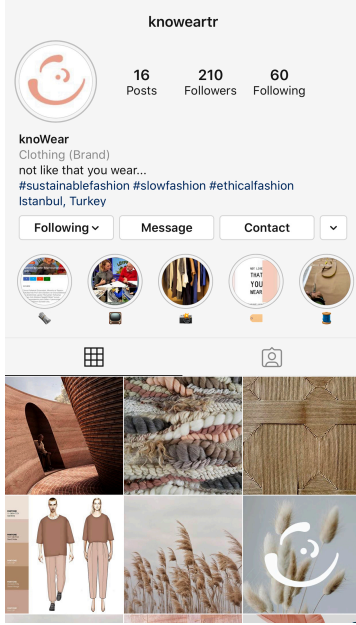


The "Why" option in the upper section of the page gives information about mission, vision and details of the Knowear project. The page opened with the "News" option, gives news about environmental, social topics, mostly related the fashion industry. The page opened with the "Events" option, gives information about upcoming events mostly related the fashion industry. And the "Blog" page, unlike others, focuses on the sustainability and ethical aspects of the textile and fashion industry. It aims to criticize fashion shows in this context, not in terms of color or style.

Most of the information provided within these sections are supported by external links.

8.6 Knowear on Social Media, News and TV.

Instagram



News



05.12.2019

Torino Politeknik Üniversitesi, Mimarlık ve Tasarım Fakültesi'nde Prof. Silvia Barbero ve Chiara Battistoni'nin denetiminde yapılan "Dünya'dan Türkiye'ye Uzanan Hızlı Modanın Negatif Etkileri" konulu araştırma projesinin yüzü Lütfe'n+1 çevre programının sunucusu Şebnem Schaefer oldu.

Knowear isimli proje "Giydiğin gibi değil!" sloganıyla, insanları çevre ve insan hakları konusunda bilgilendirerek, duyarlı giyinmeye davet ediyor.

SNOB

Torino Politeknik Üniversitesi, Mimarlık ve Tasarım Fakültesi'nde Prof. Silvia Barbero ve Chiara Battistoni'nin denetiminde yapılan "Dünya'dan Türkiye'ye Uzanan Hızlı Modanın Negatif Etkileri" konulu araştırma projesinin yüzü Lütfe'n+1 çevre programının sunucusu Şebnem Schaefer oldu.



Knowear isimli proje "Giydiğin gibi değil!" sloganıyla, insanları çevre ve insan hakları konusunda bilgilendirerek, duyarlı giyinmeye davet ediyor.

TV



Conclusion

The most important development of the 21st century is the problem of rapid consumption and production in all sectors of the economy. The most important sector affected by this development is fashion and textile. Fashion developed rapidly and diversified preferences. However, the technology used in production has accelerated its access to the seller and the consumer from the design of the product. However, as this speed increased, the quality of the product decreased, environmental damage and rapid consumption increased. Therefore, the concept of sustainability has gained importance and slow fashion movement has started to gain importance as an alternative to fast fashion. In the present age, the textile and fashion sector works in a fast production network where products are designed and sold in companies within a few weeks. Today's fashion industry is subject to a global mass production network where garments are designed and manufactured in a few weeks and sold in stores. It is inevitable to compromise on quality and durability while trying to produce fast.

Due to its increasing importance, the textile sector has become the third largest manufacturing industry in the world. That is why fashion is the second most polluting sector in the world. A large amount of water is used in textile production. It is known that 20 percent of global water pollution occurs during textile production, which means that overproduction pollutes our water and the world. In America, 12.8 million tons of textile products are destroyed annually, which means approximately 37 kilos per person. At this point, the support of recycling is in the hands of the purchaser, or the responsibility of the brands.

Nowadays, while the fashion and social media direct us to consume more, the textile sector is constantly producing more. Of course, production is inevitable, but it is undeniable that we produce more clothes than we need, and most of these garments become waste.

By 2025, fashion consumption is expected to increase by 4 percent every year, but only 20 percent of garments can be recycled every year. In the UK, 2 million tons of clothing and textiles are thrown annually and only 16 percent of it is reused. In fact, research shows that 80 percent of these wastes can be reused.

The majority of unused garments end up in landfills. This is mainly due to the low value of second hand products of poor quality products. In other words, a cheap T-shirt is cheap not only when buying, but also when disposing of it. So this product is not even possible to sell second-hand. Therefore, some of the products actually sent as donations are completely dysfunctional.

When it comes to the development of profession and design, garments that are not worn in developed countries are often sent to less developed countries., the garments that are not worn in developed countries are often sent to less developed countries. In fact, while we think that we help and meet the needs of those who live there, this excess of clothing makes the tailors and textile workers unemployed. For example, in Uganda, 81 percent of the clothes sold are known to be garments from the west. This is gradually destroying Uganda's local production and tailoring skills. The same scenario exists in many parts of the world.

In Bangladesh, the favorite production place for fast fashion brands, the wages of textile workers are about a quarter of the minimum wage. These workers are forced to live and work in conditions far from humanitarian conditions. Activists around the world argue that textile workers are modern slaves.

Therefore, by increasing the use of slow fashion, companies should change mass production and consumption networks rapidly, sustainability-oriented and environmentally friendly production should be supported. For a sustainable trend in textile and fashion and for a sustainable society, the indispensable importance of a healthy environment should be demonstrated and the production and consumption structure should be made sensitive to the environment as soon as possible.

Finally, Knowear wants to do its best for a more sensitive fashion industry in Turkey. It aims to be sensitive to the environment and human beings from the fabrics used, to the customer service, to the producers, to the number of production. And with its platform, it wants to build a network between local designers, manufacturers, sellers, second hand stores, vintage stores and recycling companies. It aims to establish an easier and more transparent relationship between the consumer and this sustainable supply chain.

Minor changes may have greater effects. Even during the research and development of this project, changes have started as a result of conversation with people around. There are too many people who are not aware of environmental issues. Everybody has to do their best on this without say "What can I change?". It does not matter whether it's a big or small project.

REFERENCES

1. **Makaleler.com.** Moda Nedir. *Makaleler*. [Online] 13 December 2017. [Cited: 15 November 2019.] <https://www.makaleler.com/moda-nedir>.
2. **TDK.** *Türk Dil Kurumu Sözlükleri*. [Online] <https://sozluk.gov.tr>.
3. **ILO.** *International Labour Organization*. [Online] September 2017. [Cited: 10 November 2019.] <https://www.ilo.org/global/topics/child-labour/lang--en/index.htm>.
4. —. *Global Estimates of Child Labor*. International Labour Organization. Geneva : s.n., 2017. 978-92-2-130153-0.
5. —. *International Labour Force*. [Online] September 2017. [Cited: 12 November 2019.] <https://www.ilo.org/global/topics/forced-labour/lang--en/index.htm>.
6. **GSI.** *Global Slavery Index 2018*. [Online] 2018. <https://www.globalslaveryindex.org/resources/downloads/>.
7. **SAP-FL.** ILO indicators of Forced Labour. *ILO*. [Online] 01 October 2012. [Cited: 05 May 2019.] https://www.ilo.org/global/topics/forced-labour/publications/WCMS_203832/lang--en/index.htm.
8. **ILAB.** *Goods Produced Globally by Child or Forced Labor*. The Bureau of International Labor Affairs. Washington : s.n., 2018. p. 11.
9. **O'Connell, .** Statista. *Statista*. [Online] February 2018. [Cited: 20 June 2019.] <https://www.statista.com/statistics/856454/market-share-of-the-leading-clothing-and-apparel-brands-worldwide/>.
10. **The World Bank - OECD.** The World Bank. *The World Bank*. [Online] 1 1 2018. [Cited: 20 June 2019.] <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>.
11. **World Bank - OECD.** GDP Growth (Annual %). *World Bank*. [Online] 2018. [Cited: 5 July 2019.] <https://data.worldbank.org/indicator/ny.gdp.mktp.kd.zg>.
12. **O'Connell, .** Market growth of the apparel industry worldwide from 2012 to 2020. *Statista*. [Online] June 2017. [Cited: 20 June 2018.] <https://www.statista.com/statistics/727541/apparel-market-growth-global/>.
13. **Ellen MacArthur Foundation.** A new textiles economy: Redesigning fashion's future. *Ellen Macarthur Foundation*. [Online] 2017. [Cited: 5 August 2019.] <http://www.ellenmacarthurfoundation.org/publications>.
14. *The politics of second-hand clothes: A debate over 'dignity'*. **Essa, .** 5 October 2018, Al Jazeera.
15. **Barnardo's.** [Online] 11 June 2015. [Cited: 10 August 2019.] https://b.barnardos.org.uk/news/press_releases.htm?ref=105244.
16. United Nations, Department of Economic and Social Affairs. World Population Prospects 2019. *United Nations Population Division*. [Online] 28 8 2019. [Cited: 12 10 2019.] <https://population.un.org/wpp/Download/Standard/Population/>.
17. *Emissions Gap Report 2018*. UN. Katowice : IPCC, 2018. p. 5.
18. Global Fashion Agenda. Pulse of the Fashion Industry. *Global Fashion Agenda*. [Online] 1 1 2017. [Cited: 5 8 2019.] <https://www.globalfashionagenda.com/publications/#ceoagenda>.
19. KEMI. *Chemicals in textiles – Risks to human health and the environment*. Stockholm : s.n., 2014. p. 33. 0284-1185.

20. Saxena, , Asm, and Arputharaj, . Researchgate. *Challenges in Sustainable Wet Processing of Textiles*. [Online] 1 2017. [Cited: 5 8 2019.] https://www.researchgate.net/publication/306035184_Challenges_in_Sustainable_Wet_Processing_of_Textiles. 2197-9863.
21. Eunomia. *The potential contribution of waste management to a low carbon economy* . 2015.
22. Kirchain, . *Sustainable apparel materials* . 2015. p. 17.
23. Turley, . *The role and business case for existing and emerging fibres in sustainable clothing: Final report to the Department for Environment, Food and Rural Affairs*. Department for Environment, Food and Rural Affairs. London : s.n., 2010.
24. KEMI. *Hazardous chemical substances in textiles: Proposals for risk management measures* . 2016. p. 30.
25. *Textile Chemicals Market to Reach US\$29.15 Billion by 2024*. Newswire, . 6 May 2016, PR Newswire.
26. Greenpeace International. *Dirty laundry: Unravelling the corporate connections to toxic water pollution in China*. 2011. p. 70.
27. Changing Market Foundation. *Dirty Fashion*. 2017. p. 26.
28. Fletcher, . *Sustainable Fashion & Textiles - Design Journeys*. London : s.n., 2008. p. 50. 978-1-84407.
29. Chemsec. Chemsec Textile Guide. *Textiles come with a toxic footprint*. [Online] [Cited: 10 September 2019.] <http://textileguide.chemsec.org/find/textiles-come-with-a-toxic-footprint/>.
30. *Fast Fashion Is Creating an Environmental Crisis*. Wicker, . 1 September 2016, Newsweek.
31. WRAP. *Evaluation of the end markets for textile rag and fibre within the UK* . 2014. p. 8.
32. Hollins, . *Closed loop fibre recycling: Current status and future challenges*. Aylesbury : s.n., 2013.
33. *Sürdürülebilir Kalkınmada Moda Tasarımcısının Rolüne Yönelik Alanyazın İncelemesi*. Sahin, and Odabasi, . 2, Ankara : s.n., 2018, Uluslararası Yönetim İktisat ve İşletme Dergisi, Vol. 14, p. 413.
34. *Sifir Atık Modası*. Erdil, . 23 February 2017, Hurriyet.
35. *Tekstil ve Moda Tasarımı Acısından Sürdürülebilirlik ve Donusum*. Turkmen, . Istanbul : s.n., 2009, p. 182.
36. *Fashion Revolution*. [Online] 2019. [Cited: 5 November 2019.] <https://www.fashionrevolution.org/>.
37. Williams, . 10 slow fashion values. *Salt*. [Online] 3 June 2015. [Cited: 20 November 2019.] <https://www.wearesalt.org/10-slow-fashion-values/>.
38. Tuzer, Damla Rabia. *Fashionizer*. [Online] 1 September 2018. [Cited: 5 December 2019.] <http://fashionziner.com/2018/09/01/hizli-modaya-karsi-yavas-moda/>.
39. Davidson, . Is There a Sustainable Certification for Clothing? *Ecocult*. [Online] 1 July 2019. [Cited: 5 September 2019.] <https://ecocult.com/eco-friendly-ethical-sustainable-labels-certifications-clothing-fashion/>.

40. Çavlin, Dr. Aylin and Rittersberger Tılıç, . ResearchGate. [Online] 1 March 2011. [Cited: 5 June 2019.]
https://www.researchgate.net/publication/285582688_Turkiye'de_Degisen_Nufus_Bilgi_Sisteminin_Kamu_Yonetimine_Katilan_ve_Kamu_Hizmetlerinden_Faydalanan_Vatandasla_Iliskisi_De_facto_Nufus_Sayimindan_Adrese_Dayali_Nufus_Kayit_Sisteminde_ADNKS_Gecis.
41. (Turkstat), . Adrese Dayalı Nüfus Kayıt Sistemi Sonuçları, 2018. *TUIK*. [Online] 1 February 2019. [Cited: 5 June 2019.]
<http://tuik.gov.tr/HbGetirHTML.do?id=30709>.
42. OECD. Fertility rates (indicator). doi: 10.1787/8272fb01-en. *OECD Data*. [Online] 1 January 2019. [Cited: 06 June 2019.]
<https://data.oecd.org/pop/fertility-rates.htm>.
43. (Turksat), . Birth Statistics, 2017. *Turkish Statistical Institute*. [Online] 01 May 2018. [Cited: 07 June 2019.]
<http://www.turkstat.gov.tr/UstMenu.do?metod=temelist>.
44. (Turkstat), . Income, Living, Consumption and Poverty. *TUIK*. [Online] 1 October 2015. [Cited: 7 June 2019.]
<http://www.turkstat.gov.tr/UstMenu.do?metod=temelist>.
45. Turkish Exporters Assembly (TIM). *Annual Export Figures December 2018*. [Online] 31 December 2018. [Cited: 15 June 2019.]
<https://www.tim.org.tr/en/export-export-figures.html>.
46. Eurostat. Where do our clothes come from? *Eurostat*. [Online] 22 April 2019. [Cited: 15 June 2019.] <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20190422-1>.
47. ITKIB. Istanbul Textile and Apparel Exporter Associations. *ITKIB Electronic Library*. [Online] 22 January 2019. [Cited: 18 June 2019.]
<https://www.itkib.org.tr/tr/elektronik-kutuphane.html?c=raporlar&page=5>.
48. Republic of Turkey Science, Industry and Technology Ministry. *Turkey's Textile, Clothing and Leather Products Sector Strategy Document and Action Plan*. 2015, Vol. I, 2015-2018, pp. 20-30.
49. Manisa Commodity Exchange. 2018 Cotton Sector Report. *Manisa Ticaret Borsası*. [Online] 27 11 2018. [Cited: 15 July 2019.]
<https://manisatb.org.tr/199/PAMUK-SEKTOR-RAPORLARI>.
50. Gardetti, Miguel Angel and Muthu, Subramanian Senthilkannan. *Organic Cotton - Is it a Sustainable Solution?* Singapore : Springer, 2019. p. 123. ISSN 2197-9863.
51. Altun, . *Tekstil Kullanım ve Üretim Atıklarının, Geri Kazanımı, Çevresel Ekonomik Etkileri*. UTSO. Usak : s.n., 2014.
52. Aztek Uygarlığı ve Aztekler Hakkında Kısa Bilgi. *tarihibilgi.org*. [Online] 21 February 2019. [Cited: 20 November 2019.] <https://tarihibilgi.org/aztek-uygarligi-ve-aztekler-hakkinda-kisa-bilgi/>.
53. Coda Blog. *Coda*. [Online] 21 September 2016. [Cited: 20 November 2019.]
<https://www.coda-plastics.co.uk/>.
54. ITKIB. Istanbul Textile and Apparel Exporter Associations. *IHKIB*. [Online] 01 January 2019. [Cited: 18 June 2019.] <https://www.ihkib.org.tr/fp->

icerik/ia/d/2019/01/10/hazirgiyim-ve-konfeksiyon-sektoru-2018-aralik-aylik-
ihracat-bilgi-notu-201901100919280673-336E8.pdf.

55. Walk Free Foundation. [globalslaveryindex.org](https://www.globallslaveryindex.org). *GS/*. [Online] 01 01 2018.

[Cited: 5 July 2019.] <https://www.globallslaveryindex.org/resources/downloads/>.

56. ILO. Child Labour. *International Labor Organization*. [Online] September 2017.

[Cited: 25 July 2019.] [https://www.ilo.org/global/topics/child-labour/lang--
en/index.htm](https://www.ilo.org/global/topics/child-labour/lang--en/index.htm).