

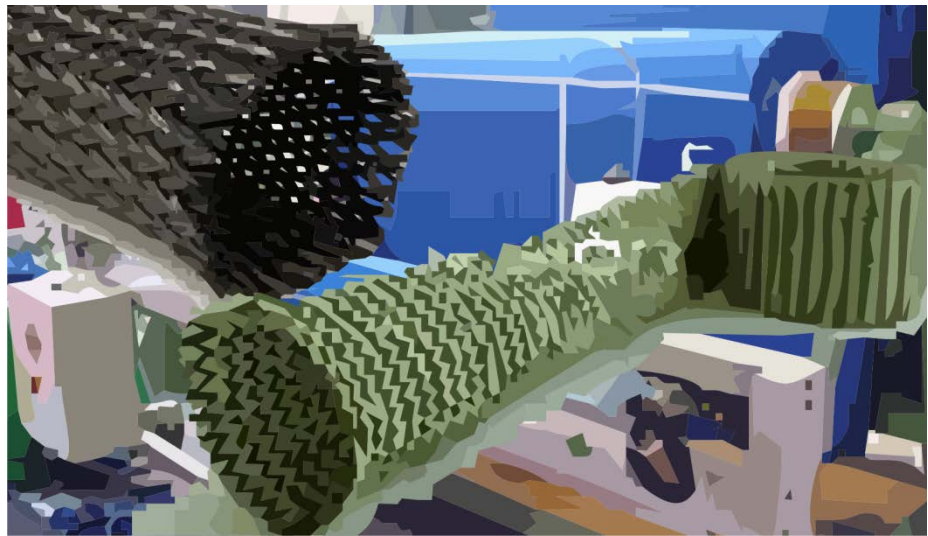
This fiche is part of the wider roadmap for cross-cutting KETs activities

'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.1.3: Biodegradable fibres and textiles for increased environmental sustainability

Scope:

To develop biodegradable fibres and textiles for increased environmental sustainability.

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

Depending on the application or the type of feedstocks or processes used for production, 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:

- Decrease dependency of chemical production from oil by shifting the feedstock base towards alternative feedstocks
- Improve environmental performance of products

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

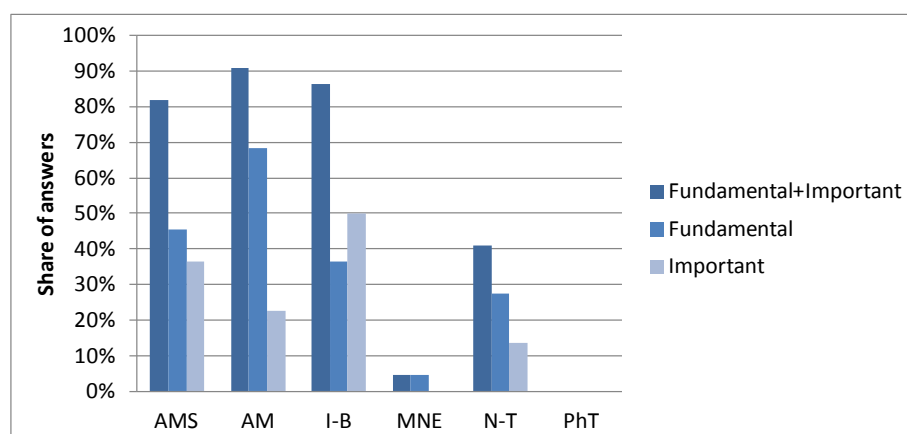
- Development of fully biodegradable materials for fibres and textiles

Contribution by cross-cutting Key Enabling Technologies:

In respect to this Innovation Field, the integration of KETs could contribute to the development of biodegradable fibres and fabrics for increased environmental sustainability, thanks to fully biodegradable materials, building on innovative material formulations or on the modification of the starting material (e.g. by alloying, incorporation of nano-additives, etc.), which may originate from renewable sources.

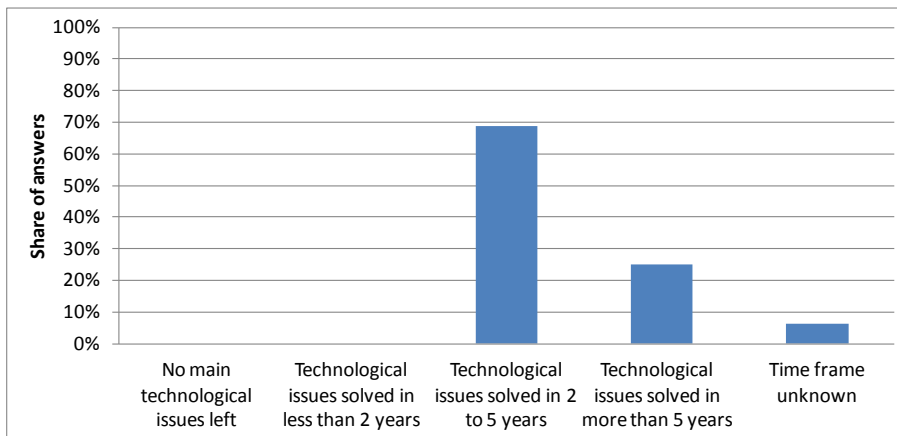
To this aim, the combination of KETs experts' opinions collected through the dedicated survey (whose result is depicted in the below bar chart), the examination of KETs-related patenting activity in respect to this Innovation Field, and desk research activities, have allowed identifying a rather strong 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)
- Industrial Biotechnology (I-B)
- Nanotechnologies (N-T)



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 2 to 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 term should be taken into consideration within this framework.

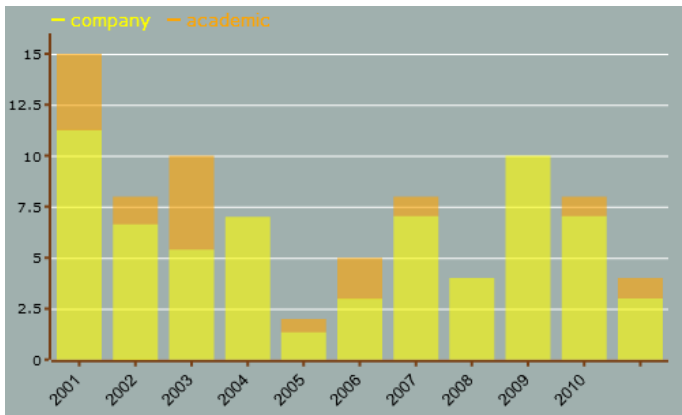
Additional information according to results of assessment:

➤ **Impact assessment:**

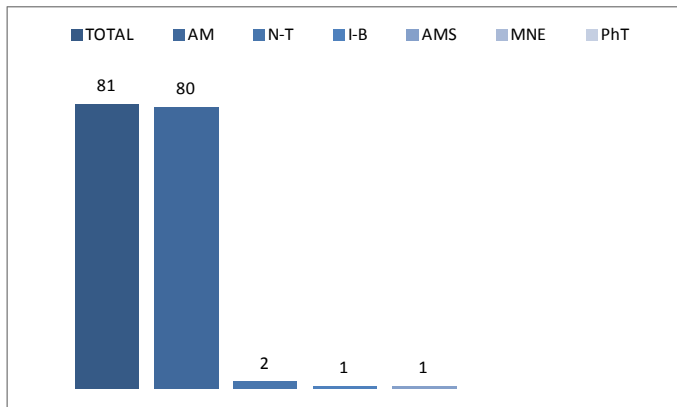
- Fibres obtained from fossil resources have replaced fibres based on biodegradable natural polymers in all markets over the last century. Yet, today, there is an increasing expressed consumer preference for "environmentally friendly" products, which finds its highest expression in the disposables area.
- The largest and most potentially environmentally sensitive market where biodegradable fibres and textiles such as particularly nonwovens could have a major impact is probably the market of disposable diapers and sanitary napkins, where biodegradable products are still limited. In this field, opportunities for using biodegradable fibres possibly obtained from renewable resources are significant.
- Other areas in which biodegradable fibres and textiles are already applied in a certain instance but could offer even higher opportunities are medical products, disposable filters, agricultural products (e.g. mulch covers), and packaging to materials used in the automotive industry, interior designs and the building industry.

➤ **Results of patents scenario analysis:**

- 81 exclusively KETs-related patents identified in the period 2001-2011 for the specific Innovation Field
- Oscillating almost stable trend curve (number of patents per year)
- Highest share of industrial applicants with intermittent relevant patenting activity by academic applicants especially in the early part of the period, most probably standing for new technologies having been patented in the corresponding periods:



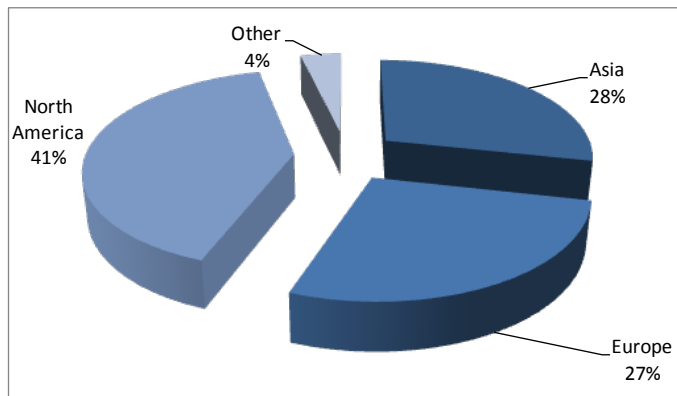
- Patents by KET:



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

KET(s)	Number of patents
AM	80
AM / N-T	2
AMS	1
AMS / AM	1
IBT	1
N-T	2

- Patent distribution by (Applicant) organization geographical zone:



- Patent distribution by geographical zone of priority protection:

