

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/rockets>

Potential areas of industrial interest relevant for cross-cutting KETs in the Construction 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.

CS.2.1: Solutions for adapting infrastructures to innovative transport means

Scope:

To develop solutions for adapting infrastructures to innovative transport means, such as solutions to make urban road and railroad infrastructures able to support operation of new sustainable energy sources vehicles.

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

- Contribute to the “Smart, green and integrated transport” societal challenge

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

- Adapt infrastructures to innovative transport modes
- Maintain at a high level of efficiency and service the patrimony of the infrastructure systems
- Reduce impacts and nuisances related to urban infrastructure construction, upgrade and/or maintenance and operation
- Preserve the functional use of infrastructures in emergency episodes

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

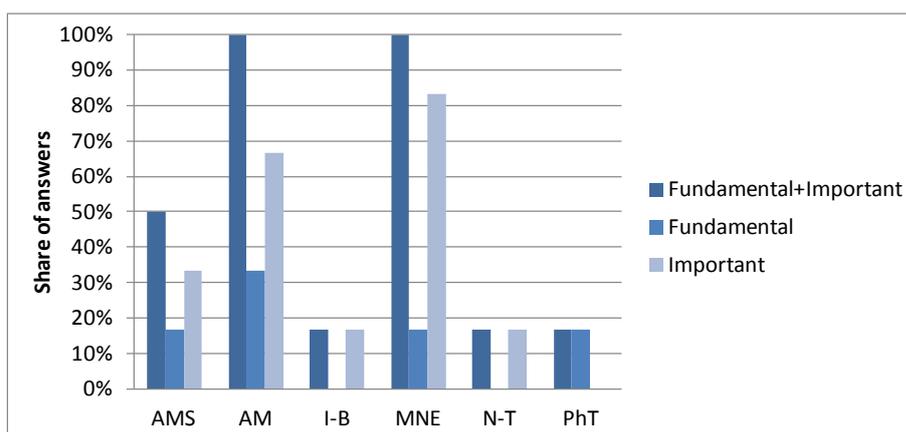
- Adaptation of existing and new infrastructure to new transport means (e.g. based on advanced technologies like magnetic levitation trains, automatic driving)
- Development of innovative means for adaptation of existing and new infrastructure to transport modes using new energy sources, needed in particular for the deployment of electric public urban transport systems
- Facilitation of dedicated road capacity for fully electric transport modes

Contribution by cross-cutting Key Enabling Technologies:

In respect to this Innovation Field, the integration of KETs could contribute to the development of advanced solutions for adapting existing and new infrastructures to new transport means (e.g. based on advanced technologies like magnetic levitation, automatic driving, etc.) as well as to transport modes based on new energy sources (e.g. electric transport systems).

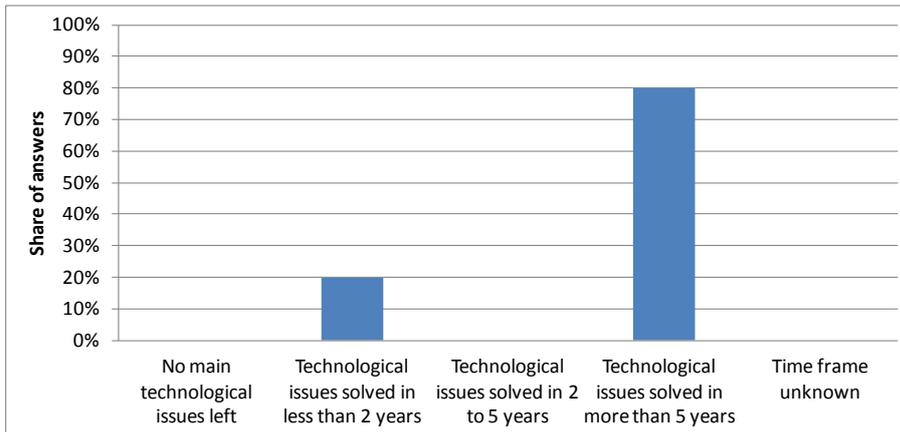
To this aim, the combination of KETs experts’ opinions collected through the dedicated survey (whose result is depicted in the below bar chart), the examination of KETs-related patenting activity in respect to this Innovation Field, and desk research activities, have allowed identifying a rather strong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

- Advanced Materials (AM)
- Micro- and Nano-Electronics (MNE)
- Advanced Manufacturing Systems (AMS)



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 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 medium term should be taken into consideration within this framework.

Additional information according to results of assessment:

➤ **Impact assessment:**

- As an example of the adaptation of infrastructures, the market for Electric Vehicle charging stations is expected to grow rapidly from 7250 charging stations in 2012 to over 3.1 million by 2019 at a compound annual growth rate (CAGR) of 113.3% over the period 2012-2019. France, Germany, Norway and the United Kingdom are expected to lead the market due to the high adoption rates of EVs in these countries (Source: Strategic Technology and Market Analysis of Electric Vehicle Charging Infrastructure in Europe, www.frost.com).

➤ **Results of patents scenario analysis:**

- No exclusively KETs-related patents identified in the period 2001-2011 for the specific Innovation Field
- No significant patent-related figures can be reported in this field