Accelerating the Development of the Protective Textiles Market in Europe

REPORT OF THE TASKFORCE ON PROTECTIVE TEXTILES
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Lead market in technical textiles for intelligent personal protective clothing and equipment

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MARKET DEFINITION AND CONTEXT

1. DESCRIPTION OF THE MARKET

The market of technical textiles for intelligent personal protective clothing and equipment (PPE[1]) comprises **clothing and other often textile-based systems and accessories** whose main function is to **protect the user**. These products are used under very different circumstances:

- Defence personnel and military forces requiring high levels of specific protection (e.g. nuclear, biological, chemical) for intervention in diverse **war scenarios** or in the event of **terrorist attacks**.

- Professionals and emergency services in need of protection from health and safety risks arising from activities in **hazardous environments or dangerous situations**.

- Hospitals or manufacturing environments where insulation from emissions of the human body and of other accessories should provide effective protection from **bacterial contamination** of patients, health care professionals or the goods manufactured.

In addition to the development and manufacturing of products, a significant part of economic value creation and employment in this market is related to **service industry** which ensures distribution and correct use as well as professional maintenance and care, critical for preserving protective functionalities and ensuring optimal performance over the whole life-cycle of the products.

Consumers

The main users and consumers for PPE products are military or civil security personnel, emergency workers (fire-fighters, rescue operators) and professionals that regularly encounter hazardous working environments (characterised by heat, cold, foul weather, low visibility or presence of chemicals, toxic gases, high-voltage electricity, radioactivity, sharp, heavy or moving items). Hospitals and industries requiring clean room manufacturing such as food, pharmaceutical and microelectronics are also heavy users of such products.

The share of public procurement is close to 100% in some use fields like defence, civil security or emergency operations and at least significant in areas like health care, energy or infrastructure works. In addition, many protective clothing features have found wide-spread application in large consumer markets like sports and outdoor clothing and footwear.

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[1] All references to PPE in this document are not restricted to the legal definition given in Article 1 of Directive 89/686/EEC but refer to a broader concept, encompassing the above mentioned products and uses.

Geographical dimension and industrial structure

On a global scale, the main competitor of Europe is the US, where very strict safety and security requirements in professional and civil applications together with a more developed liability culture drive market demand for innovative PPE products. In addition, new technological developments for functional or intelligent garments and PPE often originate from US government-funded defence research. Demand pull for innovative solutions in the military field can be largely attributed to government policies which play a determining role to mobilise support from private and public funds.

The majority of PPE-related semi-finished and finished products like yarns, fabrics and clothing consumed in the European market are also produced in the EU. For certain PPE products some production steps (usually the garment making operations) occur in countries of the Pan-European-Mediterranean area (e.g. Morocco, Tunisia, Turkey, Ukraine etc.); however higher value adding operations like finishing as well as distribution, rental and care are maintained in the EU. Imports of ready-made PPE products remain confined to low to medium quality commodity products and import growth is expected to remain constrained due to the high quality, functionality, reliability and service requirements for PPE products.

Both protective textiles as well as ready-made protective clothing products made in the EU are exported outside the EU, where demand for innovative high-quality EU-made PPE products exists. This trend is set to strengthen on account of generally rising civil security and safety at work standards across the globe.

Manufacturing of protective textiles and clothing is distributed across Europe. Generally speaking textile finishing operations tend to concentrate in Central and Western Europe and garment making is more widely found in Southern and Eastern Europe as well as some neighbouring countries in the Pan-Euro-Med zone; however, some small scale, specialised garment making operations are present in countries in North-Western Europe.

The general partition between the main world regions with regard to the global market opportunities and production for PPE products is depicted in the table below:

Geographical importance in the PPE market value (consumption)[2]			
Europe	Asia	Americas	Rest
30%	27%	37%	6%
Geographical importance in the PPE market value (production)[3]			
35 – 40%	included in rest	30%	30-35%

[2] Source: Euratex

[3] Source: European Safety Federation

2. MARKET POTENTIAL

2.1. Present situation and forecast for the market

The **size of the EU market** for personal protective equipment products (PPE) is estimated at approximately **8 billion euros**[4]**,** 85% of it consumed in the former EU15. Around 200,000 jobs are directly or indirectly related to the PPE industry in the EU. (See further details in annex on market analysis).

The turnover of **service operations** related to PPE in the EU (work wear and healthcare segments) can be estimated at **1.5-2 billion euros**[5], with 35000 to 40000 employees.

In the years 2000, the world PPE market has been growing at a rate of more than 3.5% per annum. This growth was accelerated recently and it is foreseen that it will remain above the early-2000 years growth for the 10-15 years to come.

The value of the extra-EU market doubles that of the European one, offering possibilities to increase EU exports substantially. The new EU Member States in Eastern Europe, Ukraine, Russia and Asia are the fastest growing areas (see further details in annex on market growth analysis); the access to markets in Asia is restrained both in the areas of exports and of public procurement. If access to such markets is improved, **EU exports could grow by 50% over the next 5 to 10 years.**

Technological developments originating from high-tech domains such as space industry and military use have a well-known potential to be transferred to the other domains. **"Spill over" markets** for these innovations exceed largely the size of the original PPE market including **non-wearable interior textiles** (for buildings or transport vehicles) and **consumer products** (such as garments for sports, outdoor wear or fashion). Thus, new applications in these fields represent a real potential for an **overall extensive market**, producing a clear positive impact on the modernisation, competitiveness and structural adjustment of the sector.

State of the art in technology

Research in the field of textile material technologies aims at giving textiles the capacity to perceive selected aspects of the environment, reacting, for example, to differences in temperature, electrical or magnetic fields, lighting conditions or ambient colour. A new generation of reactive fibres or fabrics incorporate, for instance, flexible and imperceptible metal nanofibres that will confer sensorial electronic conductivity to textile materials.

Current research on smart textiles[6] focuses on the integration of advanced fibres and materials at the fibre core, microelectronics components, user interfaces (e.g. sensors, displays, speakers), power sources and embedded software. In addition, ongoing EC-funded research projects address user needs and expectations in terms of user-

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4 Source: Euratex / European Safety Federation / Frost&Sullivan

5 Source: Euratex

6 Further information available in the website of Smart Fabric & Interactive Textile (SFIT) - http://www.csem.ch/sfit/

friendliness/functionality, cost, fabric resistance, comfort, robustness and reliable and accurate performance. The field is growing very rapidly in conjunction with the wearable electronics, platforms, networked sensors, etc. One of the challenges today is to fuse the research work and consumer insights on Smart Clothing and create multidisciplinary teams of product designers and engineers.

Research projects with high potential impact in protective clothing and equipment are being currently funded under the 6th Framework Programme. The INTELTEX project seeks to develop novel sensitive and functional conductive polymer composite based textiles not only for protective clothing but also for construction and medical applications. With the purpose of providing increased safety and a drastic reduction of environmental pollution, the DIGITEX project combines the development of novel compounds, chemical process and textile technologies with human physiology, advanced management and process controls to develop a new finishing technology based on the integration of nanoparticules in fluids to be jetted on textiles for antiflame, chemical, bacterial proof and other functionalities.

The integrated project ProeTEX[7], also funded by the 6th Framework Programme, is developing textile and fibre based integrated smart wearables for emergency disaster intervention personnel (fire-fighters and civil emergency workers), improving their safety, coordination and efficiency. An additional closely related system will be developed for civilians injured in such events aimed at optimising their survival management.

2.2. Development of demand and added-value.

European based customers for protective clothing and equipment are among the most sophisticated and demanding users; specifications for protective products to be marketed in the EU are defined by various pieces of legislation and standards that are regularly adapted to technical progress[8]. Moreover, in order to achieve an optimal balance between protection and performance, improved ergonomic and comfort properties are becoming essential.

Building on European leadership in terms of quality and innovation, the textile industry and scientific community are developing new advances in the fields of speciality fibres, functionalisation of textile materials and integration of micro-electronic components into smart textiles as well as in production technologies, including prototyping and customisation.

EU industry expertise in the fields of polymer technology, specialty yarn and fabric manufacture, textile finishing and service supply will play a pivotal role in reinforcing EU industry's leadership in new generation PPE products. Europe is leading in quality and research activities, with other parts of the world trying to catch up. It is therefore important to strengthen the bridge between research, industry and users to avoid that the commercial results of EU research be harvested elsewhere.

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7 Further information available in the website of the project: http://www.proetex.org/

8 See chapter 4.1 for more details on the regulatory framework

The generation of added value in the field of technical textiles, particularly in the area of protective textiles, requires a multidisciplinary approach which integrates a great variety of disciplines, ranging from basic material knowledge (chemicals and fibres), advanced chemical and mechanical processing techniques (incl. nanotechnology), nano or microelectronics to physiological and behavioural knowledge of human actors in hazardous environments. Thus, the development, manufacture and maintenance of innovative protective equipment becomes an interdisciplinary challenge that provides fresh impetus and new opportunities for the textile and clothing sector but also for other industries and service sectors.

Quality and innovation are traditionally competitive advantages of EU textile products compared to those originating from other world regions. In the technical textiles area rapid productivity gains have maintained a degree of competitiveness, which has been enhanced by innovative products and processes. In addition to enhanced product performance related to technological developments, these innovative products require comprehensive supply services (sales, logistics, care, maintenance and disposal) for an optimised life-cycle as well as advice to end-users on the correct selection and use. This close interlink of products and services could offer an additional competitive advantage to EU producers over manufacturers situated far away from the point of sale and use.

Vision for the market

In the short term the market for PPE products is expected to grow with a relative stability of market forces and actors. There is a positive upward trend underpinned by favourable economic conditions, a rising awareness of personal protection and some catch-up demand in the new Member States.

Furthermore, growing security concerns, brought about by developments in the world scene over recent years, are expected to play a determining role, pushing demand for a new generation of protective products. European countries are increasingly called to participate in peace keeping operations in very different scenarios from geographic, climate and threat potential point of view. Growing demand on military forces protective clothing and equipment adapted to these diverse circumstances is therefore expected. Moreover, other countries with a significant participation in similar operations in the framework of the United Nations will increasingly require the same kind of protective clothing and equipment.

The uncertainties around terrorist attacks, hazardous environments, contamination risks, together with an increased protection and safety awareness from defence and health personnel, workers and citizens in general, will drive demand for more sophisticated solutions in the field of protection. The **demand drivers**, both in the EU and in third countries, appear to have the potential to **bring about significant growth in economic terms as well as increased exports**.

A **proactive, coordinated approach** should be adopted involving public authorities, research community, industry and standardisation bodies. The programme for this approach would consider the uptake of high performing innovative products, the creation of the right conditions to **boost demand** and **bringing forward the realisation of market potential**.

EU industry and services could thus benefit from being the best performers in this area and become the **world standard setter**, leading **regular product innovation cycles** with high knowledge and service content of products, **automated manufacturing**, closely **cooperating supply chains** and widespread **customisation** of PPE products.

Furthermore, EU industry leadership in this domain could **spin-off to large-scale markets** such as those of interior textiles and consumer products, providing a strong stimulus and **contribution to the structural adjustment** of the EU textiles and clothing industry.

3. STRATEGIC AND SOCIETAL INTEREST

Increasing concerns about **security and safety** act as strong demand for better performing products and are the underlying societal drivers for the market of PPE.

The **internationalisation of military and emergence interventions** has resulted in European military forces and civil services facing emerging risks related to climatic conditions and new weapons. Soldiers and emergence workers require thus better performing clothing and equipment able to effectively isolate them from the environment as well as provide reliable NRBC (nuclear, radiation, biological, chemical) protection.

In this respect, a high level of competence and excellence in textile and multidisciplinary research is crucial to respond quickly to security needs with strong quality and innovation capacity. Therefore, a European textile industry able to ensure reliability of supply and confidentiality related to military products is of strategic interest to EU's security as well as to building a competitive European technological and industrial base for defence.

The steady evolution of health & safety requirements to respond to the emergence of new risks at work makes it necessary to develop new innovative products and to ensure their reliable quality. The new Community strategy for 2007-2012 on **health and safety at work** sets out the need to identify situations of exposure and to design preventive solutions and innovative technologies to deal with new risks[9]. Europe's labour force is increasingly more qualified and skilled, attaching more importance to the adequate management of risks at the workplace and demanding comfort and aesthetics in addition to protective properties.

Evolving demand for high added-value protective textiles offers possibilities for the redevelopment of a part of traditional textile and clothing manufacturer, contributing thus to the **modernisation of the manufacturing industry**. These opportunities could extend from the domain of PPE clothing and equipment to **increasing the knowledge content and added-value** of interior and consumer textile products.

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[9] http://ec.europa.eu/employment_social/emplweb/news/news_en.cfm?id=209

4. IDENTIFICATION OF POLICY INSTRUMENTS

Despite the significant developments achieved by the EU industry in the area of protective textiles, that put it in a leading position at world level, further steps need to be done in order to secure, strengthen and extend its competitiveness.

The transfer of knowledge from the research community to the industrial sphere is not always fully effective and new prototypes face difficulties in reaching the commercial stage. The relatively fragmented industrial structure, with predominance of SMEs on most steps of the PPE value chain; on the one hand ensure the flexibility required in the production area but on the other may be a barrier to developing innovative high value-added products. Shortcomings of SMEs derive traditionally from insufficient human and financial resources and could be overcome by collaborative innovation in close supplier-customer partnerships, both private-private and public-private. A **systematic, effective dialogue** involving not only the research and business communities but also users and legislators, should be established with the aim of facilitating **further technological breakthrough** and orientating the market towards more innovative products. This dialogue would be enhanced by developing on-line information and collaboration tools where researchers, suppliers, legislators and users of PPE products could exchange information on technology developments, user requirements and regulatory needs.

Cluster approaches facilitate a close cooperation between businesses, research communities and end users. By enabling long term partnerships in developing new materials, manufacturing processes and organisational concepts, such structures could provide an opportunity to improve exchanges between companies, technology centres and users. Thus, they ensure technological maturity, industrial know how and early customer feedback when innovative products and applications are developed. Moreover, clusters offer a platform to overcome resource limitations due to the fragmented structure of industry. National and regional innovation policies could play a significant role by **encouraging the development of such clusters**.

Only by coordinating the efforts of European industry and public authorities at EU, national, regional and local level will it be possible to overcome geographical, industrial and sectoral fragmentation. A common approach is thus essential to reinforce the existing competences in the fields of research, innovation and industrial technologies for EU industry to thrive in the PPE market on a global scale.

4.1. Regulatory framework

Most of these products are covered by Directive 89/686/EEC on Personal Protective Equipment[10], which is supplemented by directives on the protection of health and safety of workers; in particular, Directive 89/656/EEC on the use of protective equipment by workers at the workplace[11]. Personal Protective Equipment specifically

[10] http://ec.europa.eu/enterprise/mechan_equipment/ppe/cons_en.pdf

[11] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989L0656:EN:HTML

designed and manufactured to be used by military forces and law enforcement personnel is excluded from the scope of the PPE Directive, although fire-fighters equipment is covered by that Directive even when used by fire-fighters that are part of the military. Protective clothing used by healthcare professionals to protect themselves is subject to the PPE Directive, but equipment used to protect patients is regulated by Directive 93/42/EEC on Medical Devices[12].

In line with the principles of "New Approach to Technical Harmonisation and Standards"[13], Directives 89/686/EEC and 93/42/EEC lay down the essential user safety requirements which PPE and Medical Devices must satisfy respectively, leaving technical specifications to harmonised European standards drawn up by the European standardisation bodies. Accordingly, products which are in conformity with harmonised standards will be presumed by Member States to comply with the essential requirements laid down by the Directives.

While in general, this regulatory framework seems adequate for protective clothing products, an area of concern is the enforcement of existing legislation in order to ensure that only products providing high level of protection are placed on the market. The common rules must be respected both by products manufactured in the EU and by products imported from third countries.

Experience has shown certain deficits in the implementation and enforcement of Community technical legislation. Within the framework of the **revision of the New Approach to technical harmonisation**, the Commission adopted on 14 February 2007 its proposals for a Council and European Parliament Regulation and Decision. The proposals complete existing legislative tools by putting forward reinforced Community policies on market surveillance and accreditation.

4.2. Standardisation

Technical standards are thus a crucial element defining concrete performance characteristics and technical specifications to be targeted by manufacturers in order to ensure compliance with European legislation. Such standards should be performance-based and technology-neutral in order to foster innovation. In addition, although not directly related to the legal framework of the PPE and Medical Devices, several Technical Committees within CEN take new initiatives and work in technical standards, as in the fields of UV protective properties or test methods for the flammability of textiles.

Most products subject to the PPE Directive are subject to mandatory third-party certification. Manufacturers of PPE for high risks are also required to have a quality system approved by an independent third-party body. In addition, purchasers frequently opt for voluntary certification as a key pre-selection criterion of suppliers to establish long term business relationships. Generic management system standards related to quality assurance or environmental performance of companies, such as ISO

[12] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31993L0042:EN:HTML

[13] http://ec.europa.eu/enterprise/newapproach/index_en.htm

9000 and ISO 14000, are spreading as a means to demonstrate that an organization has the necessary structures to manage its activities.

Notwithstanding existing standardisation work, some areas require attention and increased efforts. In general, a stronger involvement of textile manufacturers and end users to drive practicable solutions would be desirable; the **participation of SMEs**, in particular from the textile industry, **needs to be fostered** in order to increase their full involvement in the development of standards in the area of PPE.

Innovative products very often involve added value in the form of new functionalities for which no standards exist. Compared to technological progress, the development of standards for measuring and testing new functionalities is rather slow and as a result, information on performance beyond minimum legal requirements is not readily available although it could drive purchase decisions of potential customers demanding the best available products. Those users prepared to pay for higher performance products should have easier access to such information.

Support measures for innovation and technological development in the field of personal protection could take into account pre-normative research and standardisation initiatives to translate advances into agreed performance targets and other alternative deliverables that could accelerate standardisation procedures. A proactive approach and leadership in corresponding standardisation at European and international level can give European companies a crucial head start to benefit from growth and industry consolidation in markets for innovative high quality protective clothing and equipment worldwide.

Industry, involving standardisation bodies and national authorities should **accelerate the development of new standards** in the field of PPE. Alternative standardisation deliverables such as Workshop Agreements (CWAs) and informal standards[14] should therefore be used more intensively. Besides accelerating the process, these Workshops would extend the use of agreed performance targets and other alternative deliverables, **providing performance information** to users interested in innovative products.

4.3. Public procurement

The public sector is a very significant purchaser of PPE products acquiring functional protective clothing for fire-fighters, emergency services, police forces and the military sector or for health care professionals in public hospitals.

While no precise data are available for protective equipment, a rough estimate of the turnover that public markets represent for the textile and clothing industry is of the order of 10 billion euros[15]. Public authorities are therefore crucial customers with respect to the development of a new generation of PPE products.

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[14] Such informal standards could be either precursor deliverables in the formal process of standardisation or alternatives developed by fora and consortia other than recognised standardisation organisations; both have a shorter development period

[15] Source: Euratex

However, very often budgetary constraints of public entities result in short-term price focused purchasing that sacrifices other, long-term criteria. The access of public purchasers to knowledge on technology developments is crucial to take into account other important elements for long-term profitable public purchasing, especially in the case of technological products and services. In order to **facilitate such access** and to **optimise the purchasing procedures** of PPE products, training material and cooperation programmes should be developed. These material and programmes should ensure public buyers are kept up to date with the latest technological developments, including IPR protection and they exchange best practices on purchase procedures of PPE products.

Against this background, industry experts prepared in 2005 a public procurement awarding guide for the textile and clothing sector with the financial support of the European Commission[16]. The aim of the guide is to aid those involved in public procurement awarding procedures for the sector to take into account criteria other than price alone. Furthermore, the European Commission, under the Pro Inno Europe initiative, has recently also developed and published a guide on dealing with innovative solutions in public procurement.[17]

Among other recommendations, the guides highlight the importance of selecting "the right product at the right price", meaning that the most economically advantageous offer could take into account price, quality, environmental and social criteria. Moreover, the guide proposes that public tenders could specify the need by reference to performance or functional requirements and accept variant bids giving suppliers the opportunity to propose innovative solutions.

Incentives for innovative solutions could be included in tenders for public purchases of protective clothing and equipment. In this respect, the need for a cultural shift in purchase policy was pointed out at a recent conference on textile and clothing sector and public procurement[18]. It was proposed that public tenders should express product requirements and awarding criteria in terms of performance or problem solving rather than give a limited definition of technical specifications that often restrict the possibilities to present innovative proposals.

Directive 2004/18/EC[19] on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts, provides the EU legal framework for public procurement procedures. It has to be stressed however that protective equipment purchases are decided at national, regional or local level where diverging practices make it difficult for globally operating European firms to profit from investments in research and development of new products.

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[16] This guide was made by Promptex (the European Federation for the Promotion of Procurement Contracts in Textiles and Leather) with the support of the European Commission's Directorate General for Employment, Social Affairs and Equal Opportunities. For more information see http://ec.europa.eu/enterprise/textile/documents/public_proc_en.pdf

[17] http://www.proinno-europe.eu/doc/procurement_manuscript.pdf

[18] For more information see http://ec.europa.eu/enterprise/textile/conf_tc200701_en.htm/

[19] http://eur-lex.europa.eu/LexUriServ/site/en/oj/2004/l_134/l_13420040430en01140240.pdf

The **contents of the guide** on public procurement and innovative solutions should be **disseminated** among public purchasers of protective clothing and equipment. Furthermore, cooperation between and within Member States should be encouraged **to exchange best practices** with a view to **pooling their resources** to overcome fragmented procurement.

DG Enterprise and Industry has also commissioned a study with the aim to evaluate the progress made since the 2004 study on SME access to public procurement and to assess the effectiveness of policies and practices introduced since. Results of the study will be available by the end of 2007; further best practices in favour of SMEs could be identified and made available to the public as a result of this study.

Public procurement in the defence sector has specific characteristics as regulations governing defence-related activities are not homogeneous at EU level but fragmented at national level. The Commission will present a comprehensive defence package to bring the benefits of the single market to the defence-sector. As a part of this initiative, a directive on defence procurement (under preparation) seeks to introduce more transparency and flexibility while enhancing the efficiency of public spending. Purchases of certain types of protective clothing and equipment, corresponding to sensitive non-military security equipment, might fall within the scope of this directive and be thus excluded from the general directive on public procurement (2004/18/EC).

4.4. Intellectual property rights

Intellectual property rights in the textile and clothing business in general, and protective clothing in particular, relate not only to technical know-how in the form of patents but also very importantly to copyright on registered and unregistered designs, which are still all too often illegally copied.

Procedures for the protection of IPR are often perceived as burdensome by the business community, especially by smaller companies. The **promotion of the sectoral IPR Awareness action** under the Competitiveness and Innovation Programme (CIP)[20] is crucial to overcome the current resource limitations and perception of IPR as a burden among certain manufacturers, public buyers and users of protective clothing and equipment.

In this context it is worth mentioning that in December 2006, the Council adopted Regulation 1891/2006[21] concerning the international registration of industrial designs which allows companies to obtain protection of a design throughout the EU and in third countries by linking EU design registration system with the international design registration system of the World Intellectual Property Organisation (WIPO). The Regulation provides for a simplified procedure which will not just save costs but will also enable EU businesses to safeguard their design rights in third countries and should impact positively also the textile and clothing industry's research and innovation activities.

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[20] http://ec.europa.eu/enterprise/funding/grants/themes_2007/calls_prop_2007.htm

[21] http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_386/l_38620061229en00140016.pdf

In conclusion, measures taken by public authorities to make the protection of intellectual property rights more effectively enforced as well as easier and more affordable would encourage European industry to invest and innovate in this field.

4.5. Access to finance

Apart from a number of larger enterprises in fibre manufacturing and textile production and finishing, most industrial players in the personal protective equipment market are small and medium companies. This structure implies a number of disadvantages in terms of relatively low profit margins, less predictable cash flows or lack of financial management capacities that make access to finance challenging. This is even exacerbated by the negative image of the sector in the eyes of potential investors.

In a survey carried out in 2006 within the Europe Innova NetFinTex project[22], close to 50% of polled companies investing in innovation in the textile and clothing sector, cited the sector's negative image as a major reason for the difficulties in accessing finance for such investment. Final results of the project are scheduled to be available by July 2008.

Measures to better link innovative enterprises and users with potential investors should focus on promoting the innovation and market potential of new textile-based protective products and to develop support structures and guidance that bring together entrepreneurs and investors. Public-Private-Partnerships schemes, through risk sharing facilities based on co-financing or guarantee mechanisms, could also contribute to overcome the risk aversion among the private investment community.

A blueprint for a **collaborative PPE product development** process, involving manufacturers and users, with integrated **public-private financing** and risk sharing facility could be developed in a first stage. At a second stage, a flagship pilot project could be envisaged.

5. CONSULTATION AND VALIDATION

The recommendations of the High Level Group[23] on textiles and clothing highlighted the crucial role of research and innovation and the technical textile domain to improve the competitiveness of the textile and clothing industry. In its second report[24] of September 2006, the Group states the need to identify niche markets to which foreign competition is still less adapted and where European companies can develop and expand by using new technologies, fibres and processes in functional, innovative ways. As a response to these recommendations, several permanent consultation mechanisms such as the European Technology Platform for the Future of Textile and Clothing[25] (ETP-FTC) and the Innovation Panel in the textile sector were put in place.

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22 http://www.europe-innova.org/index.jsp (link "Financing Networks")

23 http://ec.europa.eu/enterprise/textile/high_level_group.htm

24 http://ec.europa.eu/enterprise/textile/documents/hlg_report_18_09_06.pdf

25 http://www.textile-platform.org/

The concept of a lead market in the field of protective textiles was originally elaborated by stakeholders from academia, research and industry involved in the European Technology Platform for the Future of Textile and Clothing. During a first consultation stage, in order to answer to the questionnaire circulated by the Commission in July 2006, stakeholders identified three areas with potential to be turned into lead markets and provided a detailed answer proposing the next generation of intelligent personal protective clothing and equipment. The textile proposal was approved by the Governing Council of the platform in October 2006 and publicly presented at a joint seminar with President Barroso, Commissioner Potočnik and leaders of European Technology Platforms that took place in December 2006.

As regards the Textile Innovation Panel, it was established in 2006 in the framework of the Europe INNOVA initiative to identify and validate factors that influence the potential for innovation of the sector. The panel has met three times to discuss emerging issues related to innovation; during the second roundtable, based on a set of predefined questions, experts discussed lead market opportunities for the sector, among which the next generation of intelligent personal protective clothing and equipment[26].

Major stakeholders in the area of textile industry,[27] protective equipment manufacture[28] as well as users of PPE products and public procurement experts[29] in the field have also contributed to the report providing data for a detailed market description and suggestions to support the development of the market. There is general agreement among consulted stakeholders that this is an area presenting a significant potential for global market leadership of European companies based on important scientific and technological development. Industry, academia and research stakeholders agree on the need to stimulate cooperation between companies as well as with purchasers and users, on the importance of reliable technical information to drive purchase decisions and on the leverage effect of public procurement on market demand for innovative goods.

Public authorities, purchasers and users participated in January 2007 at a conference organised by the European Commission on the textiles & clothing sector and public procurement[30]. The event devoted a session to public procurement and innovation, where users and innovative companies presented their views, some of which are integrated in the present report.

EU textile and clothing industry is strongly committed with the project and, together with the research community and academia, have actively contributed to the analysis and proposals. Industry recognises the project as a progression towards stimulating more sophisticated market demand where EU industry would be in a privileged position, developing a competitive advantage with potential for expanding these innovations to large spill-over markets.

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26 http://www.europe-innova.org/index.jsp?type=page&cid=7548&lg=en

27 http://www.euratex.org/

28 http://www.european-safety-federation.org/

29 Promptex: European Federation for the Promotion of Procurement Contracts in Textiles and Leather

30 Proceedings of the conference available at:
http://ec.europa.eu/enterprise/textile/documents/conf_tc200701_proceedings_en.pdf

6. RECOMMENDATIONS

- At present, there is not enough indication of market or normative failure to justify immediate intervention in the **regulatory framework** beyond the revision of the framework for the New Approach to technical harmonisation.

- **Standardisation**, as a crucial element to drive the demand of informed buyers and users, requires improvement.

    - To foster the participation of SMEs, in particular from textile industry, in order to increase their full involvement in the development of standards in the area of PPE.

    - Industry should lead cooperation to accelerate the standardisation process and to extend the use of agreed performance targets and alternative deliverables.

- Good practices in **public procurement** should play a determining role in triggering market demand for the most innovative products.

    - Initiatives to disseminate the guide on public procurement and innovative solutions amongst public purchasers of protective clothing and equipment.

    - Training programmes to facilitate the access of public buyers of PPE products to information on the latest technological developments.

    - Develop a best practice guide for public procurement of innovative PPE products with high technological content, including protection of IPR.

- Simplified and more effective **protection of IPR** is necessary to stimulate investment and interest in innovative products.

    - Public authorities should ensure the effective legal protection of patents, utility models, designs and trademarks.

    - Adequate promotion of the Sectoral IPR Awareness action within the framework of the IPR Awareness and Enforcement project under the new Competitiveness and Innovation Programme CIP

- **Access to finance** should be improved by more effectively linking investors and PPE stakeholders

    - Create a blueprint for a collaborative PPE product development process involving the manufacturing and service value chain as well as public sector customers supported through a public-private partner financing scheme. A pilot project with involvement of the European Investment Bank (EIB) or similar public sector financial institution could be envisaged as a second phase.

- Other areas that require consideration focus on **cooperation** as a key element for the acceleration of **technological progress** and on **market access** for European PPE products:

- Devise a strategy for an anticipatory approach to products and markets bringing together the main actors. Organise a thematic conference with a wide range of stakeholders and develop an on-line information portal and collaboration tool for researchers, suppliers, legislators and users of PPE products.

- Encourage the development of clusters and other forms of local collaboration, with the participation of purchasers and users.

- To improve access to markets of third countries, in order to fully exploit the growth potential of European PPE exports, by means of the ongoing WTO/DDA negotiations and bilateral free trade agreements[31], for which the Council recently mandated the Commission to open negotiation..

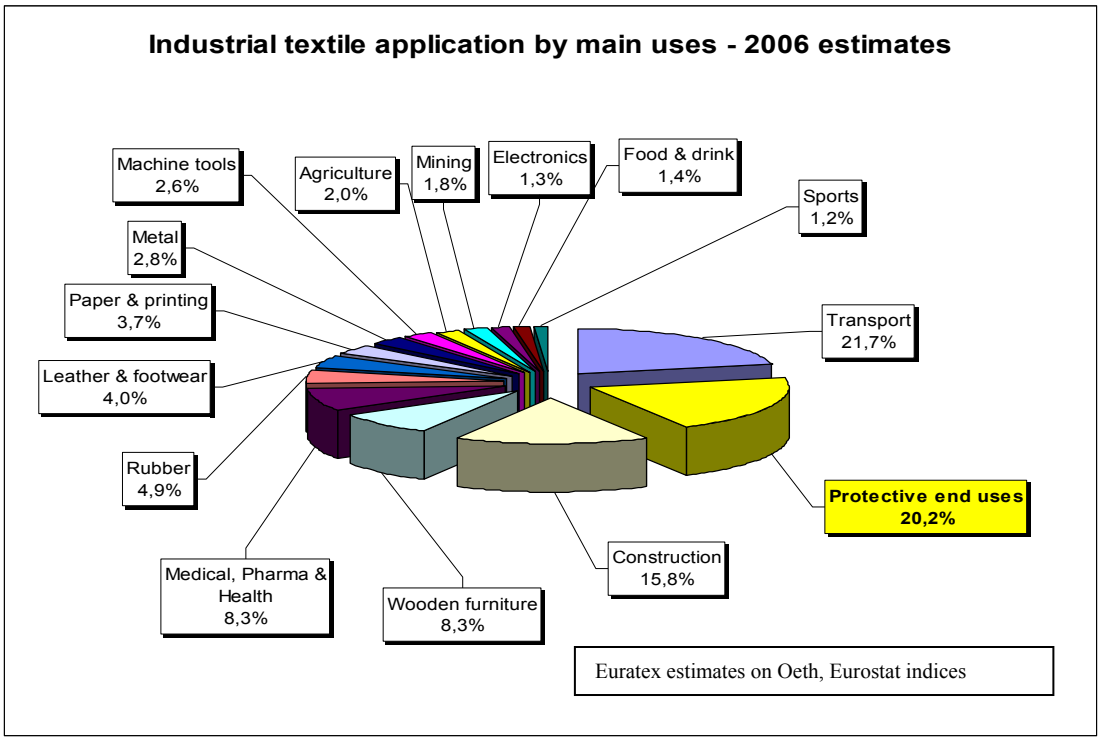
[31] With India, South Korea, ASEAN, Ukraine, Andean Community, and Central America

ANNEX

7. MARKET ANALYSIS[32]

7.1. Present situation[33]

The EU-25 market of the textile industrial applications is estimated at 39.4 billion euros in 2006. This is a conservative estimate as there is a lack of clear understanding of the size of the new member states market for industrial applications.



Areas with the greatest share in value in the EU and the world:

◊ Foul weather clothing (driven by non-industrial end uses: leisure and active wear); fire resistant clothing; medical (nonwoven) protection; high visibility; ballistic & cut protection; disposable chemical protection[34].

EU exports

◊ Extra-EU The EU25 exports of "PPE" amounted to more than 3 billion euros in 2006, which represents an increase of +6.6% as compared with the previous year.

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[32] Source: Euratex

[33] Due to the variety of manufacturers of PPE products and the absence of corresponding statistical categories, key figures for this market can only be in the form of gross estimates.

[34] The uses mentioned account for more than 80% of the market in value

Employment

The number of full time jobs concerned has been estimated taking into account the average productivity and the direct (production) and indirect (storing, handling, control, management) impact:

◊ Specialised textile The annual productivity per worker was estimated at 70,642 m² per year in 2003 in the cotton weaving chain and at 17.27 tonnes per year in the sector of knitted fabrics. Thus, a total of 5,164 jobs are concerned by the production of these EU exported textiles.

◊ Clothing The total number of employee working for the production of "PPE" can be estimated over 190000.

Distribution & Service

The various service operations related to professionally used textiles and clothing (distribution & logistics, rental, cleaning, maintenance and recycling) have an approximate turnover of slightly more than 10 billion euros and are estimated to employ in excess of 200,000 people in the EU. It could be conservatively estimated that a turnover of 1.5 to 2 billion euros and an employment figure of 35,000 to 40,000 people are directly related to 'in-service' PPE products.

7.2. Market growth analysis

Areas with greatest potential of growth

◊ Geographical East Europe (new member states, Russia and Ukraine); North East Asia (China); South-East Asia, South Asia, South America.

Asia in general will be the fast growing and most attractive area, but competition from local competitors originating mainly from Japan, Korea, China and Taiwan as well as the USA will be very strong.

◊ Export If there is real market access it is possible to increase EU exports by at least 50% over the next 5 to 10 years. The quicker the market opening will take place, the faster EU exports could grow.

The Extra-EU exports have a potential of doubling the EU market size.

◊ Applications Fire resistant clothing; ballistic and face masks; dust protection and medical (nonwoven) protection; high visibility and harnesses