



KNOWLEDGE2INNOVATION

**WP1: Mapping of available resources and analysis of the
knowledge transfer process**

**Deliverable 1.4: Synthetic report on the weaknesses
in the research organisation – SME
cooperation for knowledge transfer**

**Deliverable
Responsible APRE
Partner:**

**SPECIFIC SUPPORT ACTION
Contract No: KBBE-212446**

Introduction

The **general objective** of the report is to identify what are the possible obstacles and weak links in the knowledge transfer process.

The report is based on the analysis of questionnaires filled in by European researchers and SMEs of agro-food sector with experience in the Knowledge transfer. The aim of the questionnaires developed during the project was to identify the possible expectations and perceived hurdles of the knowledge transfer process for researchers and SMEs.

This survey, involved 7 different countries:

- Greece
- Spain
- France
- Germany
- Italy
- UK
- Hungary

Methodology adopted by every partners of the project “K2I” for selecting the interviewed:

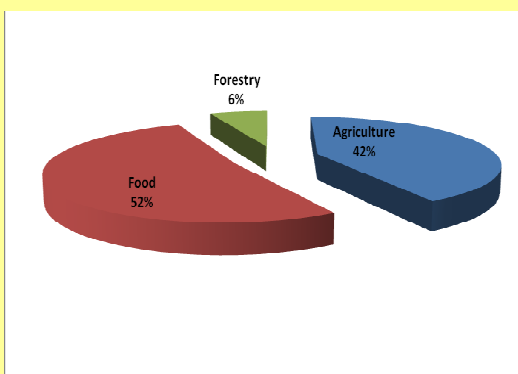
Researcher

The partners interviewed the European researchers that:

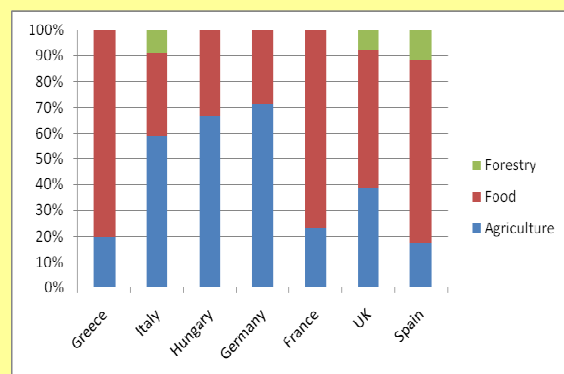
1. gained experience in Universities, Research Centres, incubators, technology parks;
2. worked already on projects that give support to knowledge transfer in collaboration with industry and SMEs of the agro-food and forestry sector.

The researchers interviewed had experience both in basic research and applied research.

Here following the graphs show the distribution of researchers interviewed for sector of interest:



Total distribution of the researchers among the specific sectors



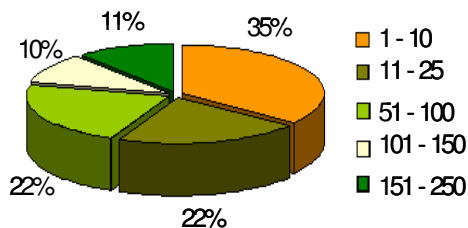
Distribution of researchers per countries

SMEs

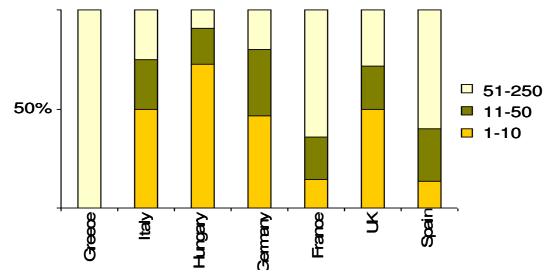
The SMEs interviewed are from the agro-food and forestry sector.

The structure of the interviewed companies in terms of number of employees indicates that the

- 35% were micro companies (1-10 employees),
- 22% were small companies (11-50 employees)
- 43% medium companies (10% employees 51-100 people, 10% employees 101-150 people and the 11% employees 151-250)



Total number of employees in SMEs

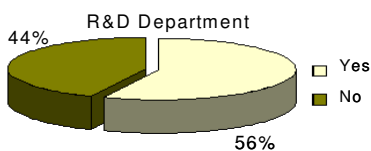


Total number of employees per countries

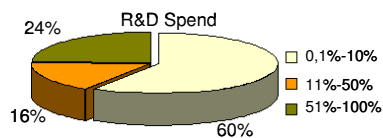
The research activities in the SMEs are the following:

- the 56% of the participating companies had an R&D department. The majority of the companies without an R&D department declared that they are interested in setting one up.
- the 55% of interviewed companies have a specific budget for R&D activities and the remaining 45% haven't a specific one. For those companies with specific budget, the 60% of SMEs spend between 0.1-10% of the total turnover, the 16% spends between 11-50% of the total turnover and the 24% spends between 50-100% of the total turnover.
- related to patents the 68% answered that they don't have one and the remaining 32% is holding from 1 to 15 patents.

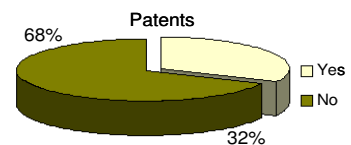
Here following the graphs of the distribution of answers:



R&D Department



Percentages of turnover spent to R&D activities



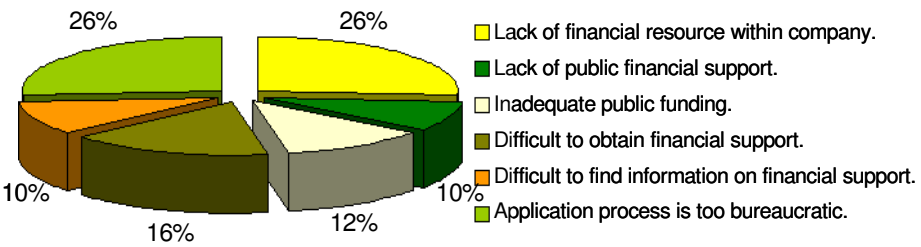
Patents

Analysis of the questionnaires: weaknesses in the research-SMEs cooperation

The analysis of the questionnaires showed how SMEs are interested in collaborating with research organisations but the main problem perceived is the lack of financial resources, that represent one of the main barriers to the knowledge transfer (KT), in particular for the 67% of Italian SMEs and for the 87% of the German SMEs. In the table below the distribution of the barriers that make difficult the knowledge transfer:

Question:

What are the barriers to KT concerning the financial issues?

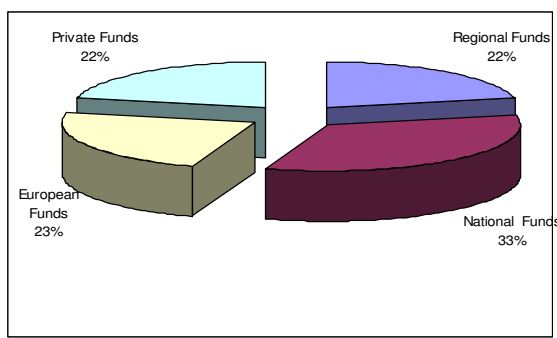


Concerning the resources used to implement research projects only the 22% are funded through private resources. In general the research projects are funded with public funds, in particular:

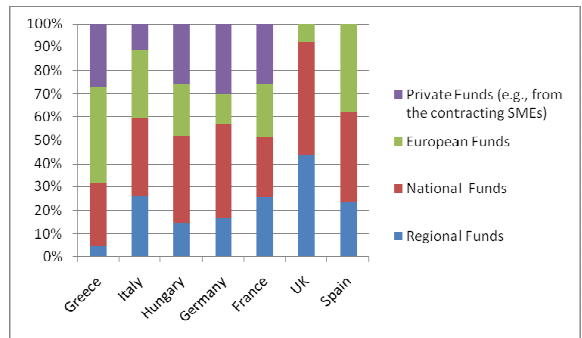
- 33% National funds
- 23% European funds

Question:

The projects involving SMEs has been funded mostly by:



Type of fundings



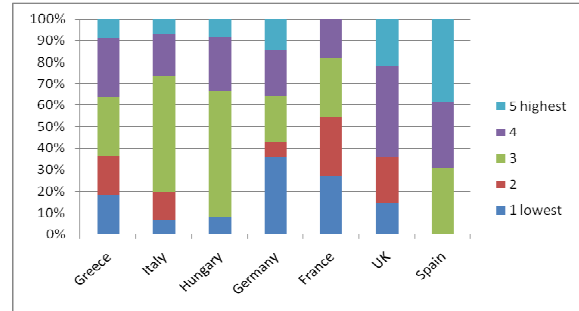
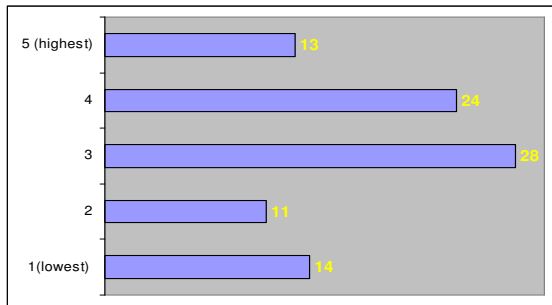
Distribution of answers per country

According to the 57% of the researchers interviewed is quite difficult to find a SME interested in collaborating in a research project; in particular nearly the 40% of the Spanish researchers declared an high level of difficulty in finding a SME.

Only the 14% of interviewed (especially Germans with a percentage of 43% and French researchers with a percentage of 54%) doesn't find difficulties.

Question :

How difficult is to find SMEs interested in your research and innovation projects?



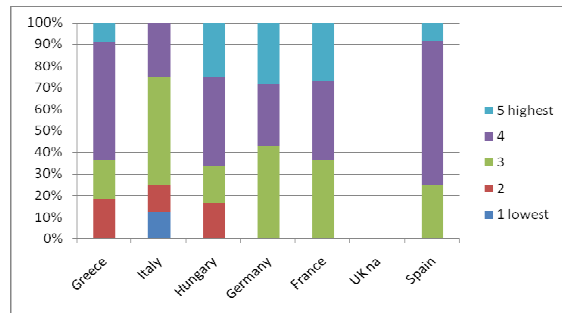
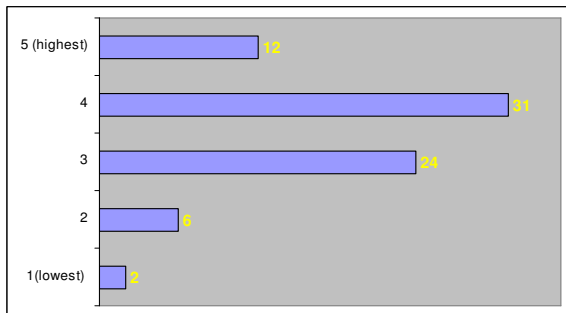
Distribution of answers of the researchers interviewed.
 Level of answer ranked from 1 to 5:
 1 the lowest level of difficulty
 5 the highest level of difficulty

Distribution of answers per country

Anyway when subsist a factual collaboration between a researcher and a SME, this partnership is successful and usually obtain the expected results.
 The 74% of researchers gave a positive answer.

Question:

How do you describe your collaboration with SMEs? How successful has it been?



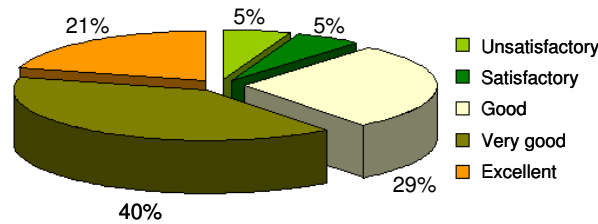
Distribution of answers of the researchers interviewed.
 Level of answer ranked from 1 to 5:
 1 the lowest level of successful
 5 the highest level of successful

Distribution of answers per country

According to the expectations of the SMEs about the collaboration with the researchers, the majority of them (40%) describes the collaboration with Universities and Research centers as “very good” followed by “good” and “excellent” in descending order. Only a low percentage (the 5 % in total) declared to be “unsatisfactory”.

Question:

How do you describe your collaboration with Universities and Research centers? How successful was?



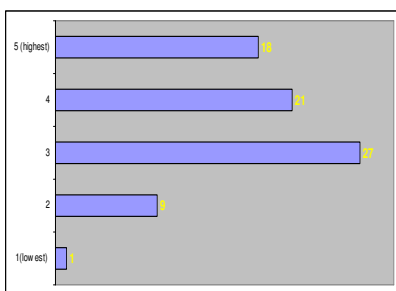
During the development of the project, the communication between researchers and SMEs is totally good.

In particular SMEs from Greece, Spain and Hungary gave answer ranked between “very good” and “excellent”.

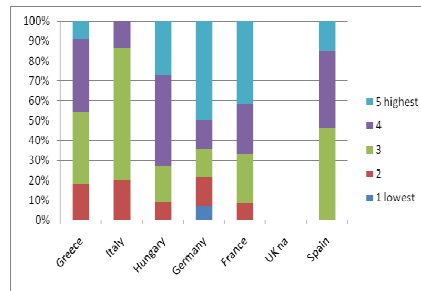
According to the researchers, the highest level of answers (ranked from 4 to 5) is registered by the 64% of the researchers in Germany, the 67% in France and 73% in Hungary.

Question:

How good has the communication with SMEs been so far?



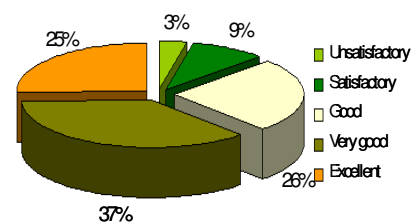
Distribution of answers of the researchers interviewed.
Level of answer ranked from 1 to 5



Distribution of answers of the researchers interviewed per country

Question:

How good the communication with academics/researchers was?



Distribution of answers of the SMEs interviewed.

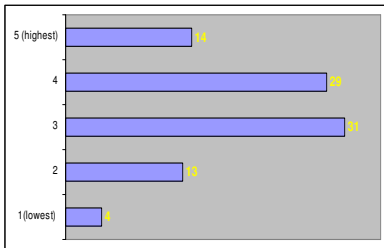
The analysis of the questionnaires shows also that the 66% of the researchers interviewed drive their own activity closer to the needs of SMEs. There is an high tendency to work trying to meet as much as possible the requirements of SMEs.

The distribution per country reveals how this happens especially in Hungary, Spain, Germany and Italy with an high level of answers ranked between 3 and 4.

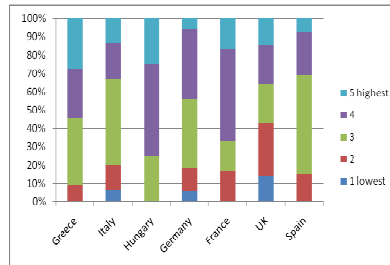
The table below shows a similar result from the point of view of the SMEs. The majority of them 41% answered “good” followed by “very good” and “satisfactory”.

Question:

How much do you drive your research closer to the needs of SMEs?



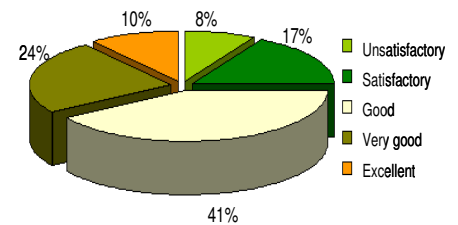
Distribution of answers of the researchers interviewed.
Level of answer ranked from 1 to 5



Distribution of answers per country

Question:

To what extent are the universities and research centers prepared to be flexible in order to meet your needs?



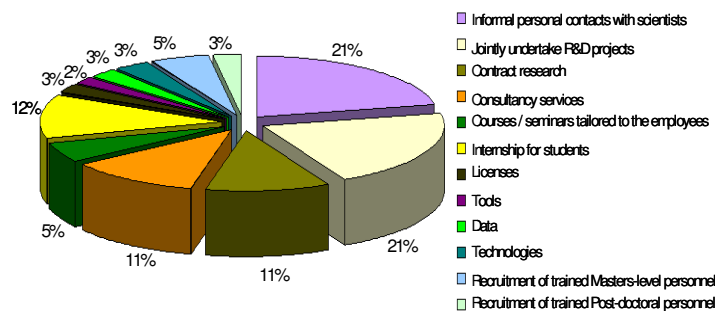
Distribution of answers of the SMEs interviewed.

According with the results of the analysis of questionnaires for SMEs the most frequent types of collaboration between the SMEs and the universities and the research centers are mainly based on:

- the consultancy services, the contract research, the recruitment of trained post-doctoral personnel and internship for students (42%)
- informal personal contacts with the scientist (21%)
- the performance of R&D projects (21%)

Question:

Which of the following types of exchanges/ cooperation does your company have with the Universities and Research Centers?

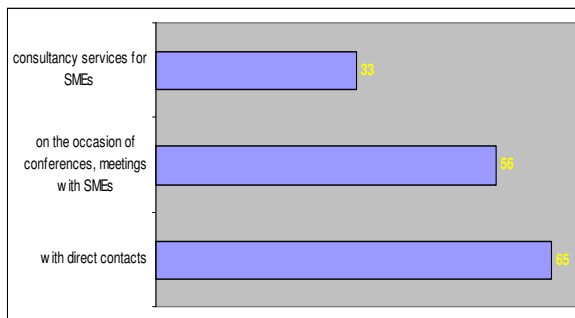


According to the 42% of the researchers interviewed the direct contact is the most suitable way for get in touch with SMEs.

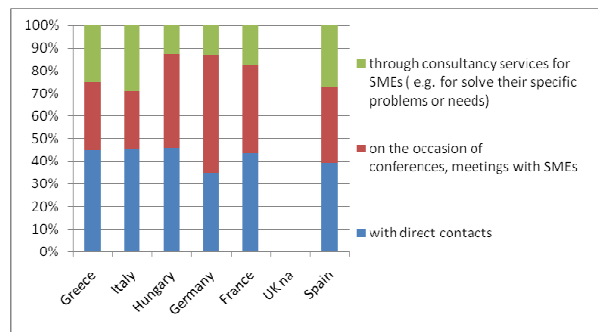
Moreover according to the 36% of researchers conferences and meetings are a good opportunities to promote own research and for interacting with the entrepreneurial sector.

Question:

How do you present/promote your research in order to “attract” SMEs for collaborations?



Distribution of answers of the researchers interviewed



Distribution of answers per country

SMEs should be stimulated to attend events where they can meet the researchers because it is a good way to find new contacts for future collaborations.

The better way to improve the knowledge transfer is increasing the relations and cooperation between academia and industry improving the idea that knowledge transfer is beneficial for both sides.

The companies usually collaborate with the universities and the research centers in order to:

- solve a specific problem (30%)
- develop a new product (27%)
- gain knowledge and know how (23%)

The main difficulties faced by the participation of SMEs in funded projects can be categorized as:

Administrative problems:

- the bureaucracy of the application system
- the complexity of the reporting system

Financial issues:

- the unsatisfactory funding level
- the insufficient flexibility in the use of the budget project
- the delays in the money transfer

Cooperation & support issues:

- difficulties in the cooperation with the researchers
- lack of research partners to support a project
- weak network of project
- coordination problems among all the participants
- long time needed to reach concrete results
- bad time management by the researcher

Hereafter the most relevant comments of researchers about the problems they meet in the knowledge transfer with SMEs and about the promotion of their research to the end users:

Question:

What kind of problems do researchers meet in the knowledge transfer with SMEs?

- “Both side (researchers and SMEs) suffer from the lack of resources and sometimes it leads to conflicts.”
- “The problem is to make understand to the SMEs how important a R&D project could be for the enterprise”
- “Problems to finance part of their own research projects, to make them participate in the elaboration of the proposals and to make them arrange the bureaucracy of the request”
- “There is lack of experience and of cultural for IP protection, criteria for negotiating the conditions for transfer of IP and the mechanisms for it: licensing, royalties, exploitation rights”
- “SMEs are seeking for solutions to basic problems related to prerequisites and need to find an immediate solution to solve a specific problems.”
- “SMEs sometimes are not very interested to absorb the results of ours research”

Question:

“In your opinion, why a lot of produced knowledge in research organizations doesn't reach a stage where it can be promoted to the end users?”

- “Because many researchers target more for basic easy publication research type rather than looking for more applicable work”
- “Financial difficulties can cause it but they are not the most important factors. Universities, research organisations usually don't help enough in these processes, also the national regulations are not good enough.”
- “Innovation requires growing financial investments during the whole process. After establishing a prototype, patenting, maintaining if the patent, market research and patenting need significant financial resources. Usually these resources are not available and involving new partners with capital can be very risky.”
- “In many cases the basic and the applied research is very much separated. The researchers is only interested in publication (that is needed from him/her according to the evaluation system of the university), not in the utilization
- “Researchers who really produce good quality work and valuable knowledge are usually isolated and much focused on their intra-lab activities, and have limited time and chances to transfer knowledge on a practical basis. Effective intra-organization

management tools and extension service offices which should recognize, respect and communicate the work of their researchers are required”

- “Researchers are not business-creative, and they have not a great industry oriented approach. This can be achieved by spending time in industry,”
- “Because SMEs are not fully aware of the scientific achievements and of the usefulness of research in resolving existing and future problems.”

It is noteworthy that the companies are not so satisfied concerning the ability of the Universities and Research centers to be flexible to meet their needs. The majority of them (41%) gave a positive answer but there is a percentage of unsatisfactory or just satisfactory (25%).

There is a general statement that academics and researchers do not speak the same language as the industry. A large percentage of the interviewed companies (nearly 80%) declare that there are problems in the “language” among the companies and the researchers.

In particular the main problems / difficulties encountered during the collaboration and knowledge transfer are underlined in the following comments given by SMEs interviewed:

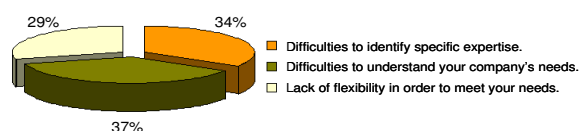
- The researchers sometimes don’t understand industry’s function, needs and the company’s problems of time and money.
They should think as a company. They should produce marketable result dealing with more practical problems. They have to listen more carefully what SMEs wants and to provide realistic solutions taking account the limitations regarding technological, economic and time issues.
- Universities and research centres don’t prepare their students for the real business environment. Usually students leave the university without any practical business experience. Furthermore universities can better foster PhD students using applied projects working with industry giving the students the necessary experience for the commercial world and making them capable to act as a bridge between academia and industry.

In relation to the barriers in collaboration / communication issues the major problems seem to be:

- difficulties of universities to understand the company’s needs (37%)
- difficulties from the companies to identify the expertise in the universities and research centers (34 %)
- inflexibility of universities and research centers to meet companies needs (29%)

Question:

What are the barriers to KT concerning the collaboration/communication issues?

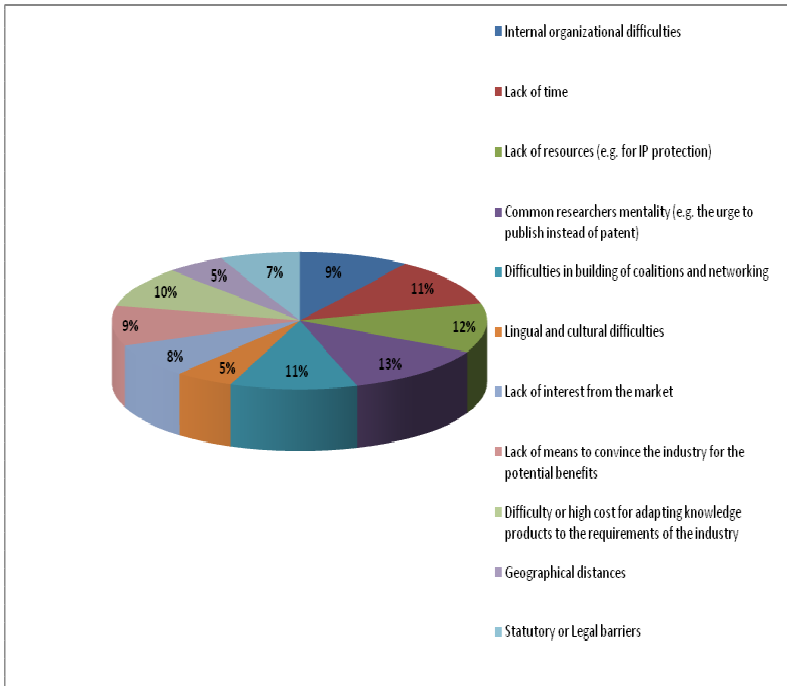


Distribution of answers of the SMEs interviewed

The efficient knowledge transfer is hindered by a range of factors which adversely affect European growth. In particular one of them is the mentality of researchers.

Question:

What are the most important factors which restrain the efficient KT?



Distribution of answers of the researchers interviewed

According to the 13 % of the researchers interviewed usually they are oriented only towards scientific publications while it's important to establish a direct communication with SMEs for seeking a solution to a specific problem.

Moreover researchers must improve their knowledge about the intellectual property rights protection.

There is lack of experience about the criteria for negotiating the conditions for transferring the intellectual property rights and the mechanisms for it: licensing, royalties, exploitation rights.

The lack of resources - for intellectual property rights protection for example - is perceived by the 12% of the interviewed as another factor which obstacles the efficient knowledge transfer.

Conclusion

The knowledge transfer is an important element for the competitiveness but it's necessary to reinforce the collaboration between research and industry; they should cooperate more frequently and with better results.

Universities and other research organizations should improve their *links* with industry across Europe removing the barriers that hinder collaboration between researchers and industry.

Several Member States - as Commission European underlined in the Communication **COM (2007)182** "*Improving knowledge transfer between research institutions and industry across Europe*" - have taken initiatives to promote and facilitate the knowledge transfer and for promoting collaboration between business and research centres but however these initiatives are often designed with a national perspective and fail to address the "transnational" dimension of knowledge transfer.

Every Member State should support the development of platforms where European scientific community and European industry can work and innovate together.

Researchers recognise the advantages of working more closely with business but usually is also difficult the management of research projects together with the SMEs.

European universities and other research institutions realise that they will have to provide world class research to attract students and researchers in the future.

In order to remain attractive they need to open up to business and international collaborations.

Historically research institutions were perceived as a source of new ideas and industry offered a natural route to maximising the use of ideas.

Now there is a significant change in the roles of both parties. Many companies are developing innovative approaches to R&D combining in house and external resources.

In parallel it has become clear that research institution need to play more active role in their relationship with industry in order to maximize the use of the research results.

This new role requires specialist staff to identify and manage knowledge resources with business potential.

To perform knowledge transfer activities affectively, research institutions need to have sufficient autonomy to recruit experienced knowledge transfer staff on a competitive basis. Increased mobility between the public and private sectors will help research institutions researchers and managers identify shared needs with industry.

However certain rules and administrative obstacles can discourage such mobility.

Knowledge transfer between research and SMEs must be supported by a variety of activities including for example:

- research organization-industry staff exchanges programmes
- collaborative and contract research
- consultancy work
- training.