



TEXTILE AND CLOTHING INDUSTRY

Problems
and Solutions





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1. INTRODUCTION

The essential purpose of clothing has always been the same—to protect the body from bad weather and injuries, and to avoid unwanted looks. Gradually, it has become a tool for showing one's status and the origin and later also one's nature, opinions, taste and style.

The nature of clothing production has also been changing radically in recent decades. The textile and clothing industry has developed to meet the needs of people from all over the world. The textile industry includes the production of fibres, textiles and fabrics. The clothing industry, also referred to as the fashion industry, focuses on the life cycle and primary production of clothing, but also other textile products, including home textiles, footwear and accessories (European Commission, 2017).

With the development of this industry, society's approach to clothing has also changed. A few decades ago, people bought clothes once a season. Later came a change in the form of the so-called *fast fashion*. It originates in the USA. In the 1980s, in reaction to cheaper textiles imported from other countries, big American clothing manufacturers decided to respond by monitoring which clothing was popular with customers. They were able to produce more pieces of the desired items and distribute them quickly. With some variations, this model was imitated by the founder of the Spanish brand Zara. New and always different trends entered his stores frequently and rapidly. And customers started shopping more.

The success of Zara was noticed by other brands very quickly. Gradually, opportunities have opened to relocate production to the countries of the Global South and so reduce the price of clothing at the expense of the environment and the quality of workers' lives. For this reason, a high number of people lost their jobs in the USA and throughout Europe, including Slovakia (Píhová and Thomas, 2019). The result is fast fashion typical by relatively cheap, mass-produced and mass-sold clothing of average to low quality, which follows artificially created fashion trends. The manufacturers of clothing, footwear and accessories profit mainly from this system of overproduction and overconsumption. Fast fashion is based on the essential principles of the current economic model—the linear economy, with complex global supply chains and profit maximisation for a narrow group of shareholders rather than all stakeholders (shared value).

This colossus has brought with it a lot of negatives, and it has become a dirty and cruel industry. Even though it gives many people a livelihood, owners of fashion brands earn incomparably more. Cheap clothing brings the exploitation of workers and poor working conditions, the suffering of large numbers of animals, the accumulation of waste in landfills and the wild, the release of pollutants into the environment, and the production of greenhouse gases associated with climate change. It is time to change this business and make it more sustainable. It is time for ambitious aims in line with the Sustainable Development Goals 2030.

The purpose of this document is:

1. to summarise information and data on the impact of the textile and clothing industry on the environment, human and animal lives;
2. to summarise visions, strategies, measures and examples of good practice from around the world, especially from Europe and Slovakia;
3. offer an overview of the EU policy on textiles and textile waste;
4. to present the current policy of Slovakia and strategic documents concerning textile waste, supplemented by data on the development of the amount and method of processing of this type of waste in recent years.

The publication is intended for all who want to gain a comprehensive insight into current problems and potential solutions in the global and Slovak textile and clothing industry.

2. THE IMPACT OF THE TEXTILE AND CLOTHING INDUSTRY ON THE ENVIRONMENT AND A DIGNIFIED LIFE



Picture 1: A pile of unwanted clothes.

Source: © Bicanski—Pixnio.com (2020)

2.1 THE IMPACT OF THE TEXTILE AND CLOTHING INDUSTRY ON THE ENVIRONMENT

Fashion-related pollution takes many forms and is created **during all stages of a product's life cycle**—from raw material extraction through fibre production, dyeing, weaving, cutting and sewing to the actual production, use and disposal of things. Textiles and clothing are also responsible for water scarcity problems, land grabbing and soil degradation, or high energy and fuel consumption, and the associated high greenhouse gas emissions (Mukherjee, 2015). In 2015, the industry **produced 1,715 million tons of carbon dioxide, which may increase by 63 % by 2030** (Global Fashion Agenda & The Boston Consulting Group, 2017).

Furthermore, predictions show that if nothing changes in the current setting, the world's fashion industry could consume more than 26% of the total carbon stock which should guarantee that global warming is kept below 2°C, by 2050 (Ellen MacArthur Foundation, 2017).

More than 60% of the total amount of textiles is used for clothing. Its production has doubled in the last two decades, for which was the trend rightly named *fast fashion* (Ellen MacArthur Foundation, 2017). All the negatives associated with this system have made the **textile and clothing industry one of the most polluting industries in the world** (Dutch Center for Circular Textiles, 2020).

This chapter further addresses the environmental impact of the textile and clothing industry in terms of:

- raw materials and processed materials,
- processing and clothing production,
- transport and sales,
- use,
- end of use.

A. Raw materials

In the textile industry, the use of non-renewable raw materials predominates over renewable ones. In 2015, a total of 98 million tonnes were consumed, but by 2050 this figure could rise to 300 million tonnes. These include **crude oil** for the production of synthetic fibres, **fertilisers** intended mainly for cotton cultivation, and **various chemicals** necessary for the production and treatment of fibres and textiles (Ellen MacArthur Foundation, 2017).

Another important raw material is water. It is estimated that in 2015, all countries in the world consumed 79 billion cubic metres of water for the fashion industry, and this figure could increase by 50 % by 2030, given current trends. Water is consumed and degraded during dyeing materials and washing textiles, but especially during growing cotton and other raw materials (Global Fashion Agenda & The Boston Consulting Group, 2017). There are already regions, where cotton resources cannot be

replenished for cotton irrigation (Mukherjee, 2015), and this problem is set to worsen in the future (World Bank Group, 2016). If the predictions come true and the current setup of the textile and clothing industry continues, **people will later have to choose between making a profit from fashion and getting enough water for basic needs.**

In addition to water, the soil is also necessary for conventional raw material cultivation. **The cultivation of monocultures**, such as cotton, is typical by a **loss of biodiversity** in the area, as well as the **degradation of soil and groundwater** due to the large amount of chemicals used (Mukherjee, 2015). Taking into account **the fast-growing human population**, for which more food will be needed in the future, the fashion industry will have to make a similar decision as for water. Either **more crops will be grown to feed people, or a large number of raw materials will continue to be grown** in a conventional way **for the textile and clothing production** (Global Fashion Agenda & The Boston Consulting Group, 2017).

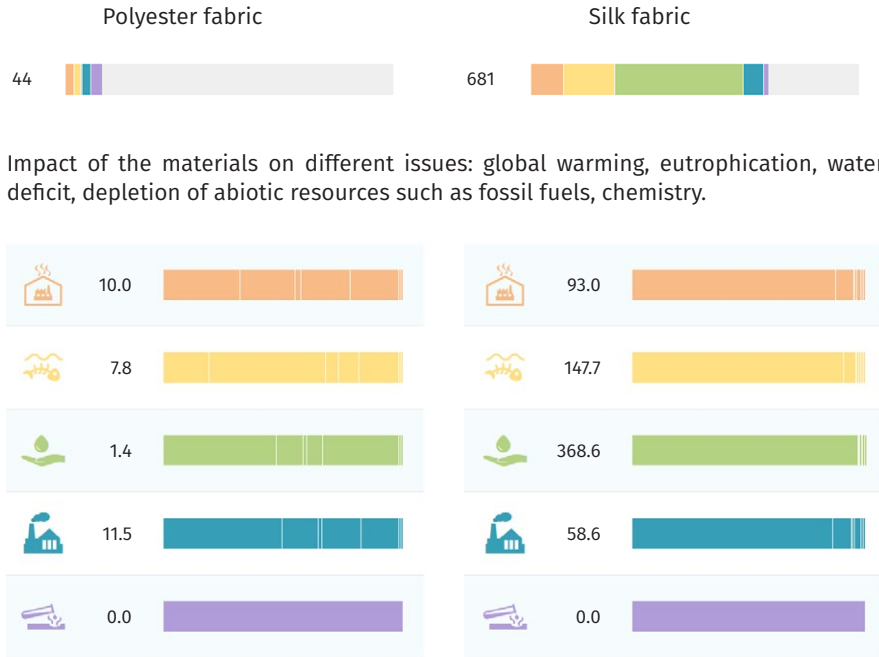
B. Processed materials

The issue of assessing the impact of materials on the climate and the environment is complex, and therefore difficult to map. The Higg MSI (Materials Sustainability Index) database shows that the overall environmental impact of the finish material depends mainly on the type of raw material from which it was produced, on the complexity of the method of its processing, and the need and method of its dyeing (Higg MSI, 2020).

Natural materials can have a much higher negative impact than synthetic ones (Global Fashion Agenda & The Boston Consulting Group, 2017). **However, synthetic materials also present serious problems**, such as the **release of microfibres** into water (see chapter 2.4). When selecting materials, it is necessary to use new **analytical tools**, such as, for instance, **the Higg MSI** (Materials Sustainability Index). It is important also **to evaluate the suitability and performance of materials within a specific application, and throughout the product life cycles.** A material may have a small impact due to the undemanding obtainment and processing, but a new product made of it may be damaged quickly without an option of reparation. The overall negative impact may ultimately be much higher than if another material was selected to make the product. Even though this material may be more difficult to obtain and first-process, the product will be more durable, easy to repair or easily recyclable.

Higg MSI is a tool which provides data solely on the reach of the production phase of materials. Materials for the production of clothing, home textiles, footwear and accessories are included here. The database offers the option to compare detailed data on which processing procedure has what kind and size of the impact on the environment and climate. Higg MSI uses a scoring framework to convert data into environmental scores for the material. The declared Higg MSI unit represents one kilogram of material. This tool, therefore, allows you to compare one kilogram of one material with one kilogram of another material. For example, only by replacing conventionally grown cotton with organic cotton can the overall negative impact be reduced by almost 50%. In case of a replacement with recycled cotton, by 60%. The silk of animal origin can have up to 15 times higher negative effect compared to synthetic polyester (Pic. 2) (Higg MSI, 2020).

Overall impact of selected materials

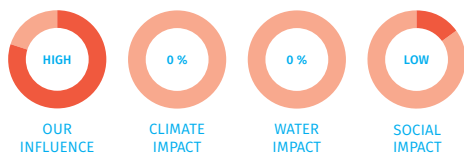


Picture 2: Comparison of the overall environmental impact of polyester and silk fabrics.

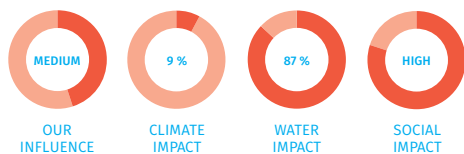
Source: Higg MSI (2020)

C. Processing and clothing production

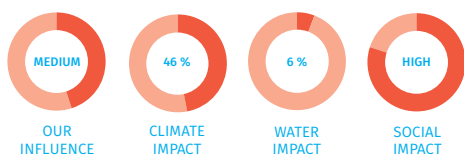
The processing of raw materials into fibres, fibres into woven and non-woven fabrics, the treatment of textiles and the making of products are **energy-intensive processes demanding in raw materials**. When the obtaining of raw materials is added, the **total impact of these phases can represent 16–96 % of the total environmental impact of the product during its life cycle** (Joint Research Center, 2014). H&M states that in 2018, the production of fibres and textiles accounted for 46 % and the production of products for 18 % of the company's total climate impact. Obtaining raw materials, in turn, accounted for 87 % of H&M's overall impact on water (H&M, 2018).



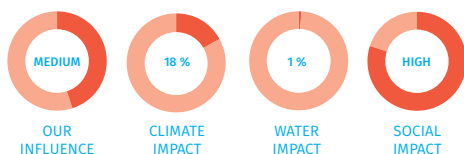
DESIGN



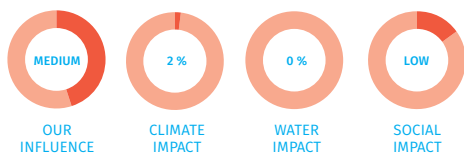
RAW MATERIALS



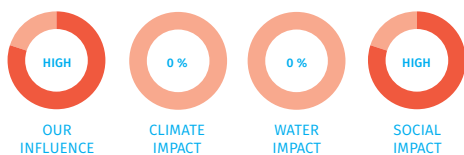
FABRIC AND YARN PRODUCTION



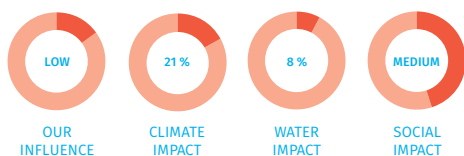
PRODUCT MANUFACTURING



TRANSPORT



SALES



USE

Picture 3: The overall impact of H&M within their value chain.

Source: ©H&M Sustainability Report (2018)

More than 1,900 elemental chemicals are used in the processing of raw materials and the production of textiles, which may contain various heavy metals. In addition to the production stage, these substances may also be harmful at later stages. Their residues may occur in clothing and cause health problems for end consumers (Swedish Chemical Agency, 2013; Sungur and Gülmez, 2015). **They may also enter the environment directly from factories,** for example, through unfiltered wastewater. Such practices are common in the countries of the Global South and in addition to nature, have negative impacts on the health of workers and people living near factories (Ellen MacArthur Foundation, 2017; Tvardžik and Boudová, 2015; Swedish Chemical Agency, 2013).

The procedures of processing and production generate a considerable amount of solid waste. The first type is material waste from production, such as **cuttings**. The share of cutting waste can be **10–25% of the materials used, sometimes even more** (Ellen MacArthur Foundation, 2017 and Reverse Resources, 2017). The second is products with **manufacturing deficiencies** which cannot be placed in stores (Koszewska, 2018). Together, they create a large amount of waste and currently end up mainly in landfills and incinerators (Ellen MacArthur Foundation, 2017).

D. Transport and sales

Compared to other steps in the life cycle of textiles and clothing (see Figure 3), **with good optimisation, transport can have a relatively small negative impact on the environment,** at just around 2% of the total impact (H&M, 2018 and Joint Research Center, 2014).

However, this step also includes **the packaging** and transfer of products from the store. It **creates waste** from packaging, bags, hangers or tags. Things that are never sold are also packaged and distributed. They are either discarded in the distribution centre, for example, due to damages, or no one buys them in the store (Koszewska, 2018). **Up to 30 % of the clothing produced may never be sold** (Ecotextile, 2016). Clothing, even with packaging, is then disposed of, sold to secondhand or outlet shops, and sometimes donated to charities.

Therefore, the biggest problem in the fashion industry is **overproduction and overconsumption**.

E. Use

Since 2005, **the total number of uses of clothing from its first purchase has decreased** by approximately **40 %**. The global average is around 125 uses. In the EU, it is 100 uses, in China, it has dropped significantly to 62 in recent years and in the USA, it is less than 40 uses (Ellen MacArthur Foundation, 2017).

The processes associated with the use of products have a higher negative impact on the environment than it may seem. **Washing, tumble drying, ironing.** All these activities are associated with high consumption of water, energy and raw materials in the form of detergents. Therefore, **their share of the environmental impact can represent 4–84 % of the total product impact in all phases of the life cycle** (Joint Research Center, 2014). H&M states (see Picture 3) that in 2018, the use of clothing by customers

accounted for 21% of the company's total climate impact and 8% of water impact (H&M, 2018).

Another problem is the release of microfibres from synthetic fabrics (polyester, acrylic, nylon, etc.) into the water during washing. Millions of particles end up in the oceans every year. This can amount to 500,000 tons of plastics. The equivalent of this amount would be 50 billion plastic bottles (Ellen MacArthur Foundation, 2017). Even though these fibres are almost invisible to the eye, they can form up to 35% of all primary microplastics ending in the oceans after accumulation (Boucher and Friot, 2017). **Their presence has negative consequences for ecosystems and human health. Even plants for wastewater treatment cannot effectively capture the microfibres yet** (Ellen MacArthur Foundation, 2017). Although the first technologies which can filter out the microfibers during washing have started appearing on the market, the solution to the problem is too slow and unsystematic.

F. End of use

In 2015, fashion-related activities were responsible for generating 92 million tonnes of waste. By 2030, this number could rise by 62% to 148 million tonnes if the current setting does not change (Global Fashion Agenda & The Boston Consulting Group, 2017). **The rapidly accumulating post-consumer waste** is the most tangible evidence of the negative impact of the textile and clothing industry. But the last phase of the clothing life cycle, according to a study by the Joint Research Center (2014), **paradoxically has a little overall impact on the environment compared to other phases.**

The reasons for the rapid exchange of clothing and the subsequent accumulation of waste include **low quality**, due to which clothing is quickly worn out and damaged, as well as **rapidly changing trends** and **people's desire** for constantly **new products**. Unwanted textiles and clothing end up in different places:

- some of them end up in secondhand shops. Either directly from consumers or after sorting things from textile collection containers;
- another part goes to people in need or is exported to other countries. These products are intended for reuse;
- the percentage that cannot be placed anywhere and no one wants it anymore ends up in **landfills, incinerators, in the wild** (especially in the countries of the Global South) or **recycling plants**. This is also the end of clothing and textiles, which are marked as unusable after the first sorting, or end up in mixed waste without sorting. It is estimated that only **13%** of the total material input is recycled again, but the result is **products with lower value and quality** than the original product. Such an approach is officially called **downcycling**. **Globally, less than 1% of input materials are recycled and made into new clothing** (Ellen MacArthur Foundation, 2017).
- There are still many barriers to closing the material flow within the textile and clothing industry. Both in the field of consumer and brand behaviour, as well as in legislation, collection systems, infrastructure and recycling technologies.

2.2 THE IMPACT OF THE TEXTILE AND CLOTHING INDUSTRY ON HUMAN LIVES AND HUMAN RIGHTS

Every sixth person on the planet works in the fashion industry. As a result, it is the most labour-intensive industry among all (Thomas, 2019). Two-thirds of the world's textile and clothing exports come from the countries of the Global South (Grace Annapoorani, 2017).

The current textile and clothing industry has been challenged many times, among other things, also **from a social point of view**. The reasons relate to poor working conditions, especially in the countries of the Global South. The media, consumers and brands became more interested in this topic after the collapse of the **Rana Plaza factory in Bangladesh** in 2013 when more than 1,100 people died, and almost 2,600 were injured (Clean Clothes Campaign, 2019a). The fact that currently, clothing production is generally socially unsustainable, is demonstrated by several resources.

This chapter focuses on issues related to:

- discrimination against women, and child labour,
- employment contracts,
- working time,
- safety,
- wages and salaries in the textile industry,
- workers' health problems,
- repression of trade unions and protests,
- non-transparent supply chains,
- working conditions in the textile and clothing industry in Slovakia.



Picture 4: Collapse of Rana Plaza.

Source: © Sharat Chowdhury CC BY 2.0

A. Discrimination against women, and forced and child labour

Reportedly, **up to 80% of workers in the textile and clothing industry are women**, who may be affected by **several problems** in some countries. The reason why employers prefer women for these positions is that they perceive them as obedient, cheap labour, with low bargaining power and easy substitutability. Factory workers are also often-times victims of sexual violence and often face threats. Despite all obstacles, they often remain in the sector because opportunities for other jobs are scarce in some countries or workers do not have the time and opportunities to retrain (*The True Cost*, 2015; *Clean Clothes Campaign*, 2019; Mukherjee, 2015).

Due to long working hours, these women cannot take care of their children and cannot be granted support in a form of maternity leave or other social benefits. Therefore, children are separated from them and raised by someone else, or they need to take care of themselves. Often they do not attend school, and in some countries, they still work in factories or agriculture (Mukherjee, 2015; Global Fashion Agend & The Boston Consulting Group, 2017).

For decades, scandals involving **child labour and forced labour**, poor working conditions and safety at work have been emerging in the textile and clothing industry. In 2016, a case of the work of children of Syrian refugees in subcontracting workshops, sewing clothes for the Esprit, Next and H&M brands, appeared in Turkey (Thomas, 2019). In 2020, Nike again had a scandal, this time in China, with forced labour of the Muslim minority, the Uighurs, who had been sent to suppliers' factories from mass re-education institutions (Washington Post, 2020).

More serious human rights violations, such as forced labour and child labour, can occur mainly in subcontractors **deeper in the supply chain** (Tier 2 – Tier 4). These include, for example, countries where children collect cotton. At risk here are children from countries such as Cambodia, Myanmar and Uzbekistan.

B. Employment contracts

A high number of workers have **short-term, uncertain or informal contracts**. If there is an employment contract between an employee and an employer in place, it is often for a definite period (usually 3 months). If the employee is still needed after three months, s/he will again receive a contract for the same period. Such conduct is usually illegal, but no sanctions are imposed. Employees thus do not have the security of stable work (Clean Clothes Campaign, 2020f). Mukherjee (2015) describes unfavourable and precarious agreements between workers and agencies. The agencies hire workers irregularly, only when demanded by factories. The workers, mostly female tailors, travel from place to place. Such a system saves factories finances and responds to the uncertain and rapidly changing global market.

Employment agencies are a risk factor, especially when **arranging work for migrants**. They often ask for fees for mediation, which may result in a situation of

forced labour and indebtedness of foreigners. These practices also apply to migrants working in economically more developed countries.

C. Working time

Employees, for instance in India, regularly work 10–12 hours and **16–18 hours** during the peak season. At the same time, a **7-day working week** is typical during this period. Due to their poor financial situation, employees are forced to work overtime without an option of refusal (Clean Clothes Campaign, 2020c; Mukherjee, 2015).

Overtime is often caused by **machine and equipment failures** and subsequent **downtime**, with which factory managers try to catch up later. Another common reason is **unrealistically set delivery dates**.

D. Safety and security

Another negative impact of fast fashion is **non-compliance with safety guidelines in the workplace**. Although there are various statutory safety standards, compliance is not sufficiently monitored. Inspectors tend to be few in economically less developed countries, and there is a high risk of bribery (Butler, 2019). This has been demonstrated by several cases with a sad ending in Bangladesh or Pakistan.

In 2012, a fire broke out in the **Tazreen Fashions** textile factory. Workers remained trapped inside the building with locked exits and bars on the windows. The only way out was through the windows on the upper floors. The accident caused deaths of 112 people and left many more injured, with permanent consequences of injuries after jumping out the windows. The factory produced clothing for the British giant Walmart, the Spanish El Corte Ingles, the German KiK, C&A and Sean John's Enyce, and other cooperating brands (Clean Clothes Campaign, 2020d; The True Cost, 2015).

Evidence of the neglect of safety is also the biggest disaster in the fashion industry, the collapse of **Rana Plaza** in Dhaka, where more than 1,100 people died. Only a day before the collapse, significant damage to the building was found, forcing the merchants and the bank, which were also based in the building, to close their businesses. However, unlike others, the factory workers had to go to work on the day of the collapse (The True Cost, 2015; Poulton et al., 2014).

In 2012, the **Ali Enterprises** building in Pakistan, which produced clothing for the German brand KiK, burned down again. The building did not have functional fire alarms or doors. Workers got stuck inside behind barred windows and locked escape doors. They could only get out through one exit or windows without bars on the fourth floor. More than 250 people died (Clean Clothes Campaign, 2020e; The True Cost, 2015).

In its 2017 annual report, Adidas states that during their supplier audits, the most frequent findings concerned **deficiencies in fire protection**. The second most common finding was non-compliance with the set minimum wage.

E. Wages and salaries in the textile industry

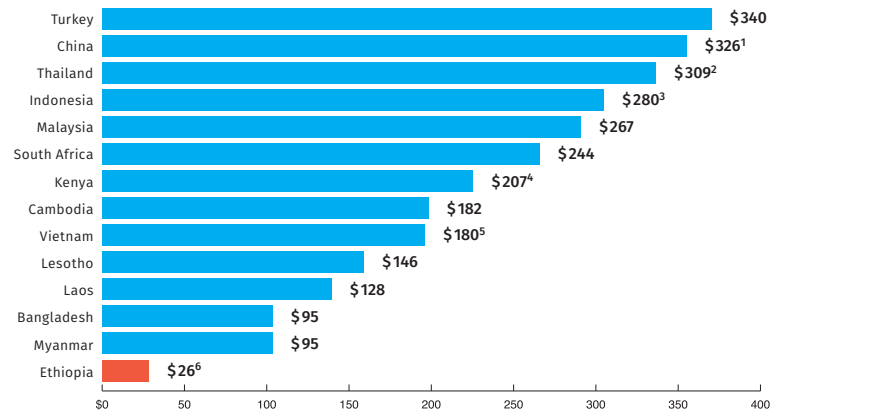
More than 98 % of people working in the fashion industry do not earn a minimum living wage (Thomas, 2019).

Over the last few years, due to rising labour costs, the clothing industry **has gradually shifted from China to other, cheaper countries**. China pays workers more and factories provide better conditions. A large percentage of them already comply with laws and standards. Production is, therefore, moved to **Bangladesh, Cambodia or Africa** to maintain high profits (Tvardzík and Boudová, 2015).

In 2018, the official minimum wage in Bangladesh was raised to 8,000 takas (95 dollars) per month. However, the minimum wage to ensure a dignified life for locals is around 16,000 takas (190 dollars) (Butler, 2019).

In 2016, another country which aims to attract producers by cheap labour appeared on the market. It is Ethiopia. The local government wants to develop the economy and later become a leader in production throughout Africa (Barrett and Baumann-Pauly, 2019).

For these purposes, the largest industrial park in Africa called Hawassa Industrial Park was built. The park meets international technical standards (Ethiopian Investment Commission, 2016). But when it comes to salaries, workers in the park earn only very little. The Ethiopian government recommended a salary of 26 dollars a month for clothing workers in the country. Hence, many of the workers cannot even afford to cover the essential costs, such as two meals a day (Barrett and Baumann-Pauly, 2019). Furthermore, Ethiopia does not yet have a set legal minimum wage/salary. The usual basic salary of 26 dollars a month is sometimes supplemented by incentive rewards.



¹In Shenzhen; ²In Chonburi and Rayong; ³In Jakarta; ⁴In Nairobi and Mombasa; ⁵In Hanoi and Ho Chi Minh City; ⁶Ethiopia has no legal minimum; \$26 is the customary base wage, which is, sometimes supplemented by incentive payments.

Sources: Just-Style and NYU Stern Center research

Picture 5: Graph of minimum wages in the clothing supply chain in selected countries.

Source: © Barrett a Baumann-Pauly (2019)

F. Health problems

The production of clothes in factories is associated with different health problems of employees due to poor conditions. In India, for example, various diseases and injuries are reported. These include **spinal problems, varicose veins, asthma, miscarriages, burns and exhaustion**. Workers have only very limited toilet breaks, which causes serious kidney problems. During long working hours (even 16 hours a day), the risk of accidents at work increases (Mukherjee, 2015).

Padmini and Venmathi (2012) examined working conditions in selected Indian factories. The lighting in some work halls was weak, which may cause **vision problems**. The average noise was also above the recommended limit, which could lead to **a loss of hearing**. Temperatures in which the workers worked ranged between 28 °C and 37 °C with an average of 34.8 °C. Such high temperatures result in **dehydration, fainting and exhaustion**. They also increase the risk of accidents at work. Most workers had some contact with various chemicals. **Dangerous chemicals** which are part of cleaning and dyeing of textiles can **irritate the respiratory tract, cause lung diseases, allergies, poisoning or cancer**. High dustiness was also observed, especially in the cutting and sewing departments. Small particles of textiles get into the respiratory airways and, like chemicals, cause **respiratory problems**. Other health issues were caused by non-ergonomic workstations and long standing. This can result in **musculoskeletal disorders, such as tendonitis, tennis elbow, carpal tunnel syndrome, spinal injuries or varicose veins**. 67% of workers in textile factories in Tirpura reported that they suffered from one or more of the mentioned ergonomic diseases.

In 2008, similar research was conducted in Bangladesh and the Philippines. The results considerably match and agree with the results of the analysis conducted in India (Akhter, 2010; Lu, 2008).

Further, farms producing raw materials for the clothing industry harm human health too, and, at the same time, also the environment. **Pesticides** used on cotton farms can cause **tumors and poisoning** to workers who spray crops daily. These substances then enter water and soil, causing health issues to other people and animals (Mukherjee, 2015; The True Cost, 2015).

G. Suppression of trade unions and protests

Employees have very **limited opportunities to organise** and create pressure on factory management. Their abilities to demand improved working conditions are limited and often suppressed (Clean Clothes Campaign, 2020h; The True Cost, 2015; Al Jazeera, 2019).



Picture 6: People are protesting on the 1st anniversary of the collapse of Rana Plaza.

Source: © Solidarity Center (2014) CC BY 2.0

H. Non-transparent supply chain

Brands do not own their factories any longer, but order the production from suppliers. The suppliers often delegate these orders further. This results in a situation when the **brand** (which has the greatest influence in this case) **is not aware or informed of the conditions** in which its products are manufactured (Clean Clothing Campaign, 2020g).

Many companies have progressed with **audits and inspections of their suppliers** but the vast majority inspect only **the direct suppliers** (Tier 1 Suppliers). Even the largest companies, such as Adidas are just starting to do audits of subcontractors (Tier 2 Suppliers). For example, in 2017, Adidas conducted audits of 45 Tier 2 subcontractors. Deeper in the supply chain are Tier 3 and Tier 4 subcontractors. Even for the largest companies, this is still an unexplored field (Adidas, 2018).

An important factor in failures and human rights violations is **the complexity of the supply chain** and the fact that even the largest companies do not know how to control the deeper layers of subcontractors in their chain. Therefore, even different **certificates cannot guarantee the elimination of injustice**. It can be ensured mainly by **local and transparent production**, which takes place under the scrutiny of people who buy and use the products of the brand.

I. Working conditions in the textile and clothing industry in Slovakia

Just like in other European countries, **the abolition of textile quotas on imports of clothing from the countries of the Global South contributed to the radical decline in textile and clothing production in Slovakia.** The result was an increase in the consumption of imported clothing in Europe from 33 % in 2004 to 87 % in 2012 (Šajn, 2019).

Of the most famous Slovak factories, only a few still operate, such as Makyta, Ozeta, Tatrašvit and Tatraľan. Thousands of people worked in these and other factories, today there is a maximum of a few hundreds in each. **There are currently around 10,000 people working in this sector in Slovakia. From 1989 to 2017, their number decreased by 56,000** (Legén, 2019).

The working conditions of people producing textiles and clothing in Slovakia are certainly better compared to the countries of the Global South, especially in terms of safety. However, there are still problems at some companies. For instance, female workers in the past stated that they worked in cramped or cold spaces.

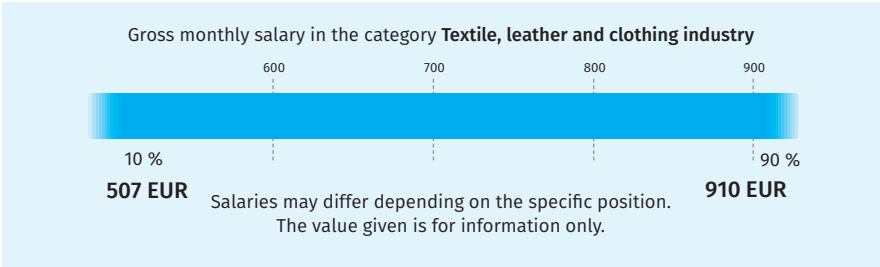
There was also a six-day working week with inadequate pay or rude behaviour of superiors. Still, the biggest problem of people working in the textile industry in Slovakia is the **low salaries**, sometimes not even at the level of the legal minimum, or their irregular payments (Odkladal, 2014; Galan, 2019). In recent years, salaries have been rising slowly. It is also related to the previously recommended **reorientation of production to technical textiles, mainly for automotive production** (Ekonomika.sme.sk, 2005).



Picture 7: Clothes sewing.

Source: © Diana Henry (2017)

The Platy.sk website (2020a) states that the current **average gross salary** in the textile, leather and clothing industry in Slovakia is **682 euros per month**. The average was calculated based on the wages of 186 respondents. The gross salary range is from 507 to 910 euros. The website data are regularly updated and list only full-time salaries. Hence, it is possible that some employers circumvent the law and employees receive lower wages than the statutory gross minimum of 580 euros. Or, for some reason, the data may be inaccurate.



Picture 8: Gross monthly salary in the textile, leather and clothing industry in the Slovak Republic.
Source: Platy.sk (2020b)

Still, salaries for individual positions start at the law statutory minimum of 580 euros.

Tailor	580 – 745 EUR
Shoemaker	580 – 977 EUR
Clothing designer, cut designer	646 – 1251 EUR
Textile cutter	580 – 941 EUR
Seamstress	580 – 779 EUR

Picture 9: Salary range in the textile and clothing industry in Slovakia.
Source: Platy.sk (2020b)

In the salary ranking, the job position of a tailor ranks 619th out of a total of 620 assessed. According to the portal, only paramedics have lower salaries in Slovakia. 100 % of tailors are women whose average age is 39 years. As for seamstresses, they have the 615th lowest salary. The representation is also 100 % female, and the average age of the respondents was 28 years. Workers in the position of textile cutters have the 606th lowest salary of the jobs assessed (Platy.sk, 2020b).

These data show that despite **their demanding physical work**, people employed in the textile and clothing industry in Slovakia are paid low. Moreover, they are **among the worst-earning workers**.

2.3 THE IMPACT OF THE TEXTILE AND CLOTHING INDUSTRY ON LIVES AND RIGHTS OF ANIMALS

The current textile and clothing industry has a negative impact not only on human lives but also on the lives of animals. Some people do not consider the lives of these individuals to be equal to humans. For others, on the contrary, this topic is very sensitive and important, so they exclude animal products from their eating habits, as well as from their wardrobes. Among other things, for greater transparency and detection of problems in the industry of animal production.

For the needs of the clothing industry, several billion living animals die each year. Furthermore, they are often treated inhumanely and experience demonstrable suffering in various processes due to human conduct (PETA, 2020a). The acquisition and processing of animal materials also have a major negative effect on the environment and the health of workers in this sector (PETA, 2020b). Therefore, the following chapter focuses on:

- the most frequently used materials of animal origin in the textile and clothing industry,
- factory agriculture,
- problematic transports.



Picture 10: Animals in a fur farm.

Source: © Dzīvnieku brīvība (2012) CC BY 2.0

A. The most commonly used materials of an animal origin in the textile and clothing industry

In the clothing industry, the most commonly used animal parts are **leather, fur, wool and feathers**.

Leather

Leather is most often used for the production of clothing, footwear and accessories, but also in the furniture and automotive industries. China is the world leader in leather processing. **54 % of the world's genuine leather production is used in the footwear industry**. The demand for skin is expected to grow together with a growing world population (UNIDO Vienna, 2010).

Around the world, various species of animals are used to obtain skin. Cattle, calves, buffaloes, and oxen are used to make leather products. Lambs, sheep, goats and deer are used in more expensive, softer clothes. Kangaroo leather, on the other hand, is one of the strongest and lightest. Therefore, it is used to make highly durable pieces, such as football boots or clothing for motorcyclists. Skins from exotic and endangered species have always been considered more beautiful and rare. Hence, snakes, iguanas, lizards, elephants and crocodiles were hunted until they were almost extinct. Since 1987, North American snakes and alligators have been removed from the list of endangered species and kept on breeding farms mainly for their commercial value. Ostrich leather is currently considered one of the best and most durable leathers and is, therefore, used by many major fashion houses as well as the upholstery, footwear and automotive industries.

Other species of animals used in the clothing industry for leather are moose, camels, horses, mules, donkeys, pigs, cats, dogs and birds; aquatic animals: frogs, eels, salmon, sharks, walruses and even dolphins (Planntin, 2016).

Fur

Every year, fur is reportedly processed from approximately 100 million animals worldwide (Spruce, 2019). In 2014, China alone, which is the largest producer of mink fur, produced 35 million pieces of this type of fur. Denmark, the second-largest producer, brought almost 18 million pieces of mink fur to the market and Poland 8.5 million pieces (Bale, 2016).

Fur is divided into subcategories of farm fur and fur from wild animals. 58% of farm fur comes from Europe. China, Russia and North America are other major producers of this commodity.

The animals most often bred on fur farms are foxes, rabbits, minks, beavers, otters, weasels, seals, coyotes, chinchillas, racoons, opossums, cats and dogs.

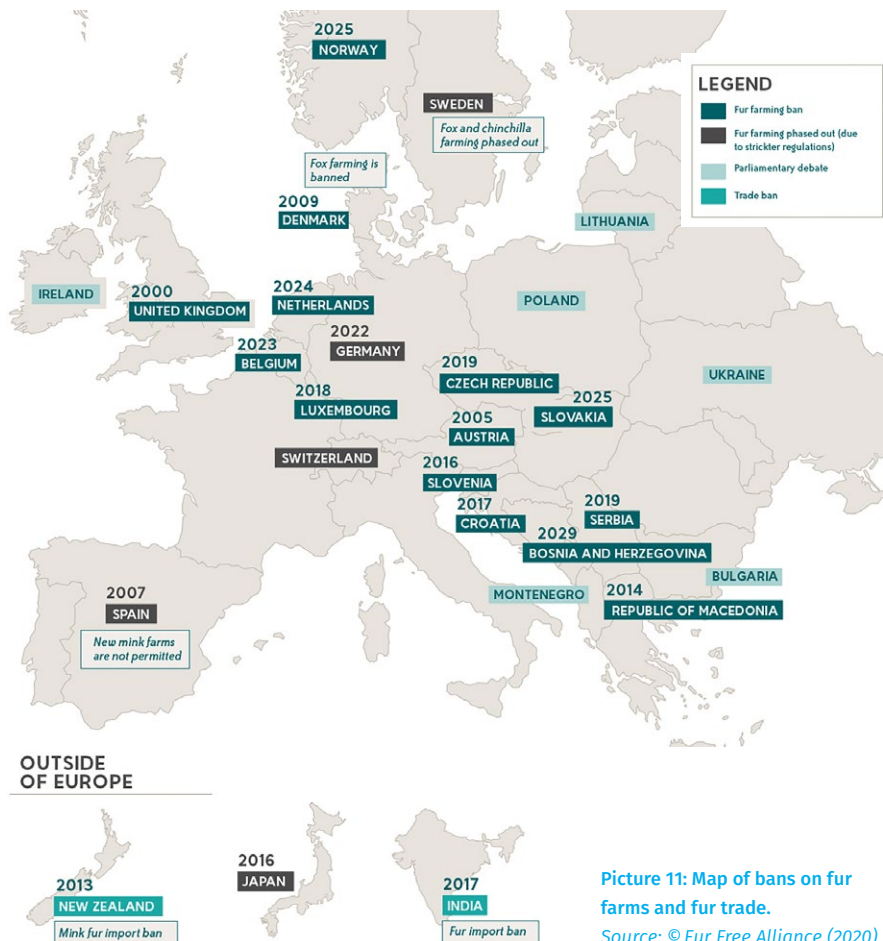
Animals hunted for fur are jaguars, ocelots, cheetahs, margays, tigers, leopards, white tigers, grey-red wolves, llamas vicuña, bears, racoons, foxes, beavers, seals, and cougars. The animals that are hunted are not only those that are overmultiplied or sick but all species, including endangered animals (Planntin, 2016).

It is difficult to estimate how many animals are used to make one fur coat, depending on the cut and size. Approximate numbers are the following:

minks: 30–70, rabbits: 30–40, foxes: 10–20, chinchillas: 30–200, seals: 6–10, lynx: 8–12, racoons: 30–40, squirrels: 200–400 (Respect for Animals, 2020).

In several European countries, fur farming of animals is already, or will soon be, partially or completely banned. In Slovakia, from 2021, with a transitional period until 2025, there will be a complete ban on fur breeding (Smrek, 2019).

Other countries have strict regulations for keeping animals on fur farms. In most cases, these regulations are liquidating for companies. There are also several cities, towns and states where there are various restrictions on the fur trade (furfreealliance.com, 2020).



Picture 11: Map of bans on fur farms and fur trade.

Source: © Fur Free Alliance (2020)

More and more **fashion brands** are involved in the fight against fur. Big brand names such as Prada, Chanel, Versace, Michael Kors & Jimmy Choo, Gucci, Armani, Burberry, Donna Karan and DKNY, John Galiano and others have already joined (Korytářová, 2019). Consumers, even those in Slovakia, reject fur more and more often. It was also confirmed by a survey by the Focus agency conducted in 2018, which showed that 68 % of consumers considered animal keeping for fur to be unacceptable (Smrek, 2019).

Wool

In terms of the impact on animals, wool is **one of the more ethical alternatives to animal material for the clothing industry**. It can be obtained without killing animals, which is a significant benefit of this material. However, even when obtaining wool (shearing/tearing), animals often suffer injuries, and the whole process is stressful for them.

Species of animals to obtain wool from include camels, llamas, muskrats, angora goats, sheep, and angora rabbits (Plannthin, 2016).

Feathers

It has been proven that feathers are still obtained today **by tearing not only the dead but also live birds**, for example, in China (Shas, 2016). But it can still occur in Europe or the USA, where the plucking of feathers from live birds has long been banned (Villalobos, 2011). Feathers can be plucked when the bird is ten weeks old and repeated at six-week intervals. The animals suffer great pain in this process. (Plannthin, 2016)

B. Factory agriculture

Most animals slaughtered for these purposes are reared under a system of **factory farming**. This breeding system is characterised, for example, by cramped and dirty spaces and living conditions that only provide a necessary minimum to achieve the required size and weight. Furthermore, characteristic are also various diseases, insensitive and violent manipulation or killing by the cheapest possible means, such as anal electric current, beating to death and gas poisoning. Some animals are even disassembled and skinned alive (PETA, 2020a). **Trapping animals** in the wild is also accompanied by negative effects. Imprisoned individuals may suffer from shock, dehydration, frost-bite or gangrene for several days and bleed out.

C. Transport of animals

Another big issue associated with obtaining animal materials is **transport**. Often animals are kept in one place but slaughtered elsewhere. Transport can take hours, sometimes even more days. A specific example is the case of India, which is also

a major producer of cheap leather. As the slaughter of cows is prohibited in some places for religious reasons, the animals are transported to other remote locations. Plannith (2016) states that these animals may experience the following practices during transport:

- cows and buffalos travel thousands of kilometres without water, food and rest; they are cruelly beaten and forced to walk in scorching heat;
- people deliberately break animals' tails and rub tobacco or chilli into their eyes for them to get up and walk on after they collapsed. Their hooves abrade and bleed;
- when cows and buffalos are transported by lorries, the animals are crammed on top of each other, causing them to suffocate, bump into each other, abrade each other and pierce each others' eyes with horns;
- when unloading, the animals that can still stand are forced to jump from high platforms, often breaking their legs or pelvises. Those that have collapsed are pulled out of the cars and left lying under the other cows.

3. VISIONS AND STRATEGIES FOR A BETTER ENVIRONMENT AND A DIGNIFIED LIFE

3.1 VISIONS AND STRATEGIES FOR A BETTER ENVIRONMENT

All the facts and predictions about **the negative environmental impact** of the textile and clothing industry given in Chapter 2.1 are a serious **reason for the accelerated systemic change**. If a **functioning circular system could be created** in this field, it could bring new economic opportunities (Ellen MacArthur Foundation, 2017). But all relevant parties must be involved in the change.

Many studies, analyses or practical examples have already demonstrated how efficiently this industry can function in the future and how it can be cleaned up. Specific proposals concern in particular:

- design changes,
- materials of the future,
- improvement of the processing and production phases,
- improving consumer buying decisions and the phase of use,
- extension of the use of products,
- efficient collection for reuse, reparation and upcycling,
- improved sorting and recycling.

A. Design changes

First of all, it is necessary to transform the way of product design itself. According to the principles of the circular design, products should be **durable, easy to repair and timeless**. Various **innovative approaches** are often used (Van den Berg and Bakker, 2015).

The most important principle of circular design is good **recyclability of the product**. A prerequisite for efficient textile recycling is the production from single-kind materials. Mixed materials and composite products are still problematic for efficient recycling.

Another principle used is the **modularity** of the product. An example of such an approach is a **dress** from the Suite 13 brand, which can be worn in 5 different ways.

As part of technological innovations, **3D printing** is also mentioned in connection with fashion. 3D printing has the potential to enable local tailor-made production without unnecessary waste of material and the need for stock storage and long-distance distribution. Several brands, such as Adidas, already use and further develop this technology (Global Fashion Agenda & The Boston Consulting Group, 2017). In the

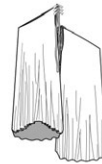
future, other smart solutions or materials may come into play, and clothing, as we know it today, could change from the ground up.



OPTION 1:
V-neck,
straps crossed
on the back



OPTION 2:
Straps crossed
on the neck



OPTION 3:
Asymmetric
solution for
one shoulder



OPTION 4:
Without straps



OPTION 5:
Skirt

Picture 12: Modular dress by the Suite 13 brand.

Source: © nila.cz (2020)

B. Materials of the future

The Ellen MacArthur Foundation (2017) considers it crucial to produce **fibres based on plastics from renewable raw materials** in the future. It further emphasises **the need to move to regenerative agriculture** and recommends that all renewable raw materials be produced in this way.

Research is currently underway **on polymers based on renewable raw materials**. Still, the challenge is to find suitable raw materials from which biopolymers could be made without competing with food production (aboutbiosynthetics.org, 2020).

In this field, there is a project entitled the Effective, which combines technology, economics and commercial adaptation. It seeks to design, produce and apply into practice **fibres and films from polyamides and polyesters based on renewable raw materials** (Effective, 2020).

There are also **artificial celluloses** like viscose available. They are made from renewable resources (plants) but their sustainable production is questionable, as their consumption has doubled in the last three decades. Therefore, new materials such as **Piñatex** from pineapple leaves, **lyocell** or **bemberg** (Šajn, 2019) are beginning to appear, as well as **Orange Fiber®** from orange processing waste or **BLOOM™Foam** from seaweed. The fruits of the kapok tree growing in Central and South America are also used. Several companies and brands, such as **MycoWorks** and **MycoTEX by NEFFA**, also experiment with replacing leather with natural materials based on **mycelia** (fungal roots).

It takes time to expand the use of these materials. But, for example, various types of **certified cotton** are already available on the market. They are more environmentally friendly than conventional cotton, but also more friendly to their growers. The world's best-known certification scheme for the textile processing of organic fibres is the **GOTS** (Global Organic Textile Standard). It defines high-level environmental criteria throughout the organic textile supply chain and also requires compliance with various social criteria. GOTS-certified textile products are already available in several retail chains in Slovakia.

C. Improving the processing and production phases

In the textile processing phases, it is crucial to **omit all substances of concern and replace them with suitable alternatives** (Ellen MacArthur Foundation, 2017). A study by the Joint Research Center (2014) lists other important recommendations, such as the production of woven clothing with alternative technologies, reducing the mixing of different types of fibres for easier recycling, reducing energy consumption, recycling water, and using less water-intensive dyeing technologies.

An innovative company entitled **DyeCoo** from the Netherlands focuses on the last-mentioned recommendation. **For dyeing it uses CO₂ instead of water**. Sarah Bellos of **Stony Creek Colors**, Tennessee, grows **natural indigo** to safely dye jeans as a substitute for harmful synthetic indigo (Thomas, 2019). Further, a Polish factory entitled **Knk-Kanaka** also offers environmentally friendly dyeing and bleaching of fabrics.

D. Improving consumer buying decisions and the phase of use

Consumers decide what they buy and, therefore, the impact it will have on the environment and the climate. For this reason, it is important to raise their awareness and offer them clear information and tools to guide them to make responsible buying decisions.



Picture 13: Hierarchy of approaches to clothing.

Source: © INCIEN archive (2019)

Education

Various organisations focus on raising consumers' awareness. The **Textile Exchange** is a global non-profit organisation which, among other things, identifies and shares examples of good practice regarding materials, transparency, or the handling of unwanted clothing (Textile Exchange, 2020). Another such organisation is **Fashion Revolution**. The movement emerged in response to the collapse of the Rana Plaza factory in Bangladesh. Since 2014, Fashion Revolution has also been active in Slovakia. It strives for the transparent, ethical and sustainable fashion industry (Fashion Revolution, 2020).

New tools

Based on its research entitled **Fashion (Re)search**, the online clothing search tool **Glami.sk** states that the interest in shopping for sustainable fashion is growing in Slovakia. However, there is a lack of basic understanding of the concept of sustainability, as well as awareness of which brands are sustainable. There is also a growing interest in buying Slovak local fashion but people often do not know where to find and buy it (Fashion (Re)search, 2019).

Therefore, Glami.sk offers customers **the option to filter** within clothing and footwear in categories, such as designs from Slovakia, country of origin, sustainable fashion and sustainable materials. Such options can help customers find products that have a smaller negative impact compared to conventional ones. But finding products that meet several principles of sustainability at once is still relatively difficult. The definition of terms such as *sustainable materials* and *sustainable fashion* may also be problematic due to the complexity of these fields.

In addition to this consumer tool, there are others, such as comprehensive **independent evaluations** (see Chapter 3.2, C).

Clothing care instructions

The user phase of the product has a significant share in the overall environmental impact (H&M, 2018 and Joint Research Center, 2014). Therefore, experts call **for more efficient washing, drying and ironing**. They recommend washing clothes less often and air drying, washing at lower temperatures, and fully loading the washing machine, avoiding tumble drying and ironing, using environmentally friendly detergents, and moving unwanted clothes further (Joint Research Center, 2014). The Ellen MacArthur Foundation (2017) considers it crucial to urgently ensure that synthetic microfibres are not released into the environment, but consumer options in this field are still limited. Users should be well informed about the effects of their use and the recommended care of textiles.

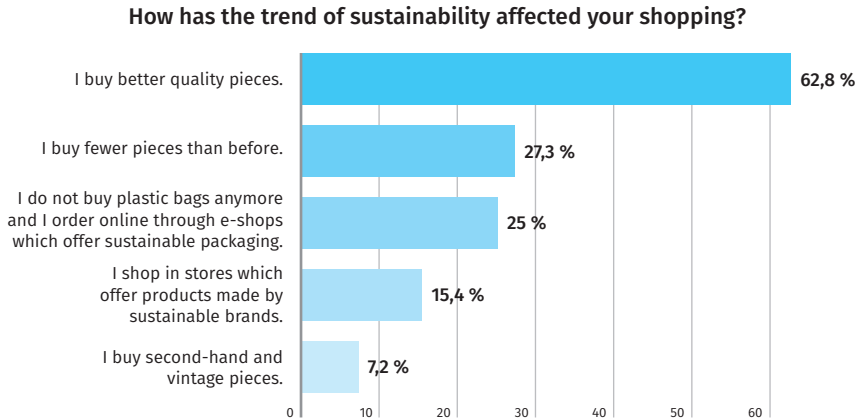
E. Extension of the use of products

Longer life of textiles and clothing in circulation is essential for a systemic change. It would significantly **increase resource use efficiency** (Ellen MacArthur Foundation, 2017). Several solutions which relate to changing the ways things are designed, sold and used have been named to achieve this goal.

Slow fashion and capsule wardrobe

Another way to prolong the use of things is to follow the philosophy of a *capsule wardrobe* or *slow fashion*. **Slow fashion** is the opposite of **fast fashion**. This concept is based on buying **a smaller number of better quality clothes**. It favours smaller local brands which are transparent, sustainable and responsible.

Slow fashion is about voluntary modesty, about rejecting everything unnecessary and about keeping meaningful values in mind. With such an approach, despite higher prices per piece, a consumer can save money, time and the environment (Lull, 2020). The results of the survey provided for the purposes of this study by Glami.sk (2020) show that consumers in Slovakia are also beginning to follow some slow fashion principles.



Picture 14: The result of a survey on sustainable shopping by Slovak consumers.

Source: Glami.sk (2020)

Creating a **capsule wardrobe** is an effective way to 'wear out' clothes. Its main principle is owning a limited number of pieces of clothing, around 20–40, which are easily combined due to their timelessness, cuts and colours. It is also recommended to prefer quality products which will last a long time (Lovely.sk, 2018).

An example of such fashion is the **CILA** brand, which produces quality capsule clothing, such as white shirts, elegant trousers and quality coats. In production, it uses residues of materials discarded from large-scale production and GOTS-certified cotton. All products are designed and manufactured in Slovakia.

New business models

As part of new business approaches which result in greater material utilisation, Lang et al. (2016) list the following categories:

- **Sale of redesigned clothing**

An example is the Hungarian brand **Sharolta**, which re-designs old clothes, mostly denim, into new bags, dresses, skirts, sweaters and jeans. The Slovak brand **WakiVaky** has a similar approach. It specialises in the upcycling of textile waste, from which it produces mainly bags, backpacks and bum bags. Upcycling means that something old is turned into a new product of higher quality and value than the original.



Picture 15: Upcycled backpack by the Slovak company WakiVaky.
Source: © WakiVaky (2020)

- **Clothing repairing and alteration services**

Within this model, the customer has the option of repairing the product or customising it. It does not need to be classic tailoring services only. Such services are already offered by the brands as part of the warranty or as additional services.

An interesting example is the **Textile Mountain** concept from Prague, which offers clothing repair but also sells residual textiles obtained from manufacturers.

- **Clothing rental**

A model which is becoming more and more popular, even though for many people it is acceptable only in specific situations. Rental rules differ with products and brands. Available is a short-term loan, but also, for example, an annual rental.

The Dutch company MUD Jeans rents jeans to consumers. The bottom line is that it gets back the textiles it has placed on the market and then turns them into new products.

The rental model is available in Slovakia, too. You can borrow **children's clothing** from the company entitled **Eko Kolovrátok** or women's clothing from **Šumné** which offers local and high-quality pieces. On their website, you can also determine your fashion footprint.

- **Swapping**

This approach can reduce the demand for new textile products.

Swaps are **events** to which **people can bring their unwanted clothes in good condition and, in exchange, take someone else's clothes back home with them.** Organisers have their own rules of swapping. There is no charge for exchanged pieces, but entrance fees may be required. In Slovakia, swaps are organised on a regular basis in every larger town. The trend is now spreading also to small towns and villages.

- **Fashion style consultancy services**

For instance, the basis is about providing expert advice on how to wear or combine already owned clothes. Even such a service can help to improve the environment.

F. Effective collection for reuse, repair and upcycling

Ensuring there is a **sufficient number of collection points** for unwanted clothing is an important step in prolonging the use of clothing and textiles. Some **companies**, such as H&M, Intimissimi, and Marks & Spencer, **have started collecting used clothing** from various brands in their stores. From there, clothing travels to be recycled or down-cycled, or to charitable second-hand shops for further sale (M&S, 2020).

Some second-hand shops also take unwanted clothes directly from customers. In Slovakia, **Nosene** serves as such an example. Besides already worn items, second-hand shops currently offer new pieces which were not sold in stores, or items which were bought but never worn. Goods of this kind are also offered by **Remixshop**, which is a European online second-hand shop. Other large second-hand shops in Slovakia are, for example, **Textile House** and **Humana**.



Picture 16: Warehouse for collected clothing of the Ekocharita organisation.

Source: © INCIEN archive (2019)

In the future, the sale of worn clothing could also expand into the shops of fashion brands. For this to happen, the brands need to realise the economic potential of this approach and not consider it as a direct competition to their new products. Decathlon has already taken such a step. It has launched a project focusing on the sale and purchase of used sports equipment and clothing under the title of **Decathlon 2HAND**. Customers have an opportunity to offer their used items on an online platform or at an event called Trocathlon. Today, the project is implemented only in Italy and Romania (Decathlon 2HAND, 2020).

In addition to donating textiles and clothing to regular shops and second-hand shops, consumers can also donate clothing via various social networks and websites. Another option is direct donations to charities.

The most well-known organisation which focuses on the collection of clothing in Slovakia is **Ekocharita—Slovakia to Slovakia**. The collection is implemented through specialised containers. **The charity currently has 1,200 containers in place all across Slovakia and collects approximately 3,000 tons of clothing annually.** Firstly, the collected textiles from containers are sorted. A part is then donated to non-profit charities, the rest is recovered for various different purposes and reused (Ekocharita, 2020).

Another suitable choice for increasing material efficiency is **upcycling**, i.e. the conversion of waste into new products with higher value and quality, as well as **the repair of damaged items**. Currently, repairs are done only on a minimum of collected damaged items in some small second-hand shops. These repairs focus only on simple operations, such as sewing buttons. Their goal is to increase the value of products. If upcycling and repairing things are preferred to recycling and downcycling, it will have a high positive impact on the environment.

G. Improved sorting and recycling

Even if all the above-mentioned approaches and measures are applied, the proportion of waste that will need to be recycled will always be generated. Therefore, **it is necessary to significantly improve not only how products are designed and subsequently manufactured, but also the production materials, and the collection, sorting and recycling processes.** Current materials and product design are not in line with the principles of simple and efficient material recycling. There is also a problem with sorting technologies that cannot distinguish and sort products by composition. As a result, almost all input material in the recycling process loses quality and can, therefore, only be *downcycled*. Unless these inputs and activities are improved, it will not be possible to maximise the share of valuable textile waste recycling (Joint Research Center, 2014 and Ellen MacArthur Foundation, 2017).

Around the world, there are already many companies operating in the field of textile waste processing. Several of them are in Slovakia. **SK-Tex** annually returns into circulation approximately **4,500 tons of textile waste** as it converts it into various types of insulation, fibres or tears suitable for the automotive, furniture and construction industries. It is the largest company for textile waste processing in Slovakia. It mainly processes clothing and also cooperates with second-hand shops, such as Genesis and

Humana, and with the clothing company Ozeta. Thrown clothes are sorted by the material into various quality groups. Among the best materials for the production of insulation is denim (INCIEN, 2018). **Stered—PR Krajné** specialises in technical textile waste from the automotive industry and makes various acoustic and insulating panels (STERED, 2020). The **Hoveba** company focuses on the processing of textile waste and offers various recyclates for sale (Hoveba, 2020). **Nitratex**, a weaving production cooperative in Svinná, is another processor of secondary textile raw materials. The cooperative is able to process approximately 350 tonnes of secondary textile raw materials per year in the form of textile clippings from ready-made knitting production, or fabrics and nonwovens (Nitratex, 2020). The company called **LYKOTEX Slovakia** is also one of the processors of secondary textile raw materials (LYKOTEX, 2020).

At the above-mentioned companies, the quality of textile fibres reduces in most cases. Therefore, it is no longer possible to produce new textiles from them. But there are emerging processors who can **recycle fibres more efficiently**. Recycling textile waste into new fibres **without loss of quality** is essential to create a closed loop system.

Worn Again has developed a special recycling technology which separates, decontaminates and extracts polyester polymers and cellulose from cotton, disposable fabrics, PET bottles and packaging. It transforms them back into new textile raw materials, and thus forms a closed flow of materials (Worn Again, 2020).

Evrnu brings **NuCycl** technology, which extends the life of textile fibres by extracting the molecular building blocks of the original fibre in such a way that new fibres can be formed again and again (Evrnu, 2020). Hilaturas Ferre uses the Recover system to recycle textile waste into quality fibres (Recover, 2020).

The Dutch company **ReBlend**, which develops innovative processes and subsequently produces its own fabrics and new products from textile waste (ReBlend, 2020), is also bringing a positive change. The Italian textile platform **Re.Verso™** implements similar activities, but it focuses only on the recycling of wool and cashmere (Re.Verso, 2020).

3.2 A VISION FOR HUMAN RIGHTS AND A BETTER LIFE FOR PEOPLE IN THE TEXTILE AND CLOTHING INDUSTRY

People from various fields have already begun to take part in the change to the fairer fashion industry. From activists to the non-profit sector, producers, journalists to consumers and policy-makers. Each group brings about necessary measures, such as:

- changes in legislation,
- changes in the approach of brands and their suppliers,
- tools for consumers,
- activities and campaigns of non-profit organisations.



Picture 17: Seamstress in a factory in Bangladesh.

Source: © Solidarity Center (2015) CC BY 2.0

A. Changes in legislation

The first step which every country involved in the production of textiles and clothing needs to take is the correct setting of labour legislation. Governments around the world should **sufficiently promote and support workers' rights**. It is more difficult

to ensure compliance with the legislation and to carry out inspections effectively. An example is China. Its labour standards are not considered weak, but non-compliance has been a long-standing problem (Halegua, 2007). Still, China is also an instance of the fact that change in this field is gradually achievable (Tvardžík and Boudová, 2015). **EU legislation** on labour law or health and safety at work, as well as monitoring compliance, is stricter than in the countries of the Global South. However, the situation also varies between EU countries.

The EU has also developed several other relevant official documents, analyses and strategies which may inspire other countries outside the EU (European Commission, 2020).

The official legal document regulating employment relations, rights and obligations between the employee and the employer in Slovakia is called **the Labour Code**.

The United Kingdom has had the **Modern Slavery Act** in place since 2015, and it requires large companies in the Commonwealth to report annually on their improvements in this field (Business & Human Rights Center, 2020).

B. Changes in the approach of brands and their suppliers

There are several ways in which brands or their suppliers, who make products for them and provide (raw) materials, can bring about a positive change in the social field. Both groups are slowly getting used to the new standards which have started being required of them. These are mainly **transparency throughout the supply chain** and various **certifications**.

If big brands want to keep their positions, they have to do things differently. They can start by allowing customers to “buy a clear conscience”. This means that they will also offer **fair certified collections**. Even though these collections will be more expensive, the customer will know their origin and the conditions under which they were produced.

This step is related to the whole supply chain, which the brand needs to pressurise, and force the individual parts in the chain to improve the conditions of the people who work for them. **Improving working conditions** may mean many things, including the provision of affordable, safe accommodation close to the workplace, fair employment contracts and wages, overtime pay, the provision of protective equipment, the ability to organise and bargain collectively, the training needed to work, and long enough breaks.

Clothing brands should indicate the percentage of workers **protected by collective agreements** in their Sustainability Reports. It is required, for instance, by the GRI 407 reporting standard. Clothing brands do not own factories and, for this reason, do not directly employ people in the textile and clothing industry. Still, **in contracts with suppliers and the code of conduct, they should include the option of collective agreements and free association**.

According to the UN Guiding Principles, also known as the Ruggie Framework, three aspects are **important principles of respect for human rights: protect, respect, remedy**. The key is to **remedy and compensate workers** who have experienced ill-treatment or harm (Shift, 2020).

Many companies have made progress with auditing and controlling their direct suppliers (Tier 1 Suppliers). For instance, they now allow them to sign **the Supplier Code of Conduct**, they increase the number of **unannounced audits**, introduce management systems to **eliminate ESG risks** (Environmental, Social and Governance Risk), increase the number of **supplier training** and create various **communication channels and mechanisms for complainants** (grievance mechanisms). Through them, the employees of the partner factories can freely and anonymously report ill-treatment, deficiencies and breaches of safety at work to a specific brand. **Helplines and emergency lines** are important tools here. To do this, brands need to create **various online, telephone and offline communication channels**, including the ability to send a **text message, email and letter**.

Innovative technologies and methods are already in use to improve working conditions. **For example, non-compliance with working hours** can now be checked by large companies during audits of their suppliers by monitoring electricity consumption or using satellite imagery (Adidas, 2018).

However, the majority of such measures only concern direct suppliers. Even the biggest companies like Adidas are just now starting to do Tier 2 subcontractor audits. **Tier 3 and Tier 4 audits of subcontractors** remain a **major challenge**, even for the largest companies (Adidas, 2018).

The complexity of the supply chain is an important factor in human rights failures and violations.

Companies can radically **reduce the length, depth and complexity of global supply chains** through **local production combined with digital manufacturing and automation**.

Moving production closer to the point of sale is called **right-shoring**. It envisages the introduction of new technologies, which can be located, for example, in an old production hall. There are not many workers in such production, but working conditions are suitable for them (Thomas, 2019). However, if such an approach is more successful, it can harm the economies of third countries.

But even the largest producers have **a problem to succeed with such a business model**. For example, **Adidas**, with other industrial partners such as the American **startup Carbon**, built the highly **automated Speedfactory** in Germany in 2016. The factory uses 3D printing from Carbon to produce midsoles for the most expensive models. After only three years, the company plans to move this factory to Asia (Supply Chain Dive, 2020).

Another interesting instance of automation and distributed production is the company **Jeanologia**, which focuses on **reducing water pollution**.

The current COVID-19 pandemic may cause that similar attempts at local production, in combination with modern technologies, get a second chance.

For companies' strategies and policies to be in line with sustainable development and human rights, their direct staff (often just marketing departments) would have **to be in direct touch with the consequences of their company's activities** and would have to adopt a "skin in the game" principle. For example, by living close to a given factory, or by temporarily rotating in positions and working directly in production. Still, this principle would require very local and distributed production and local operation of companies.

Tools to achieve change for brands and manufacturers

There are now several trusted tools available to help different brands, retailers and producers make a real difference for the better in their working processes. Companies in the textile and clothing industry can also reduce human and labour rights risks by choosing certified raw materials or by working with companies that are certified. It is important to say that certification can only reduce risks, not eliminate them.

- **The Higg Index** is a set of tools created by the Sustainable Apparel Coalition (Sustainable Apparel Coalition, 2020). It helps to measure and assess the sustainability of a company or a product and offers a comprehensive overview enabling effective protection of workers, local communities, and the environment.
- **Social Life Cycle Assessment (S-LCA)** is a stand-alone life-cycle assessment tool which focuses only on assessing social impacts. The S-LCA method defined by UNEP/SETAC proposes to include the assessment of five categories of different stakeholders and details the fields which are evaluated in each group (Lenzo et al., 2017).
- **The Fairtrade certification scheme** for the labelling of raw materials and products is, among others, the most widespread in the world and ensures that workers receive adequate pay and decent working conditions. This certification is covered by the non-profit organisation Fairtrade International, which focuses on strengthening the position of farmers and workers in the countries of the Global South (Fairtrade International, 2020).
- **The World Fair Trade Organization** brings together like-minded responsible businesses. Through its certification scheme, it verifies compliance with the ten main WFTO principles for fair trading. It operates in more than 70 countries around the world (World Fair Trade Organization, 2020).



Picture 18: Logos of Fairtrade and World Fair Trade Organization certification schemes.

Source: People Tree (2020)

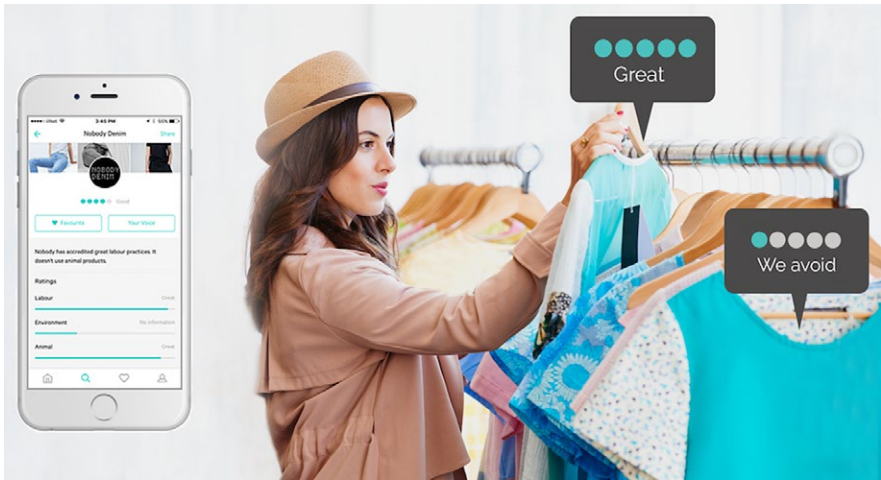
Certified raw materials are also offered, for example, by the **Better Cotton Initiative**. Responsible and ethical companies can, for instance, obtain the **B Corp Certification** and also become members of initiatives, such as the **Fair Factories Clearinghouse** or the **Fair Labor Association**.

C. Tools for consumers

Consumers have great power to influence the future of the textile and clothing industry. Firstly, they need to start appreciating their clothes more and **not consider them as disposable products**. Their next important task is **to take interest** in whether their favourite brands behave in a responsible and transparent way. If they do not, customers need to pressurise them or give preference to brands which do behave in a responsible and transparent manner.

However, brands today tend to make various false or misleading claims about their ethical support activities and the sustainability of their products. Such an approach is called **greenwashing**. Currently, greenwashing is a popular and impactful marketing tool (Thomas, 2019).

Greenwashing means “green brainwashing”. It is very difficult for a person to know which brand takes these issues seriously and does things better than other companies. Still, various tools are gradually coming to the fore, such as **applications** and **reports with independent evaluations** or already mentioned **certificates**.



Picture 19: Good on You is an application focused on ethical fashion.

Source: © fashionweekonline.com (2020)

Independent evaluations

Independent evaluations are produced by many organisations on a regular basis. However, the overall ratings of the same brands may differ due to differences in the methods chosen.

The first mentioned popular consumer tool is a **website and mobile application entitled Good On You** (Good on You, 2020). It contains a brand directory section where you can find brand ratings within the main categories, such as people, animals and the planet. Grades are awarded on the range starting from 1 (worst) to 5 (best). A similar mobile **application** is called **Clear Fashion**, but it is not yet available in some countries, including Slovakia. These tools are designed to help consumers make responsible buying decisions.

Another helpful and clear tool is **the Online Guide to Ethical Fashion** (Baptist World Aid, 2019a). It is supplemented by the document entitled **Ethical Fashion Report 2019**, which shows a detailed evaluation of 130 companies representing 480 brands. It focuses mainly on issues of human rights and transparency, and also on the environment (Baptist World Aid, 2019b).

Further, consumers may also examine which companies are at the top of the rankings, such as **Know The Chain** or **Fashion Transparency Index**, which monitor the transparency of supply chains. In the second case, the index created by the Fashion Revolution organisation focuses on the ratings of the 200 largest fashion brands and retailers. It assesses their social and environmental impact based on their established policies and practices (Fashion Revolution, 2019).

Business reports from **the Business & Human Rights Resource Centre** are also available to consumers.

Online space and events

In the online space, consumers can find advice from experts and enthusiasts in various places, whether it is blogs, posts and other contributions from well-known influencers, or entire websites focused on ethical fashion. In Slovakia, for instance, **Styllie**, a website which brings interviews with small local brands, was launched.

Sales websites such as **sashe.sk** and **fler.cz** sales, which serve to support various small local brands, also carry out similar activities regularly. Also, such examples are **Nila.cz** and **labelsbutik.cz**, which present larger foreign brands. In both Slovakia and the Czech Republic, public events are held regularly. They provide an opportunity for to local brands and manufacturers. As an instance may serve the Slovak **Dobrý trh (tr. Good Market)**, **Trnavský rínek, Urban Market**, **Slovak Fashion Council Showrooms**, **POMALO—Sustainability Festival**, and the Czech **SLOU Days**. They offer consumers the opportunity to buy fashion pieces from people who have often hand-made pieces of clothing in their studios.

D. Activities and campaigns of non-profit organisations

In the fight against social injustice, a few non-profit organisations are important actors who draw attention to problems and often try to tackle them.

The Solidarity Center supports workers who defend their right to associate. There are more than 220 expert workers in approximately 60 countries with 400 or more trade unions, NGOs, legal aid groups, human rights defenders, women's associations, rights support coalitions and more. They aim to support workers in exercising their

rights, including securing safer jobs, demanding adequate wages, improving the law, enforcing existing laws, and fighting exploitation and abuse (Solidarity Center, 2020).

Another significant international organisation is the already mentioned Fashion Revolution. Its most famous campaign is named **Who Made My Clothes?** This initiative aims to force brands to reveal to customers who and under what conditions participates in the production of customers' clothing. People reach brands by using the hashtag **#whomademyclothes** on their social media. Transparent brands respond with a photo of workers who contributed to the production of their clothes, holding the inscription I made your clothes (Fashion Revolution, 2020).



Picture 20: Who Made My Clothes campaign

Source: © The Greens EFA (2015) CC BY 2.0

E. Examples of responsible brands

People Tree belongs among international clothing brands which represent change. The brand has been operating for almost 30 years. Its founder has been paying attention to the high social standards of the entire production from the very beginning. She knows the conditions in which her products are made. She regularly visits factories and meets workers. This brand has also received several certificates, such as Fair Trade Cotton and Guaranteed Fairtrade (People Tree, 2020). Among other socially responsible brands are, for example, **Armedangels**, **Outland Denim**, **Etiko** and **Know the Origin**. These brands have received the best ratings in several independent assessments, and some of them hold sustainability certificates. There are ethical brands in Slovakia, too. As an example serve companies such as **Miestni (tr. Local)**, **Severanka**, **Créme**, **Aida Style**, **People on Earth (FRL)**, **Bagbet**, **CILA**, **Bartinki**, **Lull**, **Artisara**, **Puojd**, **Buffet Clothing**, **Uschyté**, and **Mile**. In the Czech Republic, such instances are companies **Bohempia**, **Paon** and **SUTU**.

Of course, there are many more responsible brands, both abroad and in Slovakia. Besides, some less responsible ones are slowly changing for the better.

3.3 A VISION FOR A BETTER LIFE FOR ANIMALS



Picture 21: Fox in the Canadian wild nature.

Source: © Scott Walsh (2017)

It is important to **provide a realistic image and facts about current animal husbandry and hunting practices** for the clothing industry. Such information should be communicated not only to consumers, but also to producers of clothing, footwear and furniture, and policy-makers around the world.

Animal welfare laws differ throughout countries. In the countries of the Global South, they are usually set worse and often violated. However, violations are also regularly reported in the countries of the Global North, including the European countries, where some animal protection measures are already in place (European Interest, 2019). An example of such a measure is **the Council Directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes** (Council of the European Union, 1998). **The EU Platform on Animal Welfare** (European Commission, 2020a) aims to help the European Commission strengthen dialogue. Still, there are shortcomings in this field. For example, within the EU, there is no legislation on the welfare of animals kept on fur farms. These species fall under the mentioned **Directive and Council Regulation (EC) No. 1099/2009 of 24 September 2009 on the protection of animals at the time of the killing**.

There are still many challenges concerning these issues. It is crucial that sufficient ethical standards are set globally and that they are subsequently followed and functionally sanctioned. Producers should strictly control their suppliers, continue

to look for ethical alternatives and raise awareness of their consumers. Consumers should condemn cruelty to animals in the name of fashion, demand transparency from producers and prefer materials of non-animal origin. Certificates for such clothing are issued, for example, by the PETA organisation which also provides a list of ethical brands on its website.



Picture 22: PETA certificate for vegan products.

Source: People Tree (2019)

Among brands which produce quality footwear without suffering of animals belong companies such as **Wills Vegan Shoes, Veja, Vegetarian Shoes**. Dr Martens also offer a vegan version of their popular shoes. Out of Slovak brands, Novesta sneakers are available in a vegan version. There are also specialised websites that sell only quality non-leather shoes, such as **Avesu**.

Several organisations all around the world fight for animal rights. Such are, for example, the Fur Free Alliance, Humane Society International, PETA, Respect for Animals, Four Paws and other organisations. In Slovakia, such organisations are Human Progress, the Animal Ombudsman and Sloboda zvierat (tr. Freedom for Animals).

4. POLICY COHERENCE FOR SUSTAINABLE DEVELOPMENT AND RESPONSIBLE ENTREPRENEURSHIP

4.1 POLICY COHERENCE FOR SUSTAINABLE DEVELOPMENT

Companies in the textile and clothing industry impact the planet, people and their prosperity in many dimensions both positively and negatively. This concerns everything from wages and safety at work to excessive water consumption and the use of chemicals. Therefore, companies should harmonise their corporate policies so that their benefits are generally positive.

To do this, they can use the concept of **Policy Coherence for Sustainable Development** (PCSD). It means, for instance, a conscious effort to increase **synergies** between both state and corporate policies in four dimensions – economic, social, environmental, and in the dimension of good governance (OECD, 2019).

Hence, it is a matter of finding win-win solutions for all stakeholders, including the planet. At the same time, it is also a matter of **reducing incoherence, conflicts and trade-offs** between policies. An example of such a trade-off is a situation when people in the countries of the Global South suffer for the sake of cheaper clothing for the countries of the Global North.

The coherence of company policies should also be **among short-term and long-term development goals**. It means, for example, not creating ecological debt for future generations. Coherence is not defined only in the dimension of time only but also in the dimension of space – **locally and globally**. It is coherence between “here and now”, “elsewhere” and “later” (OECD, 2019). Hence, between increasing prosperity and biodiversity in the country where the company has its headquarters, and also in the countries where suppliers and subcontractors operate.

Many companies declare the goal of **achieving carbon neutrality** by 2025 or 2030. But even this **effort** is too unambitious and not sufficient because companies should go beyond the paradigm of sustainability and neutrality – to the paradigm of **regeneration and increasing the health of ecosystems and society**.

Thus, they should **contribute to a regenerative and circular economy**. Companies are disappearing sooner and faster than in the past, and they should not leave behind ecological and social debt, but, figuratively speaking, not even “zero in the account”. Therefore, for example, they should massively support three plantings. It is important

that they leave a positive legacy in one of four dimensions (economic, social, environmental and good governance). Otherwise, in their effort to replace the old companies, new companies will not act responsibly for some time, trying to fill the hole in the market.

4.2 EU AND RESPONSIBLE ENTREPRENEURSHIP

In 2018, the EU Directive No. 2014/95/EU entered into force. It obliges large and publicly traded companies with more than 500 employees **to report their environmental and social impacts in some form every year within the concept of responsible entrepreneurship and corporate sustainability** (European Commission, 2020d). Companies can use several tools, standards and organisations for this reporting. For example, they can report to **the UN Global Compact** and **CDP** initiatives and use standards such as GRI and ISO 26000. They can provide information on human right issues to, for example, the **Business & Human Rights Centre**, and answer its questions.

5. EUROPEAN UNION POLICY IN THE FIELD OF THE TEXTILE AND CLOTHING INDUSTRY

In 2015, the estimated average **amount of new clothing purchased** in the EU was **around 6.4 million tonnes**, which is approximately **12.7 kg per person** (European Clothing Action Plan, 2017). To calculate the comprehensive environmental impact of all EU textile and clothing consumption, we would have to analyse the diverse data and effects which mostly occur outside the EU. For this reason, it is not easy to get the exact numbers. However, estimates by the Joint Research Centre from 2006 say that clothing is responsible for 2–10% of the EU's overall consumption-related environmental impact.

Šajn (2019) describes in detail the current EU policy on textiles and clothing.

The first measure, which directly applies to textiles and clothing, is the adoption of the so-called **Circular Economy Package** of 2018 (European Parliament, 2018). It contains four approved legislative proposals and, for the first time, obliges the EU member states **to collect municipal textile waste separately**.

Under the new **Waste Directive** (European Parliament and Council of the EU, 2018a), this will have to be ensured by **the 1st of January 2025 at the latest**. Targets for the reuse and recycling of textiles and clothing will also be discussed. The European Commission is due to decide on this issue by the end of 2024. New, ambitious targets are set for all mixed municipal waste. The directive says that by 2025, 55% of the weight of this waste should be reused or recycled, 60% by 2030 and 65% by 2035.

The other two relevant directives listed below do not specify textiles and clothing but will still have a positive impact in this field. **The Packaging and Packaging Waste Directive** (European Parliament and Council of the EU, 2018b) obliges the EU member states to recycle 65% of the weight of all packaging by the end of 2025 and 70% by 2030. It also sets separate targets for individual types of waste (paper, plastics, glass, metals, etc.).

The revised Landfill Directive (European Parliament and Council of the EU, 2018c) requires a maximum of 10% of the total weight of municipal waste to be landfilled by 2035.

Further responsibilities will gradually be set by the EU, as a **new action plan for the circular economy was adopted in March 2020**. It aims to address mainly the improvement of product life, the presence of hazardous chemicals, the reduction of single-use, the reduction of the carbon footprint and the promotion of the “product as a service” model.

A new goal in the circular economy is **to propose a comprehensive EU strategy for textile products**, which will be based on information from industry and other

stakeholders. The EU plans to achieve the objectives of a comprehensive strategy through a set of measures that include:

- applying a new framework for sustainable textile products, including the development of ecodesign measures, to ensure that textile products are suitable for the circular economy, the use of secondary raw materials, the prevention of hazardous chemicals and the empowerment of commercial and private consumers to the ability to choose sustainable textiles and gain easy access to reuse and repair services;
- improving the trade and regulatory environment for sustainable and circulating textiles in the EU, in particular by providing incentives and support for circulating materials and production processes, product-as-a-service models, or increasing transparency through international cooperation;
- providing guidance to achieve the high level of separate collection of textile waste, which member states must ensure by 2025;
- promoting the sorting, reuse and recycling of textiles, including through innovation, support for industrial applications and regulatory measures, such as extended producer responsibility.

The introduction of these measures is one of the goals that should lead to climate neutrality of the EU countries.

Besides the directives and strategies mentioned, there are other EU legislative measures and initiatives in the field of textiles and clothing. These have the task of protecting the customer, helping her/him to make informed choices when shopping, and thus contributing to sustainability. As early as the 1970s, the EU started working on harmonising fibre names, the fibre content of fabrics and textile products. **A new regulation on textile names and labelling** has been in force in this field since 2011 (European Parliament and Council of the EU, 2018d).

There are also **European standards** for textiles and clothing (CEN, 2020). Specific standards specify, for example, minimum performance parameters for some products, as well as environmental parameters.

Relevant for textiles and clothing is also the voluntary certification scheme called the Environmental EU Label—EU Ecolabel (European Commission, 2020b). For instance, there is a list of companies on the website, which have earned this label for their products. **Commission decision** (European Commission, 2014) sets out criteria guaranteeing the limited use of substances harmful to health and the environment, reducing water and air pollution, as well as conditions for extending the life of clothing (resistance to shrinkage during washing and drying, colour resistance to sweat, washing, wet and dry friction and exposure to light).

The field of textiles is also covered by **green public procurement** (European Commission, 2020c), which so far falls under voluntary instruments. The preparation of documents for green public procurement, which attaches importance to the environment, is facilitated by defined criteria. Individual member states and institutions choose the objectives they want to achieve through responsible procurement. The criteria for textile products are summarised in two detailed documents. The first is

a **technical report containing the final criteria** (European Commission, 2017a). The second is a document also available in Slovak entitled **EU Green Public Procurement Criteria for Textile Products and Services** (European Commission, 2017b).

5.1 DEFINED ISSUES AND RECOMMENDATIONS FOR CHANGING LEGISLATION IN THE FIELD OF TEXTILE WASTE MANAGEMENT

Currently, most textile waste ends up in landfills in Europe, on average only about 15–20 % is sorted. As a result, member states have **limited experience with the collection of this type of waste so far, but this varies from country to country**. As the time to introduce a separate collection of municipal textile waste is shortened, the use of effective support tools is being considered. The emphasis is put on **extended producer responsibility (EPR)** (ARC +, 2018).

Adding textiles under extended responsibility would mean extra charges for manufacturers and importers for goods placed on the market. At the same time, it would also mean accepting responsibility for unwanted textiles, their reuse and recycling. The manufacturers and importers would either have to set up their collection programmes or contribute to an external producer responsibility organisation (PRO). The PRO would then ensure the recovery of the waste with the help of contractual partners. Clothing, home textiles and footwear are under the extended responsibility of producers within the EU (and worldwide) only in France. Since 2007, EPR has brought several benefits there, but it also faces major challenges. In other countries, the collection is currently provided only by various charities and private companies (Šajn, 2019; Bukhari et al., 2018).

The introduction of EPR for textiles seems logical for the rapid growth of textile waste and could bring **several benefits. For instance, increasing the collection, reuse and recycling of textile products after use by consumers**, which would help to remove textile waste from landfills and incinerators and subsequently achieve its circulation. It could also contribute to better support for innovation and research in materials, design for recyclability, whole eco-design and recycling technologies (Bukhari et al., 2018; Ecosurety, 2019). Textile processors, for example, would like to see this measure in place as soon as possible (Doherty, 2019).

However, some experts also point out **the problems, challenges and exaggerated expectations** associated with the introduction of EPR for textiles (Advanced Waste Solutions, 2019; Ecosurety, 2019).

The argument against the introduction of EPR is that **material recycling of textiles is not yet very efficient**. The resulting recyclates are in most cases of lower to very low quality compared to the original material. They also have a low selling price, and thus the whole process involving the collection, transport and recovery of waste can be **economically disadvantageous**. On the contrary, for example, the sale of recycled

aluminium can cover all the costs of aluminium waste management and recovery. It follows that in the absence of sufficient sales of used textiles and clothing and if this waste would have to be recycled mainly in material terms, textile producers would have to pay **significant contributions** to the PRO. Fees will only be reduced when textile recycling becomes more efficient and when there is sufficient demand for recycling, **i.e. when the textile is able to “earn” for its recycling and management.**

Further, attention is drawn to the fact that textile waste, unlike most other waste, is currently collected by third-party operators, even without the existence of specific legislation on this material. The value of the textiles used leads to a self-sufficient collection network, which ultimately negates the need for cost-recovery schemes, such as extended producer responsibility.

Of course, this is true if people get rid of clothing and textiles which are high quality, they can be used and sold, there is a demand for them, and their value does not decrease due to the rapidly growing supply of unwanted textiles and clothing. However, the quality of textile products has been significantly declining in recent years. Therefore, such a system may cease to make a profit, or at least cover operating costs, especially in economically poorer EU countries, including Slovakia. It is due to the disposal of fewer things and low residual value.

In such a case, the introduction of EPR as a cost recovery tool would make sense, but it would bring major challenges in terms of the necessary administration and the definition of costs and reasonable and fair fees. It could also affect associations and charities' initiatives that support disadvantaged groups (Advanced Waste Solutions, 2019).

Mandatory EPR for textiles can also bring **a high risk of contamination of handed over textiles** and footwear, which then causes collection in containers on the streets. At the same time, it would increase collection costs. However, there is potential for improving collection systems as well as the containers themselves.

In general, some EPR systems are also **criticised for the increased share of recycling of reusable products**. In the discussion on EPR for textiles, such concerns have emerged, for instance, in the Nordic countries. However, this concern has not been confirmed in the context of the EPR in place in France. A question worth discussing is whether, for example, sending used clothes to the countries of the Global South in the name of reuse is sustainable (Palm et al. 2014).

Based on 2015 data from the only accredited French PRO for textiles, Bukhari (2018) states that while 61% of the textiles collected were reused, up to 40% were sent to Africa, 15% to other countries and only 6% sold locally. Another issue is that several African countries are considering banning imports of this textile.

Before introducing EPR on textiles, it is for this reason necessary to carefully consider all the pros and cons and assess the current state and possibilities in each country.

6. POLICY AND DATA IN THE FIELD OF TEXTILE WASTE IN SLOVAKIA

6.1 SLOVAKIA'S POLICY ON TEXTILE WASTE

As in other EU countries, the current situation in the field of textile waste management is not ideal in Slovakia. Slovak municipalities are not yet responsible for sorting and recovering this type of waste. This obligation applies only to mixed waste, biodegradable waste and separate collection (paper, plastics, glass, metals, composite packaging). Should the municipality decide to sort the unwanted textiles on its own, the costs of collection containers and waste collection must be paid from a local fee from citizens. It is because **textile waste in Slovakia does not fall under the extended responsibility of producers** (Euractiv, 2014). Therefore, manufacturers and importers of textile products do not have legislative responsibility for unwanted textiles, nor do they contribute to producer responsibility organisations (PROs) for the management of this waste and its subsequent recovery. Hence, the PROs do not reimburse the expenses associated with the management of this waste to local governments. It follows that unless municipalities are obliged to separate textile waste from other components and should pay for such a system from a local fee, most will probably not do so for financial reasons or the time-consuming start of the new project. An increase in fees for depositing waste in landfills may not suffice to motivate them.



Picture 23: Humana container for collecting clothes and shoes.

Source: © INCIEN archive (2019)

Still, there is another way to ensure the sorting and removal of textile waste within municipalities. It is **an agreement with a charity or private company to place collection containers** within the town or municipality. In Slovakia, Humana containers or containers from the Slovak organisation Ekocharita are distributed in large quantities.

The transport of unwanted textiles, in cooperation with charities and private companies, is ensured mainly in smaller municipalities and within **public collections**. Citizens can hand over unnecessary things, for example, at local offices or in houses of culture.

However, the situation with the collection of textile waste in Slovakia **should change by the beginning of 2025**. For the first time, EU member states will be obliged under the new Waste Directive (European Parliament and Council of the EU, 2018a) **to collect municipal textile waste separately**.

It is questionable how the Ministry of Environment and the EU will proceed. Whether, for example, textile waste is added under the extended responsibility of producers. Respectively, whether specific goals are set for the reuse and recycling of textiles and clothing. The European Commission is due to comment on this issue by the end of 2024 (European Parliament and Council of the EU, 2018a).

A. Goals and measures

Objectives for recovery or disposal of textile waste have not yet been specified in any Waste Management Programme of the Slovak Republic (so-called WMP SR).

The WMP SR for 2016–2020 (MoE SR, 2015) and also the Report on the State of the Environment of the SR in 2018 (MoE SR and RSE, 2019) emphasise the need to create an effective system of separate collection of main types of municipal waste, including textiles and clothing. This is mainly due to the obligation to reach the level of recycling of municipal waste by at least 50 % of the entire weight of produced municipal waste by 2020. However, **neither the mentioned goal of total recycling of municipal waste nor the goal of creating an effective system for sorting textiles and clothing has been achieved so far**.

The Ministry of the Environment will address this topic in more detail in the new Waste Management Programme for 2021–2025.

Within the Waste Prevention Programme of the Slovak Republic, the field of textile waste has also not been solved separately yet.

The Waste Prevention Programme of the Slovak Republic for the years 2014–2018 (Ministry of the Environment of the Slovak Republic, 2013) mentions textiles only as one of the potential components within **the support of the establishment of centres for the reuse of things**.

The Waste Prevention Programme of the Slovak Republic for the years 2019–2025 (MoE SR, 2018) mentions textiles directly only as an example of the relevant type of waste within the measure concerning the assessment of options for **financial incentives** (from the Environmental Fund, PRO) **for subjects focusing on the preparation of reuse**. The Ministry of the Environment of the Slovak Republic should consider this measure by 2025.

A small positive thing is a change in Slovak legislation concerning the definition of the so-called **by-product**. A by-product, such as production residues, which is not defined as waste, must continue to be approved by the district office. However, recently, an exception applies to textile clippings (Schabjuk, 2019).

B. Recommendations

Inter-ministerial cooperation is necessary for faster and more efficient changes in the field of the issue of textile waste accumulation. It should lead to **the creation of a comprehensive strategy** not only for the textile waste but for the entire textile and clothing industry in Slovakia.

In the beginning, it is necessary to consider the improvement of the records, which would provide a clearer picture of the total amount of textile waste produced (or the average consumption of clothing in the Slovak Republic). For instance, it is appropriate to consider the mandatory reporting of the amount of clothing and footwear collected, including how it is handled, also for associations, charities and private companies, or clothing swap organisers who are left with unwanted pieces after the swapping event.

Public authorities should think together about **the options and forms of support and motivation** of various actors that contribute to the transformation of this industry from its linear to a circular form. For example, local companies and brands could be supported, whose products are designed and manufactured in accordance with at least some of the principles of the circular design, engaged in the production of recycled materials, upcycling, rental, sale of second-hand clothing, and modification and repair of clothing and footwear. It is true also for the organisers of clothing swaps, non-profit organisations providing education, and initiatives in the field of slow fashion and repair. Furthermore, for the entities which collect and sort unwanted textile products, or donate them to disadvantaged groups, creators of efficient and innovative recycling technologies, materials and waste processors.

The last-mentioned group could be helped by adding textiles under the EPR and setting recycling targets. For instance, the Slovak non-profit organisation CEPTA (Szalai, 2019) criticises the lack of extended producer responsibility for textiles. The introduction of extended producer responsibility for textiles needs to be well considered. As mentioned in Chapter 5.1, some experts also point out the possible problems and disadvantages associated with its implementation.

6.2 DATA ON TEXTILE WASTE IN SLOVAKIA

The exact annual amount of textile waste generated is not known. Only partial data are available for some waste streams.

The following streams would need to be calculated to determine the total amount of textile waste:

1. amount from unsorted mixed municipal waste (only the average percentage of available analyses of mixed municipal waste is known);
2. the amount of sorted municipal waste which is recorded (data are available through the Regional Waste Information System);
3. the amount of sorted municipal textile waste which is not recorded (collected by charities and private companies which do not report the quantities to anyone);
4. amount of registered waste other than municipal (mainly from the textile industry—data are available through the Regional Waste Information System);
5. amount of unreported waste (except municipal) ending up in landfills and incinerators (mainly from the textile industry—data are not known);
6. amount of waste ending up in illegal landfills.

Within the **Waste Catalogue**, several categories of other (O) and hazardous (H) wastes related to textiles and clothing are defined. These categories give a **comprehensive picture of various wastes**, which is also associated with the production or packaging of textiles, not only with the final unwanted products.

04	WASTES FROM THE LEATHER, FUR AND TEXTILE INDUSTRIES	
04 01	LEATHER AND FUR INDUSTRY WASTES	
04 01 01	Waste glue and wood chips	O
04 01 02	Leachate waste	O
04 01 03	Degreasing wastes containing solvents without a liquid phase	H
04 01 04	Chromium-containing tanning slurry	O
04 01 05	Chromium-free tanning slurry	O
04 01 06	Chromium-containing sludges from on-site treatment of liquid waste	O
04 01 07	Chromium-free sludges from on-site treatment of liquid waste	O
04 01 08	Waste tanned leather (cleaned skin, cracks, cuttings, grinding dust) containing chromium	O
04 01 09	Wastes from preparation/processing and finishing	O
04 01 99	Otherwise unspecified wastes	

04 02	TEXTILE INDUSTRY WASTES	
04 02 09	Waste from composite materials (impregnated textile, elastomer, plastomer)	O
04 02 10	Organic substances of natural origin, such as fats and waxes	O
04 02 14	Wastes from finishing containing organic solvents	H
04 02 15	Wastes from finishing other than those in 04 02 14	O
04 02 16	Dyes and pigments containing dangerous substances	H
04 02 17	Dyes and pigments other than those in 04 02 16	O
04 02 19	Sludges from on-site treatment of liquid waste containing dangerous substances	H
04 02 20	Sludges from on-site treatment of liquid waste other than those in 04 02 19	O
04 02 21	Wastes from unprocessed textile fibres	O
04 02 22	Wastes from processed textile fibres	O
04 02 99	Otherwise unspecified wastes	
15	WASTE PACKAGING, ABSORBENTS, CLEANING CLOTHS, FILTER MATERIAL AND PROTECTIVE CLOTHING (OTHERWISE UNSPECIFIED)	
15 01	PACKAGING, INCLUDING WASTE PACKAGING FROM SEPARATE COLLECTION OF MUNICIPAL WASTE	
15 01 09	Textile packaging	O
19	WASTES FROM WASTE TREATMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS, AND FROM DRINKING WATER AND INDUSTRIAL WATER TREATMENT PLANTS	
19 12	WASTES FROM MECHANICAL TREATMENT OF WASTE, SUCH AS SORTING, CRUSHING, PRESSING, COMPACTION AND PELLETISING (OTHERWISE UNSPECIFIED)	
19 12 08	Textiles	O
20	MUNICIPAL WASTES (HOUSEHOLD WASTES AND SIMILAR WASTES FROM RETAIL AND TRADING, INDUSTRIES AND INSTITUTIONS) INCLUDING THEIR COMPONENTS FROM SEPARATED COLLECTION	
20 01	MUNICIPAL WASTE COMPONENTS FROM SEPARATE COLLECTION EXCEPT 15 01	
20 01 10	Clothing	O
20 01 11	Textiles	O

Table 1: Waste Catalogue of the Slovak Republic—textile waste codes.

Source: Odpady—portal.sk (2018)

As already mentioned, there are partial data on the textile waste within some waste streams. The Evaluation of the WMP of the Slovak Republic 2006–2010 (MoE SR, 2010) shows data on seven allocated types of waste related to textiles for the years 2005–2009.

Waste code	Waste name	Waste category
040209	Waste from composite materials (impregnated textile, elastomer, plastomer)	O
040221	Wastes from unprocessed textile fibres	O
040222	Wastes from processed textile fibres	O
150109	Textile packaging	O
191208	Textiles	O
200110	Clothing	O
200111	Textiles	O

Table 2: Selected categories of waste related to textiles.

Source: MoE SR (2010)

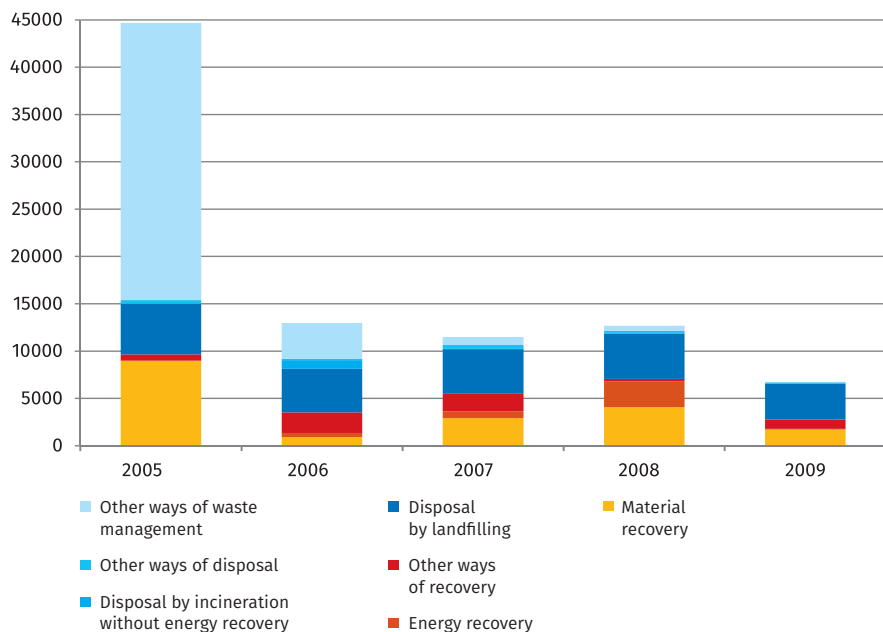
It is necessary to emphasise that the following data are **only for registered waste**, and, therefore, do not represent the total amount of textile waste produced in Slovakia.

The total management of registered textile waste in Slovakia in the years 2005–2009 is shown in Table 3 and also graphically shown in Picture 24 (MoE SR, 2010).

Index	Method of waste management	2005		2006		2007		2008		2009	
		t	%	t	%	t	%	t	%	t	%
01	Material recovery	8 986	20.11	912	7.03	2 916	25.38	4 095	32.32	1 724	25.54
02	Energy recovery	13	0.03	441	3.40	704	6.13	2 701	21.32	67	0.99
03	Other ways of recovery	659	1.47	2 170	16.73	1 869	16.27	277	2.19	986	14.61
04	Disposal by landfilling	5 309	11.88	4 597	35.44	4 721	41.09	4 777	37.70	3 772	55.88
05	Disposal by incineration without energy recovery	51	0.11	918	7.08	23	0.20	83	0.66	14	0.21
06	Other ways of disposal	369	0.83	142	1.09	416	3.62	215	1.70	138	2.04
07	Other ways of waste management	29 302	65.57	3 793	29.24	840	7.31	522	4.12	49	0.73
	TOTAL	44 689	100	12 973	100	11 489	100	12 670	100	6 750	100

Table 3: Management of registered textile waste in the Slovak Republic in 2005–2009.

Source: MoE SR (2010)



Picture 24: Total management of the registered textile waste in the Slovak Republic in 2005–2009.

Source: MoE SR (2010)

Material recovery of textile waste moved, except in 2006, in the range from 20.11% in 2005 to 32.32% in 2008. The energy recovery of textile waste increased from 0.03% in 2005 to 21.32% in 2008, but in 2009 it allegedly fell again to 0.99%. Still, the share of textile waste disposed of in landfills is relatively high and, in percentages, it had an increasing trend: from 11.88% in 2005 to 55.8% in 2009. A positive trend was the decrease in other methods of disposal from 65.57% in 2005 to 0.73% in 2009.

Before, **insufficient collection of textile waste has been a problem** too. In some municipalities, separate collection of this type of waste has not yet been introduced at all. On the positive side, in the past, Slovakia has had **a long tradition of buying out old clothes by organisations which purchased collectable materials**. Currently, this form does not work anymore.

Regarding the data for the following years, a similar evaluation concerning textile waste within the next WMP SR 2011–2015 has not been created. Therefore, for the needs of this study, the Ministry of the Environment of the Slovak Republic provided relevant data from 2010 to the most recent ones from 2018 (Ministry of the Environment of the Slovak Republic, 2020). Quantities (see Table 4) represent seven of the same categories as selected in the Evaluation of the WMP of the Slovak Republic 2006–2010 (see Table 2).

Ord.	Ways of disposal	Code	2010		2011		2012		2013		2014	
			t	%	t	%	t	%	t	%	t	%
1	Material recovery	R03	311	7.43	435	7.52	378	9.65	1 158	29.41	2 449	51.63
2	Energy recovery	R01	26	0.61	1 746	30.16	856	21.83	62	1.59	68	1.44
3	Landfilling	D01	3 791	90.55	3 604	62.26	2 633	67.19	2 683	68.16	2 211	46.60
4	Incineration	D10	59	1.41	4	0.06	52	1.34	33	0.84	16	0.33
TOTAL			4 187	100	5 789	100	3 920	100	3 936	100	4 744	100

Ord.	Ways of disposal	Code	2015		2016		2017		2018	
			t	%	t	%	t	%	t	%
1	Material recovery	R03	3 080	41,75	3 392	42,44	3 727	65,02	3 529	67,56
2	Energy recovery	R01	122	1,66	55	0,69	88	1,53	7	0,13
3	Landfilling	D01	4 155	56,32	4 509	56,40	1 902	33,18	1 685	32,25
4	Incineration	D10	20	0,27	38	0,47	16	0,27	3	0,06
TOTAL			7 377	100	7 994	100	5 731	100	5 224	100

Table 4: Total management of registered textile waste in the Slovak Republic in 2010–2018.

Source: MoE SR (2020)

In the meantime, temporary disposal codes have ceased to be used in the records and, therefore, there are fewer resulting waste management methods. Compared to 2005–2009, **the total amount of waste** related to textiles and clothing has been decreasing. It is assumed that this is related to **sorting and reusing without registration of textiles as waste** (MoE SR, 2020).

Quantities of registered textile waste throughout **the EU** are also available via the Eurostat Data Explorer. However, the resulting amounts may also include data from other categories related to textile waste in comparison with the selected categories in Table 2. The Eurostat data shall contain relevant waste from all NACE activities and households. For this reason, the resulting amounts for individual years differ from the quantities from the Evaluation of WMP SR 2006–2010 and are higher. The Eurostat data show that the amount of registered waste related to textiles in Slovakia, the Czech Republic, and the EU as a whole has fluctuated in recent years. But **since 2012, these types of waste have been increasing in both Slovakia and the Czech Republic.**

	2004	2006	2008	2010	2012	2014	2016
European Union (28 countries)	4 430 000	3 830 000	2 420 000	2 150 000	2 140 000	2 210 000	2 190 000
Czechia	310 438	78 090	77 359	62 259	63 152	90 297	108 273
Slovakia	15 300	18 521	14 530	8 351	9 445	11 484	14 751

Table 5: Textile waste in tonnes per year—all NACE activities and households.

Source: Eurostat—Data Explorer—Textile waste (2020)

After recalculating these registered quantities per person and kilograms, it is on average 2–3 kg per Slovak per year and 4–5 kg per average European for the last few years. As some partial data are missing from the records, the actual amounts are higher.

	2004	2006	2008	2010	2012	2014	2016
European Union (28 countries)	9	8	5	4	4	4	4
Czechia	30	8	7	6	6	9	10
Slovakia	3	3	3	2	2	2	3

Table 6: Textile waste in kilograms per person per year—all NACE activities and households.

Source: Eurostat—Data Explorer—Textile waste (2020)

Textile waste does not represent a large proportion by weight or volume compared to other types of waste, but it is not negligible either. It also has a significant negative impact on human health, the environment and animal lives. Besides, its number in the world is still growing due to the trend of fast fashion. For this reason, it needs to be addressed.

Regarding **the average weight share of textiles and footwear in mixed municipal waste**, the available physical analyses performed in the years 2016–2019 show about 5% representation in CHD (complex housing development) and IHD (individual housing development). The share range is approximately between 1–7% and depends on the year and type of housing development. This quantity, after recalculation for all mixed municipal waste generated in 2018, would represent approximately **10.6 kg per person in Slovakia, and thus 57,721 tons of textile and footwear waste**. The recalculation takes into account the average 4% share of textiles and footwear found in the analyses of mixed municipal waste from 2018 (INCIEN et al., 2020). This waste goes mainly to landfills or incinerators.

To monitor the trends of separate collection of municipal waste, individual types of waste are included in five streams. Among them, a separate stream is marked as clothing and textiles. WMR SR 2016–2020 contains data on registered sorted municipal textiles and clothing (see Table 7) (MoE SR, 2015). This amount has been increasing since 2010. However, in 2013, the total amount of sorted municipal waste was only 0.5% by weight. Unwanted textiles collected by charities and other private companies are not registered.

Waste type/stream	2010	2011	2012	2013
Clothing and textiles (t)	264.62	447.88	951.14	1 385.32
Year-on-year increase/decrease (%)	-16.49	+69.25	+112.36	+45.65
Total of all components	230 327.14	235 801.66	259 155.76	262 355.37

Table 7: Sorted registered municipal waste (MW) from textiles in the SR and the total amount of sorted MW.

Source: MoE SR (2015)

According to analyses, textile waste is also **represented in freely disposed waste and illegal dumps** (Ladomerský and Veverka, 2005; Moňok, 2009).

7. CONCLUSION

It has been demonstrated that the textile and clothing industry **has a major negative impact on the lives of humans, animals and wildlife**. For many people, textiles mean a living, but, paradoxically, it often damages their health and their environment. Workers, especially those from the countries of the Global South, are exploited and have to fight inhumane conditions. Every year, a large number of animals suffer and die for fashion. Trends are changing faster and faster. It results in full wardrobes of people from economically more developed countries, who are constantly influenced and encouraged by their peers and fashion brand marketing to buy new pieces. The visible result of this whole system is **piles of unwanted and low quality clothing in landfills, incinerators, and in the wild**. What we cannot see are **toxic chemicals**, synthetic fibres and greenhouse gas emissions associated with the textile and clothing industry, which leak into water, soil and air.

Recently, however, **more and more people** are aware of these facts, and they **try to contribute to positive change**. Extending ethical and sustainable fashion requires **the cooperation** of designers, manufacturers, brands and consumers. Designers, brands and manufacturers must meet consumer demands for style, comfort, quality and aesthetics of products, while also minimising the environmental and social impacts of their activities. To do this, they need to introduce innovative sustainable materials and new business models, reduce the complexity of supply chains towards local production and report transparently on their impacts.

Consumers need to understand how their access to clothing affects the environment and the lives of other people and animals, and then strive to change shopping habits, caring for and handling clothing after its use.

Policy-makers must ensure not only **the appropriate setting of laws but also the effective control of their observance**. Inter-ministerial cooperation is also necessary. Still, changes must also come from other directions, including **educational and scientific institutions and the media**.

Examples of good practice show that **there are alternatives to the current system** and that it is our responsibility to make this sector economically, environmentally and socially sustainable. But it will be necessary **to overcome many more challenges and put much effort into doing so** everywhere in the world, including Slovakia.

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10. RECOMMENDED LITERATURE

The following publications provide a more comprehensive picture of the problems and solutions in the field of the textile and clothing industry:

- **A NEW TEXTILES ECONOMY: Redesigning fashion's future** (Ellen MacArthur Foundation, 2017). <https://www.ellenmacarthurfoundation.org/publications>
- **THE PULSE OF THE FASHION INDUSTRY** (Global Fashion Agenda & The Boston Consulting Group, 2017). https://globalfashionagenda.com/wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry_2017.pdf
- **FASHIONOPOLIS: The Price of Fast Fashion and the Future of Clothes** (Dana Thomas, 2019)

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This publication offers a comprehensive overview of current problems and potential solutions in the field of textile and clothing industry in Europe, the countries of the Global South and Slovakia. It informs about the impact of this industry on the environment and human and animal lives. It summarises visions, strategies, measures and examples of good practice of policy-makers, companies and consumers. It looks into the political and strategic documents of the European Union and current Slovakia's policy in this field.

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