

CSR Activities and Impacts of the Textile Sector

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Sector profile based on a literature review
developed in the course of the FP7 Project
IMPACT - Impact Measurement and Performance Analysis of CSR

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1. Abstract

The European textile industry has been facing a long period of decline, rising global competition, and relocation to low-income countries. Compared to China and India, the European textile industry is disadvantaged due to high labour costs and higher environmental standards. Therefore, a strategy of cost leadership is impossible. To survive this difficult situation, the European textile manufacturers specialize in either high-tech industrial textiles or in high-end fashion markets.

For the sub-sector of **industrial textiles**, cradle-to-cradle and energy-efficient production are the two most important types of eco-innovation, and therefore the most prominent forms of CSR. Examples are recycling of textile products, minimisation of toxic substances, alternatives for existing raw materials, waste reduction, reduction of energy usage, renewable energy, and considering the product life cycle. As industrial textiles and the high-technology garment industry are high-technology industries, working conditions are similar to the chemical industry, and skill level and workload is generally high, as are wages and job tenure. CSR in the area of industrial textiles shows certain similarities to the situation of the chemical industry because innovation is a strategic success factor. To gain competitive advantages, investments in R&D are necessary, requiring financial resources and skilled staff. As a result, the production costs are expected to decrease, the product quality should improve, and the environmental impact be reduced.

In **high-end fashion**, a few manufacturers of branded goods play a central role by setting trends and investing substantial amounts in PR and communication. They have the economic potential and the credibility to communicate CSR issues to consumers, to create and establish market niches for manufacturers, and to integrate CSR issues into the common practice of the sector. In so doing, eco-labels could play a crucial role. Concerning quality of jobs high-end fashion and sewing manufacturing offer a mixed picture: wages are relatively low, but the primary concerns are health and working conditions, and the problem of monotonous and repetitive work. In the market segment of high-end fashion, eco-friendly products and eco-labels are perceived as opportunities for niche market strategies, but recently not for mass markets, as high social and environmental standards lead to higher production costs. However, there is a certain ambiguity as consumers expect more eco-friendly and socially responsible products, but are often not willing to pay more for them. In addition, there are many labels that confuse consumers and undermine consumers' confidence in CSR in the textile sector. Experts see a need for clear standards and public communication initiatives to increase the positive effects of eco-labels on competitiveness in the textile sector. Therefore, public CSR policies need to focus on quality control and ensuring credibility.

Embedded in this general trend towards high-tech and high-end, there are areas of **low-technology sweatshop-like production plants in Eastern Europe** as well. Working conditions here are at the very bottom end of all industries, with wages only a fraction of minimal living costs, unpaid to slave-like working conditions, and singular occurrences of child labour.

2. Facts and figures

The European textile industry has been experiencing a sharp decline in the past five decades. It is often stated that the textile sector is undergoing a tremendous transformation - moving into niche markets and industrial textiles and away from apparel. This is also manifested by the European Commission initiative European Technology Platform for the Future of Textiles and Clothing, identifying the following priorities a) a move from commodity fibers, filaments, and fabrics towards specialty products from flexible high-tech processes b) establishment and expansion of textiles as the raw materials of choice in many industrial sectors and new application fields c) ending the era of mass manufacture and moving towards a new paradigm of mass customisation, personalisation, intelligent production, logistic and distribution.¹

However, despite strong effects of globalization and industry relocation to low income countries, the textile industry remains one of the largest industrial sectors in Europe. According to latest available figures (2006), the European textile industry employs approximately 2,450,000 persons in more than 223,000 enterprises (Eurostat, 2009), out of which 96% are SMEs (Euratex, 2009). They account for 74.5% of sectoral value added in EU-27 and 75.3% employment (Eurostat, 2009). Textile and clothing sectors together account for 3% of total manufacturing value added in the EU. While clothing remains one of the largest consumer goods categories around the world, the textile industry also provides material for a vast number of other industries and a very large number of applications (Euratex, 2006). This is illustrated in Figure 1 below:

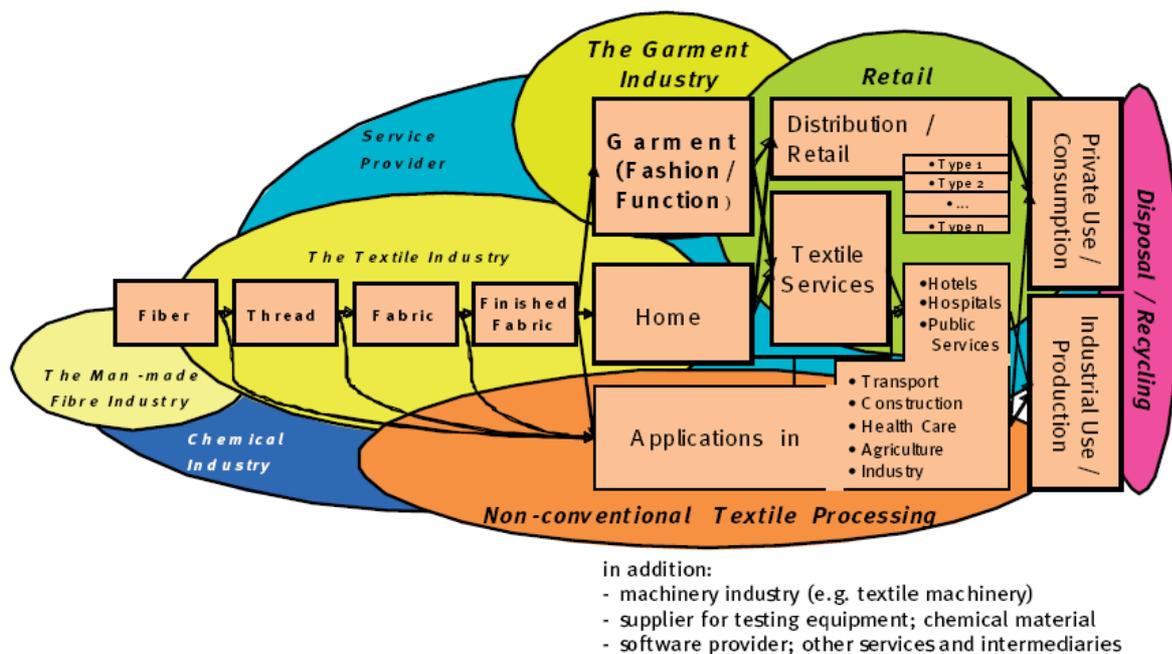


Figure 1: Textile industry and its interlinkages with other sectors. Source: Euratex 2006

¹ European Technology Platform for the Future of Textiles and Clothing website <http://textile-platform.eu/textile-platform/>

Western Europe's consumption of technical textiles by application is largest in transport (21.2%), protective uses (20.2%), construction (15.3%), wooden furniture (9%), medical and health industries (8.1%) (Euratex estimate for 2004, Euratex 2006)

The textile sector is characterized by the following activities (Stengg, 2001):

- the treatment of raw materials
- the production of knitted and woven fabrics
- finishing activities (i.e. bleaching, printing) and
- the transformation of those fabrics into products such as clothing, carpets, home textiles, and technical or industrial textiles.

Euratex (2006) proposes a breakdown of the textile manufacturing industry into three sub-sectors by application: (1) Industrial and technical textiles, (2) home and interior textiles and (3) clothing. Under the NACE division, the textile industry is divided into: NACE 17: Manufacture of textiles, NACE 18: manufacture of wearing apparel and the dressing and dyeing of fur, and NACE 19: manufacture of leather and leather products including that of footwear.

The size of each of these sub-sectors according to value added and employment share is depicted in Table 1 below:

Textile sub-sectors in Europe	Share of sector employment (2006)	Share of sector value added (2006)
Textiles	35.4%	46.3%
Wearing apparel: clothing and dyeing of fur	46.4%	34.7%
Tanning, dressing of leather; luggage, handbags, saddlery, harness, footwear	18.3%	18.4%

Table 1: Textile sector: Importance of sub-sectors. Source: Eurostat 2009.

The textile industries of highest EU value added are Italy (33,6% of EU-27), Germany (12,1% of EU-27), France (11,6% of EU 27), Spain (9,2% of EU-27) and United Kingdom (7,8% of EU-27) (Eurostat, 2009).

Sector employment: The most labour intensive activity in the textile sector is clothing manufacturing. Textiles and clothing manufacturing are the only sub-sectors in EU-27 that employs more women than men. In 2007, a female workforce accounted for 69.4 % of the textiles, clothing, and leather-manufacturing workforce, and as a whole this is more than twice the industrial average (30.1 %) (Eurostat, 2009).

The largest percentage of people employed in the manufacturing of textiles and textile products are in Italy (33.6%), Romania (14.2%), Poland (8.8%), Spain (7.5%) and Bulgaria (6.5%). The number of employees in the textile industry has declined in the past two years, according to latest available figures, now standing at 2,300,000 employees – a 6 % decline compared with 2006 (Eurostat, 2009).

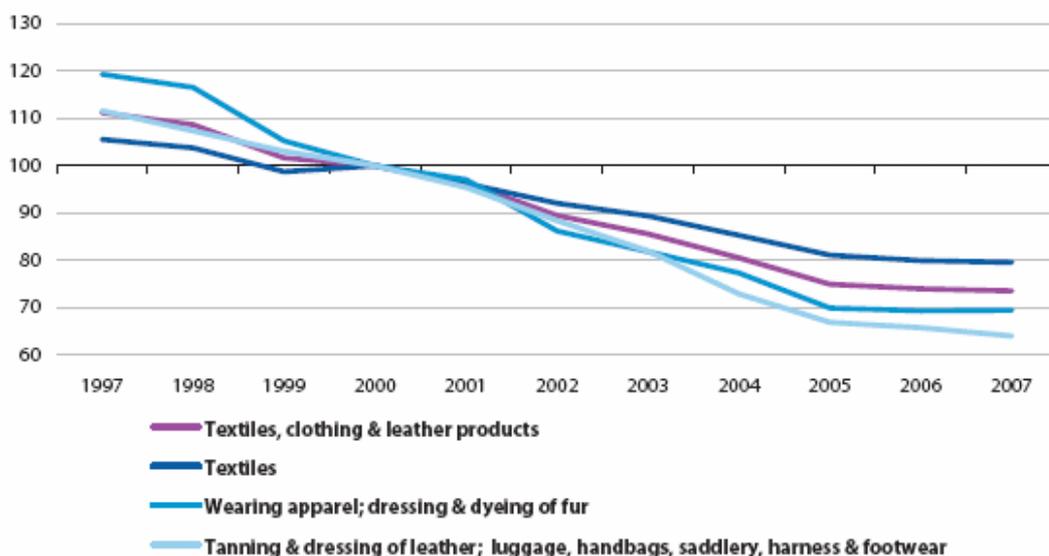
Table 2 below shows total employment figures of European textile industry by country:

Country	Thousands of units 2006 NACE 17 – Manufacture of textiles	Thousands of units 2006 NACE 18 – Manufacture of wearing apparel, dressing and dyeing of fur	Thousands of units 2006 NACE 19 – tanning and designing of leather, manufacture of luggage, handbags, saddlery, harness and footwear	Total
AT	14.8	8.0	4.8	27.6
BE	31.2	7.5	1.7	40.4
BG	34.3	139.9	21.6	195.8
CY	0.6	1.3	0.3	2.2
CZ	46.3	33.5	11.4	91.2
DE	101.6	54.5	20.3	174.6
DK	5.9	2.4	NA	NA
EE	9.1	10.7	1.7	21.5
ES	80.6	93.2	49.9	223.7
FI	5.0	4.3	2.0	11.3
FR	76.7	67.4	30.9	175
GB	77.8	37.8	11.3	126.9
GR	18.5	37.7	5.8	62
HU	19.7	38.7	13.8	72.2
IE	3.2	1.5	0.3	5
IT	234.1	238.0	164.0	636.1
LU	NA	NA	0.0	NA
LT	18.0	32.3	1.8	52.1
LV	7.6	13.1	0.6	21.3
MT	NA	NA	NA	NA
NL	13.9	5.0	1.8	20.7
PL	82.4	160.9	34.8	278.1
PT	75.5	111.3	NA	NA
RO	71.0	257.2	96.8	425
SE	7.2	1.7	1.3	10.2
SI	9.9	10.6	5.8	26.3
SK	14.5	24.2	NA	NA

Table 2: Textile sector: Total employment by sub-sectors. Source: Eurostat 2009.

3. Growth and competitiveness

Sector growth: Today, textiles and clothing are one of the most globalised goods. Globalisation and the market power of multinational retail companies have led to massive relocation of the production process to low income countries (Pretious, Love 2006; Stengg, 2001). EU textile industry output has declined by one third in the past two years, at an annual rate of decline of about 4.0% per year. However, the decline in 2006 and 2007 was much more moderate than the long-term trend. Figure 2 below depicts the long term decline of the EU textile industry.



Source: Eurostat (STS)

Figure 2: Textile sector: Decline of manufacture of textile by subsectors, index of production, EU -27 (200=100). Source: Eurostat 2009.

The decline is not homogenous throughout the industry - it is greatest in leather and clothing manufacturing (annual decline of -5.4% and -5.3% respectively) (Eurostat, 2009). The internal EU market remains the major market for European textile companies: intra-EU trade stands at 72%. The main export markets outside the EU are: Russia, Switzerland and the US (European Commission, 2010b). The trade deficit in 2008 was approximately € 44 billion, whereas the main textile imports to the EU come from China (39%), Turkey (14%), India (7,7%) and Bangladesh (6,3%) (European Commission, 2010). Since the beginning of 2009, trade in the textile and clothing sector is fully liberalised, and there are no longer quantitative restrictions on imports from China or other countries, which led to increased imports from lower income countries to the EU, and intensified the competition that the EU textile industry faces (European Commission, 2010).

Furthermore, due to the economic crisis, the textile industry in Europe is witnessing sluggish world demand due to economic difficulties of some textile end user sectors, such as the automotive and construction industries (Euratex, 2009). This, coupled with increasing production costs resulting from raising prices of energy and raw

materials, caused a further decline in the textile industry. According to Euratex (2009) production for the first quarter 2009 dropped by 23% in the textile industry as a whole, and 14% in the clothing sector compared to the same period of the previous year. In 2008, the investments decreased by 14 % and employment decreased by 7% (Euratex, 2009). The latest figures taken from the General Assembly of Euratex (2009) indicate a sharp decline of textile enterprises (minus 33 %) compared to 2006 as well, and a smaller but still significant decline of the number of employees (2008: 2,300,000 employees - 6 % decline compared with 2006).

Sector competitiveness: The European Commission set up a High Level Group (HLG) on textiles and clothing in 2004, in response to deteriorating competitiveness of the European Textile industry due to increased globalisation and competition from outside Europe. The progress of implementing the 36 recommendations that the HLG has identified in order to boost European textile industries competitiveness (which lay in the areas of internal regulatory and market issues, education, training and employment, intellectual property rights, regional aspects, research and development, innovation and trade policy) has been reviewed in the second report of the HLG on textiles and clothing in 2006 (European Commission, 2006).

Regarding the harmonization of internal regulatory measures, the HLG report 2006 identified the need for harmonization of the requirements posed on European manufacturing by REACH with those that the imported goods face (European Commission, 2006). Increasingly the European textile industry is affected by several EU regulations (European Commission, 2010b) such as Directive 2008/121/EC of 14 January 2009 on textile names, the Directive 96/73/EC of 16 December 1996 on certain methods for the quantitative analysis of binary textile fiber mixtures, the Integrated Pollution Prevention and Control, Emission Trading System Directive, and Directive 2009/29/EC, Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). The aim of these regulations is to harmonize the internal market with regard to names, composition, and labeling of textile products, in order to have a transparent and functioning EU market and to protect customers.

Furthermore, the report of the HLG on textile and clothing in 2006 pointed out that the textile industry, as well as other manufacturing industries in Europe, will be affected by the upward spiraling energy prices and the increasing scarcity of natural resources, which will lead to an increase of costs. Moreover, the HLG called for more effort in projecting an optimistic view of the textile industry, which in turn would improve the availability of credit for the industry. In terms of future industry perspectives, the industry itself has been identified as the potential driving force towards changing and adjusting the sector to global developments (European Commission, 2006). The HLG named customised and technical textiles as major markets of opportunity for the textile industry. At the same time, CSR is expected to gain ever more importance in dealing with the future challenges of the European textile industry (European Commission, 2006).

The strengths of the EU textiles industry are: high quality of production in technical, aesthetic and fashion related terms, structures that allow rapid benefit to be derived from emerging technologies (e.g. nanotechnologies, ICTs, new materials),

approximation and leadership in the main consuming markets (US and EU), strong EU brand names with a strong image worldwide, well trained and experienced workforce, and high levels of productivity, especially in some segments of the textile sector (e.g. technical textiles) where technological and engineering efficiency in production process and products is more present. The weaknesses include: growing shortage of skilled human resources with higher education (e.g. textile engineering), access to financing for SME, insufficient protection of intellectual property rights, need to increase investments in research and innovation, and high costs of compliance with environmental and chemical legislation (European Commission, 2009).

Table 3 below summarises the literature on textile industry competitiveness.

Critical Success Factors – textile sector	Source & Year
Innovations, high value products, eco-friendly products, eco-labels	Martinuzzi et al., 2010
Fast responsiveness to market changes, flexibility, collaborative supply chain networks, shortening lead times, speed-to-the market deliveries, information logistics	Oh and Kim, 2007
Industry such as quality, flexibility, supply chain management, strategy formulation and implementation	Bilalis et al., 2006
Labour-intensive vs. capital-intensive textiles	Kilduff, Chi, 2006
Innovative products and process especially in technical textiles, fashion and creativity, product quality, R&D, education, human resources, efficient use of resources, customisation, protection of intellectual property	Euratex, 2006
Niche marketing strategy, thorough understanding of targeted consumers	Parrish et al., 2006
High technology fibers and innovative textiles	Adler, 2004
Outsourcing to Eastern and Central Europe	Guercini, 2004
Reduction of environmental burdens, efficient supply chain management, cooperation	Sohal, 1998; Seuring, 2004
Innovation, quality, creativity, design and fashion, ICT, E-commerce,	Stengg, 2001
Implementing just-in-time-like management techniques	Brucas et al., 1998; Sels, Huys, 1999
Relocation of the production to Central-Eastern Europe low income countries	Adler, Breitenacher, 1997
Technological changes such as e.g. introducing in the design and cutting stages computer controlled cutters and computer assisted design systems	Taplin, Winterton, 1997
Differentiation and niche marketing, especially concerning high value added products	Bolisani, Scarso, 1995
Unique clothes, high fashion	Taplin, Winterton, 2004
R&D expenditures, export experiences	Eusebio et al., 2007

Table 3: Textile sector: literature on critical success factors

Most studies focus on specific companies or countries, and how tools or management approaches affect them in terms of competitiveness in the textile industry. What

emerges as a more common theme is the importance of efficient supply chain management and cooperation for the textile industry (Seuring, 2004; Sohal et al., 1998). Parrish (2006) argued that the textile industry's only way forward is through developing niche market strategies.

One of the key challenges for the European textile sector, according to Stengg (2001), is the high cost structure in comparison to competitors from outside the EU, due to higher wages and with higher legal standards regarding health, safety and environment. Exacerbating this challenge, consumers do not adequately reward responsible behavior, in terms of health, safety, and environment (Euratex, 2006).

Taplin and Winterton (2004) underlined that as long as the clothing manufacture continues to be an industry with a low level of technical innovation and minimal capital requirement, the entry barriers will remain low and thus plants and jobs will migrate to countries with low labour costs. Authors called this industry a "sunset industry" for high wage economies. Authors also stressed that modern consumption patterns among western societies lead to insatiate demand for new, unique clothes, especially in the areas of design and high fashion. Highly-developed countries can take advantage of this fact. Kilduff and Chi (2006) empirically confirmed that higher income countries lost their competitive advantage in rather labour-intensive sectors (such as apparel and textiles) and retained their market position in capital-intensive sectors (such as textile machinery and man-made fibers). The situation was the opposite in the case of low-income countries.

The story of a great breakdown of the European clothing industry was pictured in a very detailed manner by e.g. Jones and Hayes (2004). The authors concluded that the garment industry will probably never return to the UK (EU?), although there are some niches which can be overtaken by local companies, for example work wear.

Those companies who remained their production sites in the domestic countries had to restructure their organizations. They shifted to just-in-time-like management techniques (Just-In-Time, Computer Integrated Manufacturing, Flexible Manufacturing Systems, Total Quality Management) to meet shorter lead times, and engaged themselves in teamwork and multi-skilling among operatives to improve productivity and quality (Brucas et al., 1998; Sels, Huys, 1999). Other companies looked for technological changes to reduce costs by e.g. introducing in the design and cutting stages computer controlled cutters and computer assisted design systems. However, garment remains a highly labour intensive sector, as it is difficult to move towards automatisation (Taplin, Winterton, 1997).

Martinuzzi et al. (2010) named innovation and eco-friendly products and eco-labels to be the most promising links between CSR and competitiveness. Innovations can result in an improved competitiveness thanks to decreasing production costs, boosting the product quality and reducing environmental pressure. Also, innovative textiles (such as smart clothing) are rather difficult for imitation, and thus it is not very likely that can be easily produced by developing countries. Eco-friendly products and eco-labels are perceived as opportunities for niche market strategies – however, there is a

certain ambiguity as consumers expect more eco-friendly and socially responsible products, but are often not willing to pay more for them.

Different countries replied differently to the global structural changes happening in the textile industry. In Italy, companies focused on differentiation and niche marketing, especially at high value added products (Bolisani, Scarso, 1995, quoted by Taplin, Winterton, 2004, p. 258). Competitiveness of the German textile companies heavily relies on high technology fibers and innovative textiles. In Germany, the textile sector is strongly linked with industries like automotive, construction, mechanical engineering, as well as with producers of health care and environmental technologies (Adler, 2004). German companies outsourced many of their activities to Central and Eastern Europe, which limited cost of shipping goods from developing countries and reduced financial costs (Adler, Breitenacher, 1997).

All of those approaches seem to be very country specific and path dependent. For example, Italian apparel companies are strong with their high fashion branding, which is a result of many years of industrial development and is rather impossible to imitate. Nevertheless, even Italian firms were pushed to rationalize their production processes, mainly by outsourcing to Eastern and Central Europe (Guercini, 2004; Taplin, Winterton, 2004).

Bilalis et al. (2006) analysed key performance indicators within the textile industry such as quality, flexibility, supply chain management, and strategy formulation and implementation, and found that there is a room for significant improvement in areas of human resources management and knowledge management.

Oh and Kim (2007) claimed that China will dominate world apparel markets without quotas because China has established the most responsive and efficient supply-chain networks. Authors recommended that the US textile industry develop supply chains in neighboring countries in order to gain an ability to quickly react to market demands. As the apparel market is very variable due to development of new products and short product life cycle, establishing agile chains might be away to improve sector's time-to-market performance.

Eusebio et al. (2007) found that export experiences and R&D expenditures are factors stimulating export of textile products.

4. Environmental issues

Few scientific studies are available on the impacts of textile industry on sustainable development. However, a high level of homogeneity in terms of the issues discussed appears in the ones available, mainly centered on **resource use, waste, and toxicity**.

The most important environmental hazards from textiles are:

- use of chemicals,
- use of water,
- generation of waste water contaminated with hazardous substances,
- hazardous and toxic waste generation.

Environmental impacts start at the farm level, when toxic chemicals are used to support growth of cotton (fertilizers, insecticides, fungicides). In the case of synthetics (which represent more than 60 % of fiber production), the most important resource is oil. Thus, production of synthetic fibers leads to exploitation fossil fuels, directly for production processes in the textile industry and indirectly for processes involved in extracting and refining the oil (Müller-Christ, Gandenberg, 2006).

Table 4 summarises the literature on **environmental issues** in textile industry

Environmental issues - textile sector	Authors & Year
Environmental (oil, soil for cotton yielding) and social resource usage (labour)	Müller-Christ, Gandenberger, 2006
Resource use, high waste volumes, water use, toxic chemicals	Allwood et.al., 2006
Use of water, energy and chemicals	Kirian-Ciliz, 2003
Life cycle assessment	Nieminen et al., 2007
Organic cotton	Otto, 2004

Table 4: Textile sector: literature on environmental issues

Textile industry is extremely energy-, water- and chemical-intensive mainly due to wet processing. Regardless the type of fabrics and their final destination, most of them go through wet processing, which consists of cleaning, bleaching, dyeing, and finishing in an aqueous environment. Wet processing puts enormous pressure on the environment, as it requires great amounts of water and large volumes of toxic substances. It involves treatment with chemical baths, often requires washing, rinsing and dyeing (Kirian-Ciliz, 2003).

Environmental issues within the textile industry are very heterogeneous and depend on the type of fibers used for production – natural (cotton, wool, flax, silk) versus manmade/synthetic (polyester, polyamide, rayon, acetate, acrylic) and the type of

production process (wet versus dry). For this reason, it is very difficult, if not impossible, to apply a single life cycle assessment to highlight the environmental pressure resulting from the whole production process within this sector (Nieminen et al., 2007).

Müller-Christ and Gandenberger (2006) in their theory-based case study of the German textile industry, argue that sustainable resource management is essential to the textile industry's long-term survival. This is due to a circular relationship that exists in the area of resource use: industry uses the available resources and in turn produces goods and services to society, consequently sustaining their resource base through waste minimisation, and efficiency is a rational firm decision. Müller-Christ and Gandenberger (2006), however, suggest that the textile industry still faces challenges in dealing with sustainable development issues from the point of view of natural resource usage such as oil for synthetic garment manufacturing, and soil for growing cotton, due to increasing world consumption of these resources and thus intensifying scarcity. Noted sustainable development challenges for this industry also include social issues within the industry supply chain, in terms of labour and working conditions. Despite industry's efforts to portray their overseas factories as contributing to sustainable development through their Codes of Conduct in host countries, the industry remains in high NGO scrutiny. A report by Allwood et al. (2006), analysing the future of the UK textile industry through different scenarios, also pointed out that the biggest environmental impact of the textile industry appears in the areas of resource use, water use (especially in cotton production), and also high waste volumes due to "fast fashion" and toxic chemicals used in pre-treatment and dyeing.

Initiatives such as organic cotton are still of minor importance. Due to rather low consumer demand and relatively higher prices, world market share of organic cotton in 2004 reached 0,2 % (Otto, 2004). In contrast to conventional farming, organic cotton enables the preservation of soil fertility and the sustainable growth of cotton.

Most studies emphasise that the industry is struggling to balance out between the sustainable development challenges it faces and the production cost pressures (Allwood et. al., 2006; Müller-Christ, Gandenberger, 2006). Allwood et. al. 2006 argues that the accomplishment of a more sustainable textile industry is bound to happen only through increased consumer demand and understanding of sustainability in the textile industry.

5. Quality of jobs issues

The quality of jobs varies substantially in the textile sector, following different production models:

- Industrial textiles and the high technology garment industry are large - high technology industries have working conditions similar to the chemical industry. Skill level and workload is generally high, as are wages and job tenure.

- In fashion manufacturing, a mixed picture can be observed: Wages are relatively low, but health and working conditions and the problem of monotonous and repetitive work are primary concerns. Companies with relatively good and bad working conditions co-exist.
- In Eastern Europe, working conditions are at the very bottom end of all industries, with wages only amounting to a fraction of minimal living costs, unpaid to slave-like working conditions, and singular occurrences of child labour.

Table 5 below summarises the links between CSR and quality of jobs issues.

Work quality issues in textile sector	Source & Year
Work hours, fatigue	Metzner, Fisher, 2010
SA8000	Preuss et.al., 2009
Freedom of association, mistreatment of women	Welford, Frost, 2006
Women's rights, work hours, child labour, forced labour, harassment and abuse, freedom of association, health and safety, wage levels, labour regularity	Kaufman et al., 2004
Child labor, worker abuse, harassment and discrimination, workers rights of freedom of association and collective bargaining, adequate wage, working hours, safe and healthy job site environment.	Emmelhainz, Adams, 1999
Wages	Barendt, 2005; Goos, Manning, 2007; Low Pay Commission, 2010
Skills development and training	Eurofound, 2002; Winterton, Winterton, 2002
Human rights	Barendt et al., 2005; Dickson, Eckman, 2006
Flexibility and security	BEPA, 2004; Barendt et al., 2005; Koçer, 2009
Health and working conditions	Barendt et al., 2005; Michalski, 2006
Intrinsic job quality	Dhondt, Benders, 1998; Eurofound, 2002; BEPA, 2004
Social dialogue	Eurofound, 2002
Work life balance	Den Hond et al. (2010)

Table 5: Textile sector: literature on quality of work

Most studies on quality of work in the textile industry focus on the supply chain and the enforcement of company codes of conduct down the textile supply chain.

A study by Metzner and Fischer (2010) is one of the few that does not focus on supply chain issues, but rather on the **impacts of CSR on workers' reported fatigue** in Brazilian textile companies. This study did find some evidence that employees of companies with a higher CSR scores experience slightly less fatigue; however, the statistical importance of that finding was not very significant.

The majority of scholars focus on the positive impact of corporate responsibility programmes on **industrial relations and increased worker participation**. For instance, Preus et.al. (2009) discussed the positive implications of the rise of CSR and implementation of the SA 8000 standards in particular on employee representation through three European industry case studies, one of them being textile.

Kaufman et al. (2004), through a study of Thai garment industry focusing on factories of internationally renowned garment brands, derived a comprehensive list of issues appearing in the codes of conduct. One of the most important factors was stated to be **mistreatment of women**, who account for 80 % of labour force in the Thai garment industry. Women risk getting fired if they are pregnant, or face hiring discrimination if they are married. Welford and Frost (2006) also suggested that young women in textile factories are more prone to **abuse and harassment**. They have also pointed out that the distortion between the codes of conduct and reality is significant. They concluded that these issues arise due to weak law enforcement in countries of production, while CSR could be a significant contributor to low income country development.

Wages and inclusion are of highest concern. In Western Europe, wages are at the bottom end. In Britain, textile is No. 4 of all industries, with minimum wages (Low Pay Commission, 2010) in the textile industry at the falling end of a growing wage spread (Goos, Manning, 2007). In Eastern Europe, the picture is disastrous: In Poland, Romania, Macedonia, Serbia, Bulgaria, and Albania, unpaid labour and wages 1/2 to 1/5 of minimal living costs are common (Barendt, 2005).

Skill development and training is of high concern, as it is largely missing in an industry under high competitive pressure, where skills in high wage countries are key to survive. Whereas industry observers report skills and training „highly important“ and UK textile industry reports severe shortages of skilled personnel, training levels are little to nonexistent and concentrated on management (Winterton, Winterton, 2002). Low wages and a bad image of the industry contribute to the lack of qualified personnel. Nevertheless, job satisfaction surveys show little relevance of this indicator (Eurofound, 2002).

Human Rights issues are not supposed to be an issue in the European Union, but they are a top issue for the textile industry in some countries. In Eastern European sweatshops, there is widespread neglect of basic rights: incidences of jail-like factories, forced 24 hours work, and singular incidences of child labour can be observed (Emmelhainz, Adams, 1999; Barendt et al., 2005). Human rights are a major issue for stakeholders, mostly in the context of subcontracting (Dickson, Eckman, 2006).

Flexibility and Security: Workplace security in Western Europe offers a mixed picture: Whereas the threat to lose the job against a (cheaper) incumbent is rather

low, fear of losing job due to factory closings is high: the textile industry was considerably impacted during the economic crisis of 2008. In Eastern Europe, job security tends to be a high concern, with workers working under precarious conditions with only limited rights, and sometimes with illegal contracts or none at all. Extensive subcontracting with deteriorating conditions down the value chain is observed (BEPA, 2004; Barendt et al., 2005; Koçer, 2009).

Health and working conditions vary. In the more industrial production systems, ergonomics (painful and tiring positions), ambient conditions (dust, noise), as well as stress and workload are of some concern. An Estonian study supports this picture, but is far from being representative (Michalski, 2006). In sharp contrast is the bottom end of the value chain: In sweatshops in Eastern EU, working conditions (not so much health issues) tend to be substantially worse, with long and unfavourable working hours and singular occurrences of human rights issues (Barendt et al., 2005). Non-standard working hours are no particular issue.

Intrinsic job quality is relatively low for the large majority of employees in the sector: Monotonous and repetitive work is common (BEPA, 2004 for Bulgaria). Segregation of tasks is high, and autonomy is mainly concentrated with supervisors and management (Dhondt, Benders, 1998). Job satisfaction surveys show intrinsic work quality perceived as the least satisfying category within textile, and second worst compared to other industries (Eurofound, 2002).

According to trade unions, **social dialogue** tends to be sufficiently well established. For Western Europe, the European industry federation ETUF-TCL is actively engaging in a social dialogue with EURATEX with an agreement dating back to 1997. This agreement is currently updated. By contrast in Eastern Europe, low trade union membership is common, linked with widespread non-representation (trade unionists are predominantly men with a tendency to protect the still-protected workforce on supervisory and specialized level). There is widespread ignorance of workers' rights, both on the individual and collective level; sacking of trade unionists is common (BEPA, 2004; Musiolek, 2006). Consequently, EWCS job satisfaction shows "Social support" as second worst of all industries (Eurofound, 2002).

Work Life Balance is not researched. Evidence from other areas (precarious contracts, long working hours) suggests that work life balance is an issue, but there is no sound scientific evidence on this issue.

Den Hond et al. (2010) presented an interesting paper exploring the role of activist groups initiating changes within an apparel industry concerning the labour issues.

6. CSR issues

Literature on CSR in the textile sector is centered around **sustainable supply chains** (Perry, Towers, 2009; Pretious, Love, 2006) and **labour rights** (Perry, Towers, 2009; Turcotte et al., 2007) as CSR issues, and global introduction of **standards** and **code of conducts** by mass retailers and MNEs as main tools of CSR (Gunay, Gunay, 2009; Perry, Towers, 2009; Van Yperen, 2006). Most authors also agree that the pressure from NGOs, society, and media, and the deriving risk of a damaged reputation were stated as the major drivers towards the implementation of **code of conducts** on the side of companies (Lobel et al., 2006; Pretious, Love, 2006; Turcotte et al, 2007; Perry, Towers, 2009).

Table 6 summarises the most relevant CSR issues derived from literature analysis:

CSR issues –textile sector	Source & Year
Environmental and social standards	Van Yperen, 2006; Gunay, Gunay, 2009
Retailers standards on CSR, sustainable supply chains, fair labour conditions (lower labour turnover, better quality workers)	Perry, Towers, 2009
Human rights, labour rights, health, safety	Turcotte et al., 2007
Innovation for improvement in efficiency (responsible, ethical and environmentally safe production), protection of human rights (unfair labour conditions)	Lobel et al., 2006
Ethics in industrial purchasing, fair working hours, adequate compensation (minimum wages, excessive overtime, exploitation of workforce), protection of human rights (sweatshops, child labour), health, safety, bribery , corruption, sustainable supply chains	Pretious, Love, 2006
Overview of various standards	Van Yperen, 2006

Table 6: Textile sector: literature on CSR issues

Lobel et al. (2006) argue that finding the right balance between profitability and social and environmental goals requires the involvement of governments, industries, and civil societies, and standards can be seen as one important measure towards social change. While Turcotte et al. (2007) claim that the development of standards is a dynamic process, and some standards may lose power over time while new ones emerge.

Little literature is available from the point of view of textile manufacturing specific CSR issues (e.g. energy efficiency, waste management) as most studies focus on retailers or apparel sub-sector.

7. Trends and Future Prospects

The European textile industry has been marked by increasing competitive pressure, caused by the eradication of import quotas for all member countries of the World Trade Organization in 2005. For the survival of the sector in Europe, Kennan et al. (2004) mention five key factors that are likely to affect the sector profoundly over the coming decade: international trade relations, industrial organization and structure, new and emerging technologies, human resources, and enforcing international rules and conventions.

China, India, Pakistan, and the upcoming Vietnam are presenting the biggest threat to European textile markets. Given the fact, that China's total EU clothing import has risen from 7.5 to 11.2 percent between 1989 and 2000, it is clear that it has consolidated its position as the most important producer for the EU market. Yet, Abernathy et al. (2006) claim that Bangladesh is the leading source of T-shirts into the EU, since it enjoys free entry into the EU on apparel. That is due to its status as a "least developed nation". Providing all services from textile production to cutting, sewing, and packaging makes these countries extremely competitive. Therefore, European voices for renegotiating of import restrictions are growing louder. If the European Commission doesn't intervene to protect domestic producers, the abolition of quotas will lead to huge job losses across the EU, as firms either close or relocate to cheaper sites of production. The support of Chinese imports and competition would also affect textile industries in other developing countries, such as Bangladesh and Sri Lanka, which would lead to severe economic hardship in some of the poorest countries in the world. To develop protection for domestic producers and work against wage dumping, the EC would be forced to develop a fair policy that would support some relocation to China and India, but would still acknowledge the importance of proximity to domestic markets. Creating these preconditions, much of the industry would remain in Europe.

Product proliferation and shorter product cycles, reflected in ever-changing styles and product differentiation, demand the supply of increased numbers of products with fashion elements, speed, and flexibility. Therefore, geographical proximity to markets will be of crucial importance to respond quickly to "fast fashion". A good example to mention is the Spanish clothing company Zara, which is producing a wide range of fast-changing fashion-basic garments from its domestic production base, which allows "just-in-time production". European industrial organization and structure will therefore have to adapt to the "fast clothing market" by investing in the new technologies that permit a wide adoption of agile and flexible product sourcing. However, major sourcing factors for all companies are still price, quality, quick response, and logistical requirements. Taking over these services for the buyer presents an increasing load of risks. Nonetheless, the Euro- Mediterranean area, Eastern Europe, and Northern Africa were potential locations for an effective European business opportunity in terms of clothing and textile production. (Keenan et.al., 2004)

Further business possibilities could be realized by making use of new and emerging technologies that are concerned with developing automated and computer-based manufacturing systems. They could enable EU industry to offer products tailored to the individual needs of a customer, but manufactured in a mass-production system. That mass production means producing tailor-made clothing at comparable prices, and would provide the EU industry with competitive advantage over mass-produced clothing. Furthermore, new textiles and composite materials could present a market niche to consumers' demands, but will require adapted or entirely new machinery and processing methods. Existing materials can also present new opportunities if they are processed in innovative ways. Technological development, like recent breakthroughs in biochemistry, biotechnology as well as plasma, laser, and nanotechnologies will permit yarn forming, coating, or laminating processes that will give new and traditional fibrous textile materials, and thereby shape consumers' demand. It is up to Asian and European markets as to which one will make use of this "product revolution" in textiles and clothing firms and then take advantage of the economic opportunity. (Keenan et.al., 2004)

In terms of human resources a drive for greater flexibility, it is expected that employers will favor part-time workers, fixed-term contracts, and temporary work arrangements. Flexibility trends might also increase the resource to the informal sector, like sweatshops and home workers. Industries will have two possibilities to respond to increasing international competition: either driving down wages and worsening working conditions even further, or intensifying commitment to high-value or high-design content production. Two scenarios could result out of these reactions: Firstly, EU enlargement would bring massive numbers of low-skilled labour into the EU 15 and consequently creates further pressure on current wage levels and therefore hamper the industry to modernize and adopt latest technologies. Secondly, highly skilled workforce would demand good pay and decent working conditions and at the same time would be working at the cutting-edge of the industry to sustain Europe's innovative leadership with novel and high-quality products. (Keenan et.al., 2004)

The threat to intellectual property rights, counterfeit goods, and imitation products will require an international code of conduct. Still, there is a lack of legislation, and its enforcement and established guidelines of the International Labour Organization are often difficult to implement. Therefore, international rules and conventions will be confronted with demands solving the problem on an international scale by implementing new regulations implicating also ensuring increased protection of workers' rights. (Smith et. al., 2005)

To save the European textile industry from being wiped out by its Asian competitive threats, the European Commission (2003) released a Communication on "The Future of the Textiles and Clothing Sector in the Enlarged EU". These policy suggestions for the future recommend concentration on innovation, research, fashion and design, creation and quality and the use of new technologies, together with positive industrial relations. According to Lutz (2005) and the agenda of the European Technology Platform for the Future of Textiles and Clothing Industry, three main strategies should be followed to defend European clothing industry's competitive future position in the global market. Firstly suggested is a move from commodities to specialty products in

order to support the functionalization of textile materials and related processes. This should be realized through new discoveries in biomaterials, biotechnologies, and environmentally-friendly textile processing. Secondly, the development of innovative fiber- and textile-based products for new application fields, such as new products for human performance in terms of medical, protective, and sport use, and new textile products for technical applications. An example of a distinctive product to mention is Polartec. Thirdly suggested is the move from mass production to customization related to new product design concepts, technologies, full life-cycle, and total quality management concepts.

As also stated by Abernathy et. al. (2006), lean retailing practices and replenishment products will take greater hold in Europe in response to consumers' demands regarding more variety, more fashion, more product access, and lower prices. Hereby, the role of design in the clothing sectors of Bulgaria, Slovakia, and the Euro-Mediterranean will become of crucial importance. However, pressure of suppliers will only increase since they will face greater risk arising from added variability of product demand. Hence, the continued survival of apparel manufacturing will be about inventory risk, product diversity, replenishment, service, and good risk management.

All in all, the survival of the remaining apparel sector in EU markets depends on using the benefits of proximity from a design, marketing, and production point of view, and a decimation of Asian markets.

Trends and Future Prospects- Automotive Sector	Authors	Year
Future impacts on the location of apparel and textile production, public-policy choices, lean-retailing model, EU and US markets, quotas and trade costs	Abernathy, Volpe, Weil	2006
Key drivers to affect European textile industry in the future, international trade relations, industrial organisation and structure, new and emerging technologies, human resources, international rules and conventions	Keenan, Saritas, Kroener	2004
Agenda of European Technology Platform for the Future, main strategies to defend European clothing industry	Lutz	2005
European Commission and outward processing arrangements related to the textile industry, role of Bulgaria and Slovakia in the future	Smith, Pickles, Begg, Rouka, Bucek	2005

Table 7: Textile Sector: literature on future trends

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9. Literature

The following table shows the construction sub-sectors according to NACE 1.1 version

Sector	NACE 1.1	Sub-sector
Textile	DB17	Manufacture of textiles
	DB17.1	Preparation and spinning of textile fibres
	DB17.11	Preparation and spinning of cotton-type fibres
	DB17.12	Preparation and spinning of woollen-type fibres
	DB17.13	Preparation and spinning of worsted-type fibres
	DB17.14	Preparation and spinning of flax-type fibres
	DB17.15	Throwing and preparation of silk, including from noils, and throwing and texturing of synthetic or artificial filament yarns
	DB17.16	Manufacture of sewing threads
	DB17.17	Preparation and spinning of other textile fibres
	DB17.2	Textile weaving
	DB17.21	Cotton-type weaving
	DB17.22	Woollen-type weaving
	DB17.23	Worsted-type weaving
	DB17.24	Silk-type weaving
	DB17.25	Other textile weaving
	DB17.3	Finishing of textiles
	DB17.30	Finishing of textiles
	DB17.4	Manufacture of made-up textile articles, except apparel
	DB17.40	Manufacture of made-up textile articles, except apparel
	DB17.5	Manufacture of other textiles
	DB17.51	Manufacture of carpets and rugs
	DB17.52	Manufacture of cordage, rope, twine and netting
	DB17.53	Manufacture of non-wovens and articles made from non-wovens, except apparel
	DB17.54	Manufacture of other textiles n.e.c.
	DB17.6	Manufacture of knitted and crocheted fabrics
	DB17.60	Manufacture of knitted and crocheted fabrics
	DB17.7	Manufacture of knitted and crocheted articles
	DB17.71	Manufacture of knitted and crocheted hosiery
	DB17.72	Manufacture of knitted and crocheted pullovers, cardigans and similar articles
	DB18	Manufacture of wearing apparel; dressing and dyeing of fur
	DB18.1	Manufacture of leather clothes
	DB18.10	Manufacture of leather clothes
	DB18.2	Manufacture of other wearing apparel and accessories
DB18.21	Manufacture of workwear	
DB18.22	Manufacture of other outerwear	
DB18.23	Manufacture of underwear	
DB18.24	Manufacture of other wearing apparel and accessories n.e.c.	
DB18.3	Dressing and dyeing of fur; manufacture of articles of fur	
DB18.30	Dressing and dyeing of fur; manufacture of articles of fur	

The following table shows the textile sub-sectors according to NACE 2.0 version

Sector	NACE 2.0	Sub-sector
Textile	C13	Manufacture of textiles
	C13.1	Preparation and spinning of textile fibres
	C13.1.0	Preparation and spinning of textile fibres
	C13.2	Weaving of textiles
	C13.2.0	Weaving of textiles
	C13.3	Finishing of textiles
	C13.3.0	Finishing of textiles
	C13.9	Manufacture of other textiles
	C13.9.1	Manufacture of knitted and crocheted fabrics
	C13.9.2	Manufacture of made-up textile articles, except apparel
	C13.9.3	Manufacture of carpets and rugs
	C13.9.4	Manufacture of cordage, rope, twine and netting
	C13.9.5	Manufacture of non-wovens and articles made from non-wovens, except apparel
	C13.9.6	Manufacture of other technical and industrial textiles
	C13.9.9	C13.9.9 - Manufacture of other textiles n.e.c.
	C14	Manufacture of wearing apparel
	C14.1	Manufacture of wearing apparel, except fur apparel
	C14.1.1	Manufacture of leather clothes
	C14.1.2	Manufacture of workwear
	C14.1.3	Manufacture of workwear
	C14.1.4	Manufacture of underwear
	C14.1.9	Manufacture of other wearing apparel and accessories
	C14.2	Manufacture of articles of fur
	C14.2.0	Manufacture of articles of fur
	C14.3	Manufacture of knitted and crocheted apparel
	C14.3.1	Manufacture of knitted and crocheted hosiery
C14.3.9	Manufacture of other knitted and crocheted apparel	

The EU biggest textile companies in 2009

	Company name	Country	NACE 2.0 code
1.	ADIDAS AG	DE	1419
2.	PUMA AKTIENGESELLSCHAFT RUDOLF DASSLER SPORT	DE	1419
3.	HUGO BOSS AG	DE	1413
4.	LA SEDA DE BARCELONA SA	ES	1320
5.	BURBERRY GROUP PLC	GB	1413
6.	GUINNESS PEAT GROUP PLC	GB	1310
7.	PENTLAND GROUP PLC	GB	1413
8.	DEVANLAY S.A.	FR	1439
9.	MIROGLIO S.P.A.	IT	1410
10.	GEOX S.P.A.	IT	1410
11.	ESPRIT RETAIL B.V. & CO. KG	DE	1413
12.	KONINKLIJKE TEN CATE N.V.	NL	1300
13.	VF EUROPE	BE	1413
14.	DOLCE E GABBANA INDUSTRIA S.P.A.	IT	1410
15.	DOMO	BE	1330
16.	GOLDEN LADY COMPANY SOCIETA' PER AZIONI	IT	1431
17.	GAMMA HOLDING N.V.	NL	1300
18.	PROMOD	FR	1413
19.	WE INTERNATIONAL B.V.	NL	1410
20.	FIBERWEB PLC	GB	1395
21.	HENNES & MAURITZ SL.	ES	1419
22.	W.L. GORE & ASSOCIATES GMBH	DE	1394
23.	VALENTINO FASHION GROUP S.P.A.	IT	1410
24.	LEVI STRAUSS & CO EUROPE	BE	1413
25.	SARA LEE GERMANY GMBH	DE	1431
26.	BALTA INDUSTRIES	BE	1393
27.	MAX MARA S.R.L.	IT	1410
28.	SIXTY S.P.A.	IT	1410
29.	LORO PIANA S.P.A.	IT	1310
30.	TEXTIL MANUEL GONÇALVES, S.A.	PT	1399

Source: Amadeus data base

Sectoral Institutions and Initiatives

- EU Textile and Clothing High Level Group (www.ec.europa.eu/enterprise/sectors/textiles/documents/high-level-group/index_en.htm),
- European Technology Platform (www.textile-platform.eu/textile-platform/?category_id=75),
- Euratex – The European Apparel and Textile Confederation (developpement.euratex.org),
- European Trade Union Federation – Textiles, Clothing and Leather (www.etuf-tcl.org),
- Textranet – European Network of Textile Research Organizations (www.textranet.net),
- European Man-made Fibres Association (www.cirfs.org),
- European Association of Fashion Retailers (www.aedt.org),
- The Fair Wear Foundation (www.fairwear.org),
- The International Fairtrade Network (www.fairtrade.org),
- The Clean Clothes Campaign (www.cleanclothes.org),
- The Sectoral Dialogue on Leather and Tanning (ETUF-TCL and Cotance),
- The Sectoral Dialogue on Textiles and Clothing (ETUF-TCL and Euratex),
- Cosmic Project (www.cosmic.sssup.it),

Major European legal frameworks relevant to the sector

EU legislation affecting environmental issues

- Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH),
- Directive 2008/1/EC of the European Parliament and of the Council concerning integrated pollution prevention and control (IPPC),
- Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community,

EU legislation affecting quality of work

- Directive 91/533/EEC on an employer's obligation to inform employees of the conditions applicable to the contract or employment relationship,
- Council Directive 1999/70/EC of 28 June 1999 concerning the framework agreement on fixed-term,
- Council Directive 97/81/EC of 15 December 1997 concerning the Framework Agreement on part-time work,
- Directive 2008/104/EC of the European Parliament and of the Council of 19 November 2008 on temporary agency work,
- Directives aimed at improving health and safety at work: 89/391 (Framework), 89/654 (Workplaces), 89/655 (Work Equipment), 89/656 (Personal Protective Equipment), 90/269 (Manual Handling of Loads) and 90/270 (Display Screen Equipment), Directive 91/383/EEC,
- Council Directive 94/33/EC of 22 June 1994 on the protection of young people at work,
- Directive 2003/88/EC of the European Parliament and of the Council of 4 November 2003 concerning certain aspects of the organisation of working time,

- Directive 96/71/EC of the European Parliament and of the Council of 16 December 1996 concerning the posting of workers in the framework of the provision of services,
- Directive 2008/94/EC of the European Parliament and of the Council of 22 October 2008 on the protection of employees in the event of the insolvency of their employer,
- Council Directive 2001/23/EC of 12 March 2001 on the approximation of the laws of the Member States relating to the safeguarding of employees' rights in the event of transfers of undertakings, businesses or parts of undertakings or businesses,
- The Framework on Information and Consultation (Directive 2002/14/EC) grants basic principles, definitions and arrangements for information of employees at the enterprise level,
- Council Directive 98/59/EC of 20 July 1998 on the approximation of the laws of the Member States relating to collective redundancies.

Databases relevant in the sector

5 major European databases exist on job satisfaction, which meet the restrictive criteria: European in scope, periodically updated and statistically representative. They are not sector specific.

- European Labour Force Survey (ELFS),
- European Working Conditions Survey (EWCS),
- European Survey on Income and Living Conditions (EU-SILC),
- European Structure of Earnings Survey (ESES),
- International Social Survey Programme (ISSP).