European Foundation for the Improvement of Living and Working Conditions

Knitting the future of the textiles and leather sector: Four scenarios

european Monitoring Centre on Change

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Introduction

This report describes four different scenarios for the future development and status of the European textiles sector. A scenario describes a plausible hypothesis about the future and is one of the tools used in foresight exercises, for policy analyses and policy formulation, and for strategy processes in private companies.

A scenario is a coherent description of drivers, trends, and events that may influence and change the shape of analysis over a given period of time. But a scenario is not a prediction: the aim of scenario analysis and exercises is precisely not to predict the future. Indeed, given the uncertainty of the future, it needs to be explicitly stated that the scenario is only a possibility, one among other likely possibilities.

Building scenarios that describe the world six years from now is necessary in order to adapt current practice and arrive at a more robust, future-oriented practice should a particular future occur. Scenario building can also point to ideas and methods for utilising insights generated in the case studies and the market study. Consequently, while scenario-analysis may be a valuable tool for insight and a catalyst for strategic discussions, it should not be regarded as an end in itself.

The four alternative scenarios presented here represent realistic, internally consistent, and plausible pictures of alternative futures:

- Scenario 1: *Perfectly prêt à porter*
- Scenario 2: *Rags and riches*
- Scenario 3: *The emperor's new clothes*
- Scenario 4: *Driving Miss Daisy*

The scenario development process

Objectives

In a rapidly changing world - where demand and supply opportunities change equally fast - it is not enough to simply project the present into the future. Alternative visions of the future are needed in order to broaden understanding of issues that should be addressed today.

The objective of this report is to present a scenario analysis that may be used as a vehicle to develop long-term visions (with a seven- to 10-year lead time) of possible circumstances and requirements to optimise the European textiles industry and the sustainable development of its workforce. This objective is pursued as a task split into the following two sub-goals:

- To develop exploratory scenarios for the macro drivers influencing the textiles industry. These reflect the trends that few companies and political actors can influence on their own.
- To present plausible implications of the changes at company level. These are the initiatives and strategies that companies are likely to follow in the scenarios.

Methodology

In principle, a scenario is a tool which is used for policy analysis and strategic analysis to describe a possible future. As such, a scenario has to fulfil the following criteria:

- It should be plausible, but it does not have to be the most probable.
- It should be internally consistent in order to be plausible and in order to stimulate a coherent discussion.
- It should not describe the developments that led to the picture of the future. Instead, participants are asked to project backwards from the projected future to arrive at a better understanding of how that future might come about.
- It should contain enough information to describe the functioning of a system.

The scenario building has been designed as a two-stage process:

Stage 1 is devoted to developing exploratory (not normative) scenarios. These are partly based on existing work, but are mainly based on desk research by the scenario team without the direct involvement of external industry experts. Existing work in this area has been examined, including the Commission's Forward Studies Unit **Scenarios for Europe 2010**[1] as well as the OECD's future studies. In this stage, the main macro drivers[2] and important dimensions of change are examined in order to determine the most important elements of the future. Once these drivers and dimensions have been identified, they are fleshed out into plausible and concrete scenarios. The decision to concentrate on a set of four such scenarios has been deliberate.

Stage 2 examines the plausible implications that the macro drivers may have for companies and for those issues that companies must address in the future. This part has been carried out partly through desk research and partly drawing on the strategic discussions that scenario experts conducted with industry experts and company managers when the case studies were presented.

Construction of the scenarios

The construction of 'external scenarios' builds on a conceptual framework designed to capture changes in the external environment of service provision by means of five categories of drivers and trends:

- socio-cultural;
- economic;
- political;
- technical;
- ecological.

[1] Bertrand, G. (ed.), *Scenarios for 2010*, Working paper, Bruxelles, European Commission, 1999, available at: **http://europa.eu.int/comm/cdp/scenario/index_en.htm**

[2] They are labelled 'macro' drivers because they focus on the drivers that are hard for any single actor to influence.

The scenario team gathered a variety of opinions on the major trends and drivers of socio-cultural, economic, political, technical and ecological changes over the next ten years in relation to factors that will impact significantly on the textiles industry. These trends and drivers were then consolidated and assessed within the team according to four criteria:

- importance, i.e. importance for eService delivery: low, medium, high;
- certainty, i.e. likelihood of occurrence: low, medium, high;
- controllability, i.e. ability to manage: low, medium, high;
- significance, global and European: yes or no.

Using assessments of around 50 trends and drivers, five dimensions were identified as the basis for the scenario-building strategy:

- Tech 1 = Development of information, communication and production technology.
- Tech 2 = Development of textile-related technologies such as chemistry and nanotechnology.
- EU = Development of the European Union.
- Int. Trade = Development of international trade.
- Market = Economic situation within the EU.

The final output of this process was a set of four scenarios that differ from each other in the specific characteristics of each of the five key dimensions.

Dimensions of the scenarios

The five dimensions, which were identified as the basis for scenario building, can be characterised as follows:

1st Dimension: Tech 1. This dimension refers to how advanced the general and industry-specific use of information and communication technologies (ICT) and industry production technologies are in 2010. There are two versions of this driver: 'high', where the ICT infrastructure and use of ICT is sophisticated and production technologies are advanced and highly flexible also, and 'low', where there has not been much development since the present.

2nd Dimension: Tech 2. While Tech 1 refers to the technologies related to the processes of design, production, and sale of textile products, Tech 2 refers to technology that is fundamental to the actual products of the textile industry in 2010: chemistry, nanotechnology, biotechnology, and other 'fundamental' technologies that may change the way textile materials are produced and used. There are two versions of this driver: 'high', where Tech 2 redefines the conception and use of these technologies, and 'low', where there has not been much development since the present.

3rd Dimension: EU. This dimension refers to the European Union's progress and its ability to act cohesively. There are two versions of this driver: 'success', where the enlarged EU has become a democratic and economic success and is able to work in the interests of its citizens and companies, and 'failure', where the enlargement process is highly problematic and the EU is unable to provide 'value' for its citizens and companies.

4th Dimension: Int. Trade. This dimension refers to global and national trade agreements and legislation in 2010. There are two versions of this driver: in the 'open' version most of the quotas and trade tariffs barriers have gone while the remaining legislation and agreements are predominantly aimed at ensuring that international trade is conducted

according to the principles of sustainability and fairness in relation to the less developed regions of the world; in the 'closed' version most quotas have been removed but national states can protect their home markets with tariffs.

5th Dimension: Market. This dimension refers to the state of the world market and how competitive European companies are in relation to it. More specifically, it refers to whether or not market conditions are good on the European home market. There are two versions of this driver: 'good', where market conditions are favourable for EU companies in Europe and in the rest of the world, and 'bad', where conditions for EU-based companies are poor internationally but acceptable for EU home markets.

Industry-specific effects of the scenarios

The analysis of the industry-specific effects on companies across the five dimensions is categorised as follows:

1. Skills and education: This theme deals with the issues and challenges related to skills and education for industry in general and with the use of skills and education in textiles companies.

2. Work organisation: This theme deals with the organisation of work in the textiles companies. Issues are related to internal enterprise organisation and to the distribution of work throughout the value chain.

3. Business strategies: This theme deals with the generic business strategies that companies follow in the scenarios, involving issues such as brand management and sourcing strategies.

4. Innovation strategies: This theme deals with the various innovation strategies that companies pursue and, on a more general level, with the role and importance of innovation seen from a European perspective.

The four scenarios and their specific effects on the industry are shown in the table below.

Table 1: *Industry-specific effects of the scenarios*

	Perfectly prêt à porter	*Rags and riches*	*The emperor's new clothes*	*Driving Miss Daisy*
Tech 1	**High**	**Low**	**Low**	**High**
Tech 2	**High**	**High**	**Low**	**High**
EU	**Success**	**Success**	**Failure**	**Failure**
Int. Trade	**Open**	**Closed**	**Open**	**Open**
Market	**Good**	**Bad**	**Good**	**Bad**

Scenario 1: ***Perfectly prêt à porter***
This is in many ways a utopian scenario. The year 2010 has been preceded by a period of economic, social, and technological progress, and the world is at peace. The enlargement process of the EU has been a striking success and the EU is emerging as a very strong player on the world scene. International trade is free but fair, and the companies are looking for business opportunities all over the world. The dimensions of this scenario are Tech 1 = high, Tech 2 = high, EU = success, Int. Trade = open, and Market = good.

Scenario 2: ***Rags and riches***
This is a scenario where EU companies are maintaining their competitive advantages, but developments in international trade, ICT, and production technology prevent them from exploiting these advantages outside Europe. EU policy and initiatives have played an important role in the development of the companies' competitive base, and challenges related to labour market issues are solved by upskilling and re-skilling the workforce. The dimensions of this scenario are Tech 1 = low, Tech 2 = high, EU = success, Int. Trade = closed, and Market = bad.

Scenario 3: ***The emperor's new clothes***
This is a scenario where the promises of new technologies have not borne fruit, and the EU has failed in many ways. Most of EU textiles production has therefore been outsourced or closed down. International trade is very open, and consequently many EU companies find themselves in a cost game where they are having a hard time matching the price/value offers of companies based in emerging-market countries. The dimensions of this scenario are Tech 1 = low, Tech 2 = low, EU = failure, Int. Trade = open, and Market = good.

Scenario 4: ***Driving Miss Daisy***
This is a scenario where product and process technologies are developing rapidly, but the 'engines' driving the development are located outside the EU. The EU has not been able to exploit the opportunities presented by enlargement and is generally having a hard time supporting its citizens and businesses. Although international trade has developed rapidly, European companies are focusing on the European market, even though competition on this market is becoming stronger with the entry of emerging companies from Asia. The dimensions of this scenario are Tech 1 = high, Tech 2 = high, EU = failure, Int. Trade = open, and Market = bad.

The four scenarios manage to show variations across all five dimensions. No scenario is perfectly correlated (either in a positive or negative direction) with any other scenario, but in the full versions below they have been designed to be internally consistent. Each paints a very different picture of the Europe of 2010, each highlights unique aspects, and each is possible.

Scenario 1: *Perfectly prêt à porter*

This is the first of four scenarios outlining the future development and status of the European textiles sector in 2010. Scenario 1 is in some ways a utopian scenario. The year 2010 has been preceded by a period of economic, social, and technological progress, and the world is at peace. The enlargement process of the EU has been a significant success and the EU is emerging as a very strong player on the world scene. International trade is free but fair.

Scenario dimensions

Five dimensions were identified as the basis for scenario building:

- Tech 1 = general and industry-specific ICT and industry production technologies in 2010.
- Tech 2 = fundamental technologies that can change production processes and textile use in 2010.
- EU = the European Union's progress and its ability to act cohesively in 2010.
- Int. Trade = situation of global and national trade agreements and legislation in 2010.
- Market = market conditions in 2010 within the EU in relation to the state of the world market and how European companies compete in it.

Dimensions of scenario 1

- Tech 1 – high
- Tech 2 – high
- EU – success
- Int. Trade – open
- Market – good

Macro drivers

Developments in technology

Collaboration between companies in different parts of the value chain and adequate funding of research projects from the EU have permitted European producers to develop highly complex and flexible production facilities including 3D sewing machines, 3D weaving technologies, and machine vision technologies. Production facilities are integrated with automatic 3D measurement and fitting systems used by designers and customers in up-scale clothing shops. Furthermore, technological developments have led to 'made-to-order' and 'ready-to-wear' becoming central competition parameters among mid-scale brands such as Levis, Diesel and Gap, which store measurement data about customers who buy ready-to-wear clothes.

Europe is in a strong position as a developer and user of these new forms of production technologies, and the export of these technologies and related services has become a significant industry for the EU. Ready-to-wear production offers individual design opportunities such as the choice of colour, threads, buttons and printed design on shirts and pants. From a customer perspective, this fits the ethos of the highly individualised and fragmented European society. From a company perspective, the technology offers the opportunity to create virtual 'lock-ins' of customers, since measurements and other individual data cannot be exported from brand to brand. Furthermore, companies with scale and a high degree of made-to-order and ready-to-wear production that targets different customer segments have the opportunity to run highly efficient and flexible networks of JIT ('just in time') production.

Positive developments in information and communication infrastructure technologies, such as broadband and wireless technologies and the success of the generic business models driving these technologies, have enabled more and more digital business, i.e. B2B as well as B2C. In the B2B segment, advanced forms of electronic data interchange (EDI) ensure optimal flow of goods in the supply chain. Moreover, trade portals have facilitated a very high degree of transparency in the price and value structure throughout the supply chain. Furthermore, ICT developments have impacted on the organisation of work and the handling of information and knowledge (e.g., eLearning and knowledge

management systems). EU companies are highly competitive due to their use of knowledge sharing and learning, and the innovative use of customer and market data within the value chains.

Since 2005, companies in the EU have had a dominant position in the development of new textiles/materials and functional clothing. Basic research in generic technologies such as nanotechnology, chemistry and ICT has led to specific uses for intelligent materials such as biomedical clothes for 'non-invasive' use and textiles with nano-enhanced functionalities. This technology transfer has been mediated by EU framework activities, by active industry organisations, and by 'front runner' companies. In these companies, cross-functional teams of designers, engineers, and other specialists have found specific uses for generic technologies in a work organisation environment that has fostered creativity and experimentation.

Developments in EU-related issues

The EU enlargement from 15 to 25 Member States has not been an easy process. At a political level, debates about a common constitution, the distribution of votes between the countries, and the role of the European Parliament, have generated frequent conflicts among the shifting alliances of countries. But at a more practical level, the expansion has been a success. Led by countries such as the Czech Republic, Lithuania, and Slovenia, the new Member States have collectively raised productivity, GDP, and FDI. These Member States are developing regional centres of excellence and clusters in a variety of industries. In this way, most of the countries have been able to migrate their low-skilled price-sensitive production competencies to more knowledge-intensive competencies. They have thus managed to avoid price-based competition with third world countries. Some of the eastern European Member States were from the beginning in a particularly favourable position because of their high level of technical competencies. They have experienced a trend of 'relocalisation' of production from the Far East, since companies serving the middle and upper levels of EU markets value proximity to their customers above production prices[3].

Challenges relating to the ageing of the European population have been met by initiatives both at national and European level. The most dominant and successful initiatives have been regional and local initiatives related to lifelong learning and job rotation between related sectors. Local companies and industry organisations have played an important part in these initiatives (either directly or through 'regional skills councils') by engaging in dialogues on current and expected skill gaps.

Another success story is the EU's common research and innovation strategy. Central to this success has been the creation of incentive structures in the funding, which has created common goals and interests for companies and universities. Although the EU has continued its progressive (compared to the US and Asia) policies on environmental issues, it has at the same time fostered initiatives and legislation that could alleviate the negative competitive effects that a strict environmental legislation has on EU based companies. Another European initiative to facilitate innovation-driven companies has been the common EU-patent legislation which has eased the administrative burden in the patent application process. As a result, EU textiles companies have a strong profile in sustainable production methods and the use of sustainable materials. In a society where environmental concerns have increased in importance, this is now proving to be a unique selling point for EU-based companies in relation to a large segment of customers with an interest in the state of the environment.

[3] Automated and flexible production facilities have played an important role in lowering the average production price.

International trade and its effect on the labour market

In 2010, prosperity in most parts of the world has led to an open and progressive business climate. In the textiles sector, national subsidies are history and all quota restrictions have been eliminated due to the Agreement on Textiles and Clothing (ATC) which led to a complete liberalisation from 1 January 2005. The full implementation of the agreement in 2005, following a ten-year phase-out period of the earlier Multi-Fibre Arrangement, paved the way for European countries to harmonise customs duties and non-tariff barriers. With the enlargement of the EU, the number of jobs in the textiles and clothing sector increased by 25%, and the number of companies by 8%. As the new Member States strove to migrate their competencies and work upwards in the value chain, the traditional bulk production of clothes was moved to the Far East. Companies seeking to improve their response to market trends kept production in low-wage EU regions and countries in the Euro-Mediterranean zone. So far, the short-term effect of this has been massive job losses in the textiles sector, but national and European educational initiatives have been an important lever in aiding the unemployed to seek jobs in other functions or industries.

These initiatives have not been able to avoid negative effects on some of the workforce. Women, older workers, and ethnic workers are significantly over-represented in the numbers who have been unable to find new jobs. While the move to bring production back to Europe is promising for the majority of the workforce, there are still groups who struggle to re-enter the labour market.

As the economies of countries such as India and China became stronger, labour costs rose. This prompted many EU companies to invest in highly flexible production facilities in the EU, thereby moving a large part of the production back to the Euro-Mediterranean zone. Another effect of the emerging economies' strong growth rate was that they became attractive markets for European products. This trend is visible in the textiles and clothing sector as well as in the markets for production machinery and many of the new textiles developed in the EU.

Delocalisation of production to China and to India in the beginning of the 1990s gave local industry the competencies to build up a textiles and clothing industry not only based on production but also on development, innovation, and marketing. By the end of the decade, these countries imported technology and skills from the EU on the one hand, and had become competitors to the European textiles and clothing industry on the other.

As European companies began to look outside their traditional home markets, competitors from Asia and the USA began to take an interest in EU markets. The traditional assumption that the EU was too fragmented a market for US or Asian companies to deal with lost its justification as global cultural phenomena began to shape customer interests and bring about a customer segmentation that was linked by interests and ethos rather than geography. Consequently, most markets are now influenced by a plurality of actors from a wide variety of countries operating in sophisticated networks.

Market development and consumer interests

The abolition of trade barriers is reflected in a wide variety of products at very competitive prices. New brands from all over the world are entering the EU markets and vice versa. In other words, the competition is intense, but the elimination of trade barriers ensures that it is based on fair business. The opening of the markets in China, India, and South America has given European companies opportunities to reach these markets with value-added products. In particular, products made of 'intelligent materials' are highly sought after outside Europe. Although market conditions are fine, with consumers having sufficient buying power, meeting highly differentiated consumer demand is a challenge. While consumers still like to display the brands they are wearing, they have no corresponding brand loyalty. Consumers want to be fashionable: the desire to signal individuality and personal taste through clothing grows stronger in the new millennium as a consequence of a globalising world. Clothes are more than a matter of looking good: they are also a way to display a person's political or religious/spiritual values and beliefs. But there are also meta trends that influence most

segments, no matter what their ethos and interests. Examples of such meta issues are environmental issues, the effects of the global distribution of work, and the originality of the clothes/designs.

The market for textiles and clothing has expanded due to technological developments related to fabrics. This means that a variety of new industries are being served by 'textile products'. Examples of these industries are healthcare, military, aeronautic and aerospace, and architecture.

Company-related themes

Skills and education

In 2004, many textile companies were suffering from skills gaps and skills mismatches. Many managers were reluctant to invest in education since market developments were hard to predict. By 2010, the picture is quite different. Through training and motivation at management level, often arranged by industry organisations or regional skills councils, companies have become more alert to the skills issue.

A new breed of managers, middle managers, and designers has emerged and is now well integrated in the labour markets. These employees combine multiple skills in professional areas that used to be thought of as separate, such as finance and design. This enables them to function as central nodes in networks and multifunctional teams, where they are able to drive processes of change and innovation. Another important characteristic of this new breed is that they have spent time working as apprentices in the textile companies as an integrated part of their study. They are therefore alert to the challenges of the business climate once they graduate. This mix of theory and practice is something that most students continue to develop after graduation. Many of them take the tailored and highly specialised courses that educational institutions have begun to offer as a result of their dialogue with industry organisations and regional skills councils.

Work organisation

The organisation of work has undergone much innovation during the past five years. New forms of flexible production facilities and 'networked' modes of collaboration between companies have had significant effects on the organisation of work. Traditional structures and professional hierarchies have vanished and team organisations have become the dominant *modus operandi*. This transition has not been easy since many employees felt uncomfortable with increased responsibility and weakly defined functional and professional job descriptions. However, many organisations have been able to reorganise quite efficiently by employing specialised educational activities and new incentive and wage structures. The role of management has been a central driver of change. Many companies who failed to re-organise are family-owned business who simply have not had management commitment to change.

Unions and industry organisations have played an important and positive role both nationally and at a European level. A feeling of 'shared faith' has governed their interaction. Many of the initiatives related to the re-organisation of companies are inspired by guidelines and ideas formulated jointly between industry organisations. The organisations have played a central role in bringing production back to Europe. They have had strategies in place to help companies understand that the production being brought back is and will be different from the production that was outsourced during the nineties.

Business strategies

At a sectoral level, small and medium-sized enterprises (SMEs) have proved to be more resilient and fit for survival than most analysts predicted back in 2005. Consequently, the structure of the industry is formally much the same, since mergers and acquisitions have only taken place among very large companies. Smaller companies have organised themselves in flexible networks to achieve scope and scale to compete with (and serve) the very large industry conglomerates. SMEs are very niche-oriented. They are able to bring their core competencies into play in a variety of

different fields as the markets for textiles are expanding into other sectors and definitions of textiles and their functionalities are being pushed by innovations. Large conglomerates compete by utilising scope and scale to create innovation and drive business development. Materials and technologies are often patented and kept as proprietary standards and platforms to create a customised service for end-users. A few large companies have also had success through following highly focused research and development (R&D) strategy and developing new materials and technologies that have been adopted by the industry at large.

Innovation strategies

Innovation has been and still is one of the most important sources of competitive advantage for European textile companies.

In general terms, innovation in EU companies is user-driven as well as research-driven. User-driven innovation is facilitated by the ICT links that companies have with their end consumers. Through direct interaction with end-consumers and through data-mining analysis, companies are able to pick up on trends and preference changes in their end-consumer segments. Much production process innovation has been incremental. Many companies have created incentive systems that reward employees who find ways to optimise or develop production facilities.

Many innovations in materials and chemistry are based on team efforts that include designers and trend spotters. This ensures a successful transformation of generic technologies and methods (such as nano-fabrics) that target specific use and value for end-consumers and the companies. In an industry dominated by SMEs, very few companies have had the resources to employ these kinds of cross-functional teams. Much innovation is therefore taking place in 'innovation forums'. While these are now self-sustainable units, in their start-up phase they received economic and organisational assistance from companies, the EU, and the European textile organisations.

Scenario 2: *Rags and riches*

In Scenario 2, EU companies maintain their competitive advantages but cannot exploit these advantages outside Europe. EU policy and initiatives have played an important role for the development of the companies' competitive base, and challenges related to labour market issues are solved by upskilling and re-skilling the workforce.

Scenario dimensions

Five dimensions were identified as the basis for scenario building:

- Tech 1 = general and industry-specific use of ICT and industry production technologies in 2010.
- Tech 2 = fundamental technologies that can change production processes and textiles use in 2010.
- EU = the European Union's progress and its ability to act cohesively in 2010.
- Int. Trade = situation of the global and national trade agreements and legislation in 2010.
- Market = market conditions in 2010 within the EU in relation to the state of the world market and how European companies compete in it.

Dimensions of scenario 2

- Tech 1 - low
- Tech 2 - high
- EU - success
- Int. Trade - closed
- Market - bad

Macro drivers

Developments in technology

At the beginning of the decade, many of the old EU Member States prioritised funds to R&D in generic technologies such as nanotechnology and biomedical technology. The existence of 'front runner' companies led to technology transfer of the results of this massive investment to the textiles and clothing industry. Some European companies producing functional clothing can now be found at the global forefront of value-added products. However, this niche represents only a small percentage of total industry turnover.

On the other hand, general developments within ICT and production technology has not at all fulfilled earlier expectations made at the beginning of the century. The trend to delocalise production to the Far East or North Africa[4] has continued throughout the decade, leaving the EU with very little industrialised production.

A few years back, some prominent company leaders and experts stated that the industry had to start investing in research and development in new production technology with a view to increasing automatisation in order to improve European industry's competitive edge. Despite this recommendation, the strategy of delocalisation is still dominant. In north Europe, most of the high-cost production has been increasingly delocalised for several decades, except for some niche production. In the textiles and clothing industry in the south of Europe, which remained quite labour-intensive for many years, delocalisation outside Europe became a common occurrence only within the past three or four years. Most EU companies argue that they would rather invest in R&D related to product development than invest in process and production development. The major reason for this is that net profits from the former are expected to be higher than profits from the latter since production is still very cheap in North Africa and Asia.

Developments in EU-related issues

At a political level, enlargement of the EU from 15 to 25 Member States has been a difficult process. Discussions about rules governing countries' level of representation in the European Parliament, the general role of the European Parliament, and the new constitution have not been decisive because of ongoing conflicts among shifting alliances of countries. The picture at market level is different: the development of a harmonised internal market integrating the economies of the new Member States has in a short time attained a level of functionality that allows products and employees to flow freely.

[4] The decision to delocalise production is based on how great is the company's need for a 'fast' response to market development. Fast-response production is outsourced to North Africa while slow-response and low-price production is outsourced to Asia.

The EU is struggling with serious problems regarding the loss of jobs in the industry to developing countries outside Europe. This has led to an increased level of unemployment and, due to increased competition, the demise of many small and medium-sized companies. To cope with these challenges, the EU has invested heavily both in vocational training and higher education. It has also focused on entrepreneurship and agreements on common research and innovation strategies in a number of fields, such as nanotechnology, chemistry, and biotechnology, with the aim of strengthening the competitive profile of different industries.

The EU Member States in general acknowledge the importance of lifelong education, which is deemed necessary in order to avoid a workforce that is unskilled or only qualified for low-skilled jobs. Many regional initiatives have been set up to help companies and local authorities to train and educate employees dismissed from low-skilled jobs, so that they can qualify for work in other sectors and/or higher skilled jobs.

Other educational programmes focus on how to help young people bring forward their good ideas and transform good ideas into products or concepts. Students all over Europe are competing in entrepreneurship.

One research initiative deals with technology transfer across different industries and between universities, research institutes, and the business world. A promising best practice example is the growth of intelligent textiles and functional/smart clothing in the textiles and clothing industry.

International trade and its impact on the labour market

Trade barriers are inhibiting international trade in 2010. As the ten-year phase-out period of the Multi-Fibre Arrangement came to an end in 2005, several countries increased their customs duties and non-tariff barriers. Within the 25 EU Member States, customs duties and non-tariff barriers have been removed so as to ensure free product movement. But the duties on imports to the EU are high in order to protect the European market. The rest of the world has responded with similar trade barriers. In other words, the 2005 Agreement on Textiles and Clothing (ATC) has had little effect, since repeated failures in WTO[5] negotiations have not been able to prevent the implementation of national or Community trade barriers.

The European economy is strong and the European market functions well. The strong euro therefore affects the trade balance with markets outside EU.

General conditions for the European textiles and clothing sector are not very promising. Worldwide competition is strong, and international trade barriers force most European companies to focus on the European market - which is also marked by a high level of competition, even though the home market in a 25 country EU is considerably bigger than before. The European textiles and clothing industry is therefore under pressure, and many SMEs are closing down. Product development, management, and marketing continue to be located within Europe, while production is outsourced to developing countries. Textiles and clothing industries in the south of Europe - Greece, Italy, Portugal and Spain - which formerly had quite extensive sector activity have experienced massive job losses due to delocalisation of production. Two groups of companies are able to handle the crisis well: companies whose innovation strategies result in value-added products for a niche market, and large enterprises that follow a consolidation strategy.

[5] World Trade Organisation (WTO)

Market developments and consumer interests

Consumers are as unpredictable as ever, demanding a wide range of new and diversified products. The majority of consumers seem to prefer 'more fashion for less money'. The most successful of the European companies - like H&M and Zara - know how to accommodate these fluctuations in the market by continuously developing new products followed up by quick response to consumer feedback.

Consumers have lost confidence in international brand names that base their brand on 'codes of conduct' and 'corporate responsibility'. This was triggered by several incidents where well-known companies were exposed as not practising what they preached. Some instances occurred because of a direct lack of interest in social responsibilities on the part of major brands; others occurred because brand companies lost their ability to control what was happening along the supply chain - but the effect was the same regardless of the cause.

The diversification in products reflects the fragmented market where one big customer segment demands low prices and a lot of smaller segments look for more specialised textiles and clothing. Intelligent clothing has found growing markets in, for example, extreme sports and among elderly people who have the purchasing power to pay for special clothes that help monitor heart rates and blood pressure.

European countries have had some success with technology transfer from nano- and biomedical research into the textiles and clothing industry. This has resulted in new intelligent materials used in health care, military, aerospace and building and construction. Some European textiles and clothing companies are world leaders in these niche productions based on value-added products. This gives access to some foreign markets despite global trade barriers. In spite of a high level of demand, these niches only account for a small percentage of total industry turnover.

Company-related aspects

Education and skills

The strategy of delocalisation, pursued by most of the European textiles and clothing industry, has resulted in a massive loss of low-skilled jobs. This phenomenon is not unique to the textiles and clothing industry, but is also found in many other sectors with high production costs. As a restructuring effort, many regional authorities have increased investments and are collaborating with industry organisations and local companies in training employees about to be dismissed. A few people who lose their jobs find other - and sometimes better - jobs within the textiles and clothing industry, others find jobs in other sectors, but most remain unemployed, since the majority of those who are dismissed are elderly women and immigrants.

Companies are very aware of the importance of ongoing training, especially of managers responsible for logistics and finance. While many workers with low-skilled jobs have become redundant, there is a high level of demand for new graduates with skills in the natural sciences and with an educational background and skills profile that transcends traditional professional boundaries (for example between design and production). The demand for this kind of employee is accentuated by demographics: there are very few young people entering the labour market. Ongoing education is one way to both attract new employees and make them stay with the company.

To optimise conditions for continuous product development, many companies have formed groups containing a multi-functionality of different skills to secure mutual inspiration and ideas testing. The focus on entrepreneurship at European level means that many new graduates of vocational colleges have a good overview of entire product cycles and know how to mix creativity with more technical competencies - new, young designers who also know about the economics of production processes are very valuable to companies.

Work organisation

Work organisation focuses partly on the delocalisation of production to developing countries, and partly on how to attract highly educated employees to functions such as product development, management, logistics, and marketing. The possibilities of further education and personal development, wage incentives, and increased responsibility are used to attract suitably qualified employees.

Larger companies tend to be vertically integrated within most or all of the supply chain. Horizontal collaboration and networking is not very well developed among companies that mass produce standardised products. The opposite structure can be found in companies that focus on narrower consumer segments and niches like intelligent textiles. Here, price is not the only factor of importance: quality and new functionalities are also important consumer preference parameters. In these companies, horizontal integration in the supply chain and networking among companies and between companies and universities and research institutions are very common.

Business strategies

The motto seems to be 'business as usual'. The dominant business strategy is still delocalisation of production to developing countries in order to reduce costs and therefore increase price competitiveness. When relocating, companies follow one, but often several, of three possible paths: they can delocalise vertical supply functions; they can subcontract manufacturing processes to outward processors; or they can source finished products from suppliers in developing countries.

Besides paying attention to price competitiveness, companies focus on brand management and fast response to the market by optimising internal logistics and workflow. Bigger brand companies find their competitive advantages in rapid prototyping, rapid response to consumer feedback (sales), and flexible workflow optimised by work organisation and close cooperation within the supply chain.

For companies operating in the niches of intelligent materials and functional clothing, an important part of the business strategy is collaboration with universities and research institutions in order to invent and test new products.

Innovation strategies

Innovation in the majority of European companies is primarily user-driven. The fragmentation of consumer markets and the demand for product diversification at low prices put pressure on companies to continuously market new collections and new products. Innovation strategies therefore focus on 'reading the market' to spot new trends and tendencies and turn them into new products before competitors do the same. 'Product development' is probably a more suitable name than 'innovation' for this strategy.

Research-driven innovation strategies are only employed by a minority of European companies, those involved in the production of so-called intelligent materials where technology transfer occurs between, for example, nanotechnology and the textiles and clothing industry.

Scenario 3: *The emperor's new clothes*

In Scenario 3, the promises of the new technologies have not materialised, and the EU has failed in many ways. Most EU textile production has been outsourced or companies have closed down. International trade is very open, and many EU companies find themselves in a cost trap where they have difficulties matching the price/value offers of companies based in emerging market countries.

Scenario dimensions

Five dimensions were identified as the basis for scenario building:

- Tech 1 = general and industry-specific use of ICT and industry production technologies in 2010.
- Tech 2 = fundamental technologies that can change production processes and textiles use in 2010.
- EU = the European Union's progress and its ability to act cohesively in 2010.
- Int. Trade = situation of the global and national trade agreements and legislation in 2010.
- Market = market conditions in 2010 within the EU in relation to the state of the world market and how European companies compete in it.

Dimensions of scenario 3

- Tech 1 - low
- Tech 2 - low
- EU - failure
- Int. Trade - open
- Market - good

Macro trends

Developments in technology

Over the past five years, there have been no worldwide technological advances in the textiles and clothing industry. The European focus has been on reducing labour costs by delocalising production to developing countries. Lack of company attention to and investment in technological innovation has not been compensated for by research initiatives at industrial, national, or European levels.

The pace of technological development is therefore slow. Some improvements are seen within information and communication technologies in the area of supply chain management and B2B, but this relates mainly to relatively advanced IT systems applied to EDI and intra and extranet. Little B2C innovation has occurred since the middle of the decade. Few brands employ digital body measurements for customisation or virtual product 'try-on' due to the high cost of the technology involved.

There have been few breakthroughs regarding basic research in generic technologies such as nanotechnology, biotechnology, and chemistry, and very few commercially successful technology transfers to the textiles industry. The lack of commercial success is attributed to the fact that the development of new products has been far too technology-driven, disregarding essential disciplines such as design and marketing. Consequently, the earlier expectations of a future filled with intelligent textiles and functional clothing have not been fulfilled.

Developments in EU-related issues

The EU has not been able to reap the expected synergies from the enlargement of the European Union from 15 to 25 Member States, neither on a political level nor on an economic level. Ongoing political discussions have resulted in little common consensus, and agreements are made at the level of lowest common denominator. This has applied to the development of a common constitution, the role of the European Parliament, the roles of the different institutions, the number of commissioners, and the rules governing countries' level of representation in Parliament. Discussions about

the economy focus mainly on how to 'cut the cake'. The new Member States had anticipated a more prosperous future, and especially that structural funds would benefit the new - and most indigent - Member States. But the old Member States were inclined from the beginning to view the new as being an economic burden. In many ways EU enlargement replicates problems encountered during the reunification of former West and East Germany in the early 1990s.

The Union has become a fragmented body developing at different speeds. The formerly strong economies among the old Member States are still on top and the weaker ones remain at the bottom; some analyses even indicate that the gap continues to widen. A similar picture is to be found among the new Member States but at a slower pace. This makes it difficult to launch and operate cohesive initiatives regarding, for example business conditions, educational levels, or innovation and research strategies.

International trade and its impact on the labour market

The full implementation of the Agreement on Textiles and Clothing (ATC) took place on 1 January 2005, after a ten-year quota phase-out period. At the same time, the shifting political climate in the US regarding foreign policy meant that the US has been very active and successful in establishing a 'new world order' where free trade is dominant.

The opening of the world market offers good conditions for the European textiles and clothing industry. However, competition is intense as it is primarily based on low prices, and European products are matched in the home market by an influx of cheap products from all over the world.

Delocalisation of production from Europe to, for example, India and China accelerated following EU enlargement. As a result of attempts to harmonise the European market, labour costs rose in the new Member States, previously the preferred destination for West European delocalisation. The establishment of production facilities and the development of local competencies in China and India meant that these countries were in a position to develop their own textiles and clothing industries. By 2010 these countries were no longer the sweatshops of the world, but represented brands of their own.

Unemployment among low-skilled workers is a feature of the labour market in Europe. Delocalisation, not only in the textiles and clothing industry, but also in other sectors, combined with high labour costs, has resulted in massive job losses in the sector.

Market developments and consumer interests

The opening of the world market has in general been positive for western economies. European products have their share of the world market. In a globalised world, where people are bombarded with a continuous barrage of information, having a history and having roots has become a marketing theme, and European textiles and clothing brands are in a better position to take advantage of this theme than many competitors.

A market without quotas and trade barriers offers consumers a variety of European and non-European products to choose from. To attract consumers' attention, companies compete on prices, but also on whatever marketing package they think will please the consumers. It is generally the old, established European brands (e.g. British Burberry) that sell traditional-type products; but other marketing packages such as adventurous clothing and textiles, corporate codes of conduct, corporate fair responsibility, and environmentally correct products can also be successful.

Company-related aspects

Education and skills

The skills base in the European textiles and clothing industry is drying up as jobs are being outsourced and employees are retiring. Since most companies that downsize are caught in a cost game, very few have the opportunity to finance re-education or other activities that can make the transition easier for low-skilled employees. A minority of companies have been successful in offering some employees alternative jobs in service functions or upskilling them to perform higher-skilled jobs, but most low-skilled employees become unemployed without the prospect of a new job.

In some European countries - especially in the Scandinavian Member States - there is a tradition of cooperation among companies, local authorities and educational institutions in order to help the dismissed employees into new job careers. Unfortunately, the task is very difficult due to a general loss of low-skilled jobs in all sectors. In EU Member States without this tradition, the unemployment rates are even higher. The EU has not succeeded in establishing common initiatives to solve present - and prevent future - massive unemployment.

Companies compete for highly educated people for jobs within management, marketing, design, and product development. Due to the loss of jobs and the lack of innovation, the textiles and clothing industry has become a low-status sector and hence has difficulty in attracting employees with a higher education background. This is a serious problem in view of the reduction in population size. Companies are conscious of the importance of having apprentices so that young people will get to know the industry and its career opportunities. Generally speaking, the role of apprenticeship has been adapted from vocational training to the higher education systems, since most jobs in the textiles industry now require higher education. In some of the European countries - like Germany and Denmark - the use of apprentices is an integral part of the public educational system. In other countries, the use of apprentices is based on voluntary agreements among single companies and local schools.

Work organisation

The intense competition means that companies are trying to consolidate by focusing on one area or product in the sector. Diversified companies that specialise in many disciplines are disappearing and companies that specialise are growing in numbers. There is therefore a great diversity within the one speciality that a given company focuses on.

Product development, marketing, and management have remained in Europe. A few of the bigger companies remain fully vertically integrated. However, due to the tendency of concentrating in one speciality, most companies have become more horizontal. The opening of the world market means that many companies have subcontractors and suppliers in many parts of the world (called ‘spider-networking’).

Business strategies

Technological development is slow in the textiles and clothing industry worldwide. This is due to two factors: a lack of investment in research and development at company level, at industrial level and nationally; and the unfulfilled expectations and lack of commercialisation of technology transfer into the textiles and clothing industry. European companies therefore find their competitive advantages primarily in offering low prices and only secondarily in product development and branding.

Business strategy means finding the best solutions to lower production costs in order to become price-competitive. Delocalisation to low-wage developing countries is the preferred business strategy.

Innovation strategies

'Most European companies in the textiles and clothing industry have no innovation strategies', was the headline of the *Economist* in the first week of June 2008. The article went on to say that most new products do not differ radically from the last product the company 'innovated'. There is nothing value-added in the products, and there are no new functionalities and only rarely new materials. 'Product development' is a more suitable concept to describe the innovation strategy in most companies.

Product development is based on trendspotting, on analysing customers'reactions, and in foreign markets also on collaboration with suppliers.

Scenario 4: *Driving Miss Daisy*

In Scenario 4, product and process technologies are developing rapidly, but the 'engines' driving the development are located outside the EU. The EU has not been able to capitalise on the opportunities presented by EU enlargement in 2004. In the face of the rapid development of international trade, European companies persist in focusing on the European market, despite the fact that competition is growing from Asian enterprises.

Scenario dimensions

Five dimensions were identified as the basis for scenario building:

- Tech 1 = general and industry-specific use of ICT and industry production technologies in 2010.
- Tech 2 = fundamental technologies that can change production processes and textiles use in 2010.
- EU = the European Union's progress and its ability to act cohesively in 2010.
- Int. Trade = situation of the global and national trade agreements and legislation in 2010.
- Market = market conditions in 2010 within the EU in relation to the state of the world market and how European companies compete in it.

Dimensions of scenario 4

- Tech 1 - high
- Tech 2 - high
- EU - failure
- Int. Trade - open
- Market - bad

Macro drivers

Developments in technology

'A shoe is a shoe is a shoe, but it's mine!' Mass customisation has entered the textiles and clothing industry with around 20% of products - from clothing to home textiles - that are given a personal touch. Most brands with their own retail shops offer customers a 3D body scanning measurement service. Furthermore, they can provide a wide range of services in eRetailing, including the following services for customers:

- uploading their smart cards with, for example, their body measurements, shoe size, dimensions of living room or furniture;
- virtually try-on of products;
- online selection of materials, colours, patterns, threads, and buttons;
- delivery of goods to the shop or their home address within a few days.

The rollout of broadband and of wireless technologies in European countries has been instrumental in securing a well-developed digital infrastructure. This forms the backbone of a sophisticated collaboration between companies in different parts of the value chain. The 'Customised Clothing Infrastructure' (CCI) enables the production and distribution of custom-made garments with a close-to-perfect fit. Flexible production methods based on new production technology also play an important role in this 'customisation' paradigm.

But all is not well seen in the European environment. While technological development has made rapid advances, this also occurs outside the EU. Very few companies in the EU have R&D-based competitive positions. Not surprisingly, there are many different views as to why EU companies no longer represent the R&D cutting edge, and are now simply followers.

As more and more production was outsourced to Asia and the Far East in the early years of the decade, workers and managers there built up their competencies in relation to production processes and innovation. Slowly, the balance of incremental process and production innovation moved from Europe to Asia, as European companies focused on brand management and left production competences to their suppliers. When the new model of flexible production hit the market, many EU companies were unprepared and consequently lagged behind in the implementation and organisational management of these options.

In core research areas such as nanotechnology and chemistry, the weak position of EU companies is an issue of public concern. Companies and universities argue that Member States and the EU have not been ambitious enough in their funding of R&D activities in Europe compared to the US and the dominant Asian economies. The promises and ambitions of the Lisbon Strategy were a short-lived dream. Politicians say that companies have been too laissez-faire and short-sighted in their strategic aims and ability to assess their competitive positioning in the world economy. The bottom line is that the dynamic centres driving the 'implementation' of the new technologies in the textiles sector are located outside the EU.

Developments in EU-related issues

The enlargement of the EU from 15 to 25 Member States has not been easy. At a political level there have been debates concerning a common constitution, the role of the European Parliament, and rules governing national level of representation in the Parliament. On-going disagreements have resulted in conflicts among shifting alliances of countries. The majority of new countries have found the economic climate to be very challenging. Much of their

traditional production has now been outsourced to Asia. The structural funds and transition agreements have not helped these countries to build competitive positions in knowledge-intensive industries or the knowledge-intensive part of the global value chain of traditional industries. Both old and new Member States sense that the European project is collapsing and that Europe is progressing at several different rates. Regions that had a strong vantage position at the beginning of the decade are still strong, but at a global level they are no longer leaders and are certainly no longer able to act as Europe's engine. EU Member States are fighting hard to re-enter the top of the value chain in a number of industries. This is increasingly difficult given the fact that many recent graduates and top researchers emigrate to jobs located at centres of excellence in other parts of the world.

International trade and its impact on the labour market

After the less-than-constructive results of the WTO Ministerial Conference in Doha in 2003, most analysts felt that free and fair international trade would not be realised within the decade. But success in the 'war on terror' and a change in US foreign policy have created an international climate where sustainable global prosperity is a vision supported by free and fair trade. Initially, countries such as China and India benefited significantly from the trade agreements while western economies saw the remains of their low-skilled labour jobs being delocalised to low-wage regions. Technological development and the orientation towards flexible production gave some countries an opportunity to bring production back to Europe. This process has been hampered in most European countries by the fact that the workforce generally does not have the current skills needed to implement and operate complex production machinery. Instead, North African countries are the preferred partners for EU companies who base their business strategy on mass customisation and rapid responses to market development. This development has had a dramatic effect on many of the SMEs in the other segments of the European textiles industry. Companies have been closing down quicker than anticipated, and initiatives to create networks of SMEs or merge them have not been effective enough to withstand competition in the open markets. Larger companies have gone through several phases of mergers and consolidations. The healthiest part of the European textiles industry is the large textiles and clothing conglomerates that have the scope and scale to compete on the markets of their own choosing.

The effects of this development on the EU textiles labour market have been devastating for the low-skilled workforce. Very few are formally employed in the production of clothes and textiles, while at the same time there is a significant amount of 'informal' production based on low-skilled manual labour by underpaid, temporary employees with limited labour market rights.

Market developments and consumer interests

Although the global economy is progressing, the EU economies are in decline. This is reflected in consumer preferences in the home markets of EU textile companies. Interest in high and medium-priced fashion has been declining rapidly throughout the decade. Consumers focus more on price as the primary parameter when they shop. Intelligent clothes and technical textiles are very popular in some of the wealthier consumer segments, but most of the products sold here are not European. Most consumers take little interest in sustainable production methods or the country of origin of a product. Consequently, the EU market is no longer a stronghold for EU companies. Especially in terms of niche products, EU companies are being outpaced by foreign competition. Similarly, only relatively large EU companies can compete on markets outside EU. Free and fair trade has therefore proved to have short-term as well as long-term negative consequences for the EU textiles sector.

Company-related aspects

Education and skills

One of the reasons for poor SME performance is the inappropriate skills levels among management and middle management in a global market place where the locus of technological development is outside the EU. Initiatives to offer specialised courses did not take progress beyond words into action. Many SMEs lacked strategic vision or the internal capacity to identify and fund educational activities themselves. Another problem is the poor image the sector has among students, due to limited career opportunities, except within large corporations. Those few students who do possess the right mix of competencies are often tempted by job offers from Asian or US companies. An initiative is currently under way to integrate apprenticeship into higher education as a means of getting the educational system and industry to work together.

Work organisation

There have been very few significant shifts of practice in the organisation of work since the beginning of the century. For large companies, most changes are related to the outsourcing of low-skilled work and the increased focus on brand management, sourcing strategies, and ICT-based marketing analysis. A common organisational approach has been to become leaner, and in this process many resources has been allocated to the description and documentation of work processes in all functional areas from design to finance. Based on this documentation, good practice for work processes and knowledge management has been implemented. This has increased the reaction time and companies' opportunities to act rapidly and target a specific goal (e.g. new designs or new types of products), but the very lean and formal structures have not facilitated the kind of 'out-of-the-box' thinking and innovation that is prevalent in large companies outside Europe.

Work organisation in SMEs can be spilt into three categories. One category is made up of traditional SMEs who are working as they have been for the last 30-40 years and are actively using this as 'brand' value and an indicator of high quality. Companies in this segment are typically located in countries with a strong tradition of craftsmanship within the textiles sector, such as France, Italy and the United Kingdom. The next category is composed of SMEs (often entrepreneurs) who work with some sort of high-tech approach. Their work organisation is often highly flexible and to a large extent virtual since they collaborate with centres of excellence all over the world to develop their products. The third category is composed of companies that are entrenched in a competitive war based on price and flexibility parameters, since they have no other unique parameters to brand themselves with. From an industry perspective, this group is still the largest but its numbers are declining rapidly as companies outside EU often offer better price and flexibility.

Business strategies

At industry level, SMEs have experienced a difficult time during the last five years and there is little to indicate that this will change, at least in the short term. The most successful SMEs are those niche-oriented companies which rely on special craftsmanship or a unique brand for a very loyal group of customers. Another successful niche position is characterised by technical textiles and/or intelligent clothes, where a few European companies are doing very well; there are, however, fewer of these companies than expected five or ten years ago. The much debated networked company strategy is not something that many SMEs have been following. The European Commission and several Member States organised initiatives to advance networked collaboration in the textiles sector, but very few of these initiatives are successful. Companies who participated in these initiatives generally evaluated them as being too much talk and too few euros and consequently involving too little business. The larger companies have pursued a strategy of combining scope and scale through mergers and acquisitions. This enables them to enter price-based competition (if necessary) and to build brand-based synergies among their numerous product varieties. Marketing and sourcing are key areas for these larger EU companies, who tend to accept the role as 'followers' of R&D-based innovation in product and process technology.

Innovation strategies

As noted earlier, very few companies possess innovation strategies. The large conglomerates base much of their product development on user-driven innovation and rely heavily on ICT to do this. This approach allows them to maintain their position in the competitive landscape, but rarely enables them to capture significant market shares from other companies and/or enter new markets. Niche-oriented high-tech driven SMEs allocate all of their resources to a few promising areas. They often collaborate with universities or other research institutions for product development. As the centre of power of fundamental research disciplines has shifted away from Europe, an increasing number of niche companies look to universities outside EU when they need strong R&D partners. Naturally, the industry is worried that this may lead to a migration of the knowledge-intensive SMEs that would greatly benefit from localising in the new knowledge-intensive regions of the world. So far, the use of advanced ICT that enables highly sophisticated communication and interaction has been an important factor in the retention of SMEs in the EU, as this opens opportunities for virtual collaboration with R&D environments all over the world.

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