

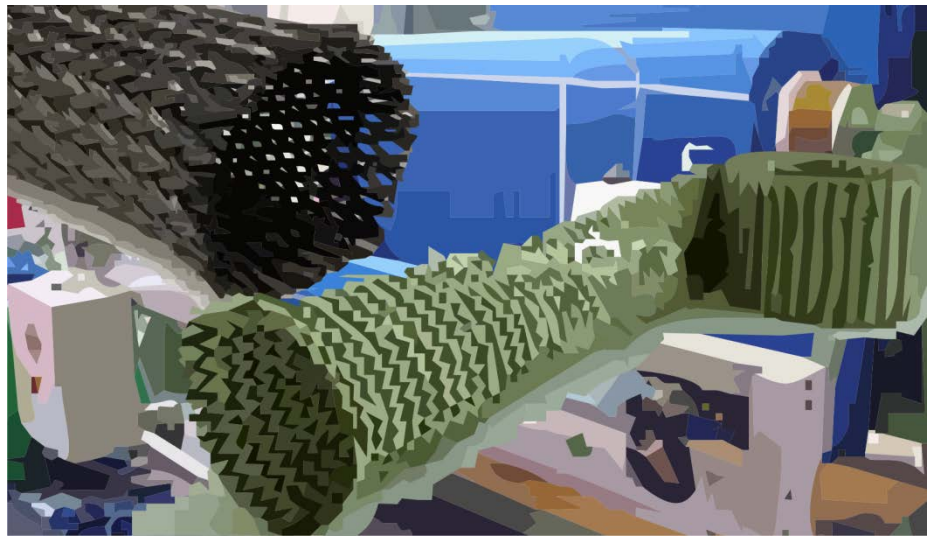
This fiche is part of the wider roadmap for cross-cutting KETs activities

**'Cross-cutting KETs' activities bring together and integrate different KETs and reflect the interdisciplinary nature of technological development. They have the potential to lead to unforeseen advances and new markets, and are important contributors to new technological components or products.**

The complete roadmap for cross-cutting KETs activities can be downloaded from:

<http://ec.europa.eu/growth/industry/key-enabling-technologies/eu-actions/ro-ckets>

## Potential areas of industrial interest relevant for cross-cutting KETs in the Textiles domain



This innovation field is part of the wider roadmap for cross-cutting KETs activities developed within the framework of the RO-cKETs study. The roadmap for cross-cutting KETs activities identifies the potential innovation fields of industrial interest relevant for cross-cutting KETs in a broad range of industrial sectors relevant for the European economy.

The roadmap has been developed starting from actual market needs and industrial challenges in a broad range of industrial sectors relevant for the European economy. The roadmapping activity has focused on exploring potential innovation areas in terms of products, processes or services with respect to which the cross-fertilization between KETs can provide an added value, taking into account the main market drivers for each of those innovation areas as well as the societal and economic context in which they locate.

Taking the demand side as a starting point, cross-cutting KETs activities will in general include activities closer to market and applications. The study focused on identifying potential innovation areas of industrial interest implying Technology Readiness Levels of between 4 and 8.

## TX.2.4: Functional (para-) medical textiles

### Scope:

To develop functional (para-) medical textiles and textile-based products (e.g. bandages) with built in functionalities such as the release of drugs or active components, etc.

### Demand-side requirements (stemming from Societal Challenges) addressed:

Depending on the application, textiles can contribute to tackle the following societal challenges:

- Health, demographic change and wellbeing
- Inclusive, innovative and secure societies
- Climate action, resource efficiency and raw materials
- Secure, clean and efficient energy

### Demand-side requirements (stemming from market needs) addressed:

- Demand for high performing materials with improved functionalities

### Specific technical/industrial challenges (mainly resulting from gaps in technological capacities):

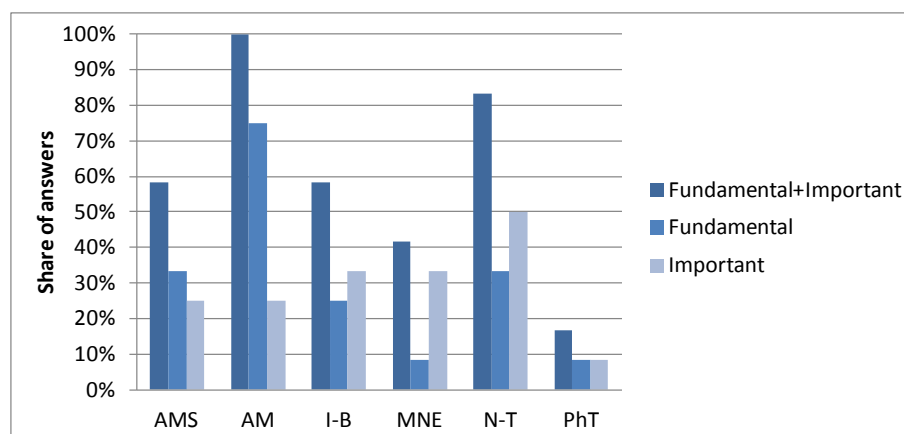
- Development of fibres and textiles as medium for targeted release / delivery mechanisms (e.g. slow release of pharmaceuticals)
- Tailoring of controllable biomedical properties of fibres and textiles
- Development of functional textiles to be used for targeted drug release, tissue scaffolds and intelligent textile implants

### Contribution by cross-cutting Key Enabling Technologies:

In respect to this Innovation Field, the integration of KETs could contribute to the development of more advanced functional (para-) medical textiles and textile-based products (e.g. bandages) with built-in care functionalities, building on solutions such as fibres and textiles applied as media for the targeted release/delivery of components, biocompatible functional textiles such as tissue scaffolds and implants, and the related manufacturing processes.

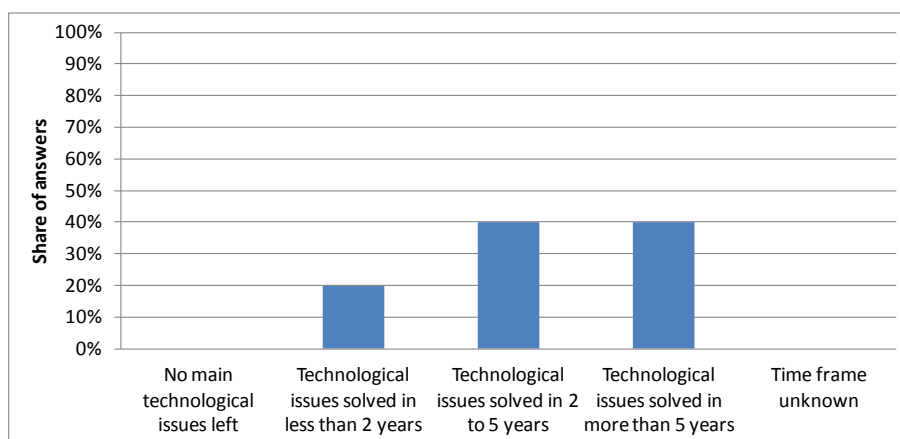
To this aim, the combination of KETs experts' opinions collected through the dedicated survey (whose result is depicted in the below bar chart), the examination of KETs-related patenting activity in respect to this Innovation Field, and desk research activities, have allowed identifying a rather strong interaction of KETs with respect to this Innovation Field, with either fundamental or important contribution mainly by the following KETs:

- Advanced Manufacturing Systems (AMS)
- Advanced Materials (AM)
- Nanotechnologies (N-T)
- Industrial Biotechnology (I-B)



### Timing for implementation:

According to the majority of KETs experts' opinions (whose result is depicted in the below bar chart), desk research, and in line with the KETs-related patenting activity in this field, it is considered that the main technological issues holding back the achievement of cross-cutting KETs based products related to this Innovation Field could be solved in a time frame of either 2 to 5 years or more than 5 years:



Hence, depending on the specific technical and/or industrial challenges holding back the achievement of cross-cutting KETs based products related to this Innovation Field, the provision of support in the short to medium term should be taken into consideration within this framework.

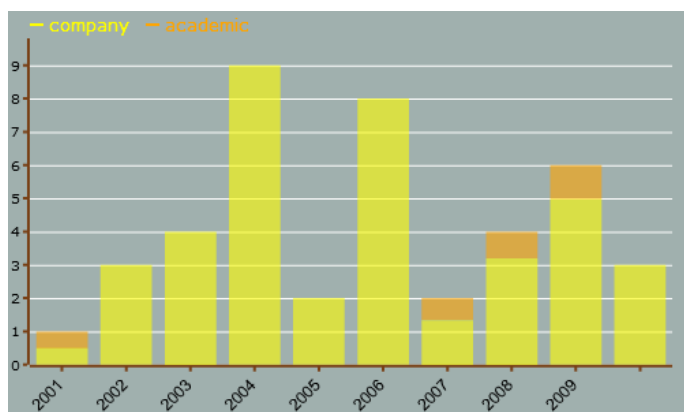
### Additional information according to results of assessment:

#### ➤ **Impact assessment:**

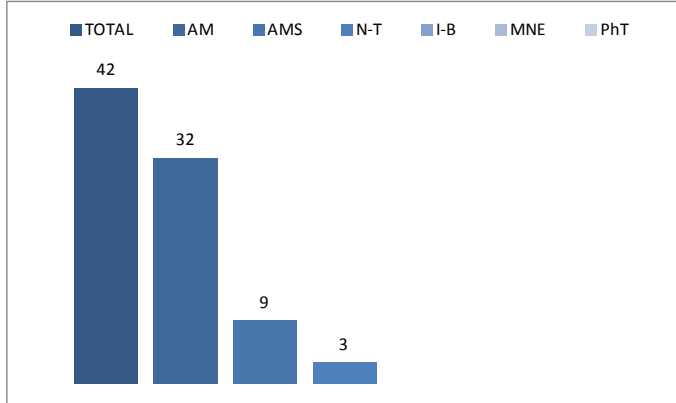
- In Europe, four countries consume about half of the technical textiles in terms of value: Germany, France, the UK and Italy. The technical textiles industry in Germany represents 45% of the European textile industry, followed by France, UK and Italy. Medical textiles are one of the faster growing sectors of the global technical textiles industry. The global market for medical textiles was about 5 billion Euro in 2007. Every year this niche market becomes more relevant and its importance will increase even more in the future (Source: F. Conicella, A. Dayon, Health care: trends, priorities and relations with textiles, Presentation Piemonte Innovation Cluster, 2013).

#### ➤ **Results of patents scenario analysis:**

- 42 exclusively KETs-related patents identified in the period 2001-2011 for the specific Innovation Field
- Scattered trend curve (number of patents per year)
- Highest share of industrial applicants:



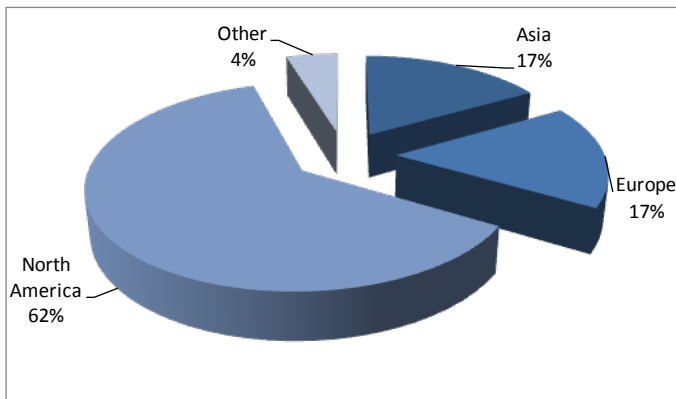
- Patents by KET:



- Patents by KET(s) and relevant combinations of KETs:

<i>KET(s)</i>	<i>Number of patents</i>
AM	32
AM / N-T	2
AMS	9
N-T	3

- Patent distribution by (Applicant) organization geographical zone:



- Patent distribution by geographical zone of priority protection:

