Supporting Partnerships in Innovation and Entrepreneurship

Analytical Compendium

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1. Role, Benefits and Impact of Supporting Partnerships in Innovation and Entrepreneurship

European universities and other research institutions are realizing their changing role in the globalized economy and have undertaken interesting initiatives. They realize that they are no longer simply providing the local area with graduates but that they find themselves competing on a global scale for students, researchers and industrial partners. In turn, they will need to open up to business and international collaboration, which may also help leverage new funds. Sharing knowledge in particular through R&D collaborations with business – while a potential source of income for research institutions – may well give an important boost to both quantity and quality of the research undertaken. (Improve knowledge transfer between research institutions and industry across Europe, pg. 7)

External factors influence the results of the co-operation process. The prevalent innovation policies in a given Region, the commitment of the financial system and the culture of entrepreneurship will all exert an influence on the success of the partnership. Shared programmes involving Industry and financial organisations allow greater control over these external factors and can therefore improve the results obtained. In concrete terms, co-operation enables highly skilled business people to pass on experience and skills to entrepreneurs, can spread the risk of investment and connect individuals with complementary interests. (R&D-Industry Co-operation to Foster Innovative Firm Creation, pg. 134)

It is particularly interesting to note the range of benefits which can be obtained by pooling patents between research institutions. A patent pool can help create a critical mass of intellectual property which is necessary for an innovative idea to be attractive to the private sector. If marketed properly, every relevant industry player could be made aware of the research centres that generated the IP and this would help catalyse links with industry. Furthermore, building a patent pool can lead to stronger relationships between knowledge transfer offices and provide a basis for further inter-institutional endeavours. Such pooling of resources appears to be particularly appropriate for those research institutions that do not have the scope and volume of exploitable research results to justify the establishment of a knowledge transfer office. (Improve knowledge transfer between research institutions and industry across Europe, pg. 9)

In addition to the knowledge transfer activities themselves, there are also indirect benefits and should be considered in the longer term:
- The development of mutual trust between the research institution and industry, beneficial to the establishment of long-term strategic partnerships (as opposed to one-off contracts).
- The enhancement of research institutions research activities (access to state of the art industrial equipment, improving research institution project management skills, complementing the research institution competence base by new skills and techniques developed in industry, improved understanding of market needs and of industry problems).
- Gaining status and prestige (resulting from successful partnerships and products).
- The enhancement of research institutions teaching activities (involvement of industry-based lecturers, enrichment of teaching contents and materials with practical examples, learning to apply skills and knowledge to solve real business problems, etc).
- The identification of potential new clients or partners for further research.
- Attracting, retaining and motivating good scientists interested in entrepreneurial aspects or in new professional career opportunities.
- Contributing to public authorities better recognising the socio-economic relevance of publicly-funded research, potentially leading to increased funding thereof.
- Facilitating exchanges of staff between the research institution and industry, or hiring new graduates from the research institution by industry. (Improving knowledge transfer between research institutions and industry across Europe, pg. 20)

Closer co-operation between the R&D system and industry aids the spinning-off process. New innovative firms that meet market needs and obtain profitable returns from the economic and human resources would be difficult to crate by a sole organisation. The process becomes much more fluid and fruitful when undertaken in the context of collaboration between public and private institutions. (R&D-Industry Co-operation to Foster Innovative Firm Creation, pg. 134)

Networking between different agents opens up greater opportunities for innovation than the traditional approach based on a one-way transmission between ‘knowledge-generators’ (universities and R&D labs) and ‘knowledge-users’. In practice, knowledge is generated and used everywhere and the continuous flow of information through well engineered networks ensure that the right information reaches the right people at the right time. (R&D-Industry Co-operation to Foster Innovative Firm Creation, pg. 135)

There was a general feeling that technology transfer often lacked professionalism. Much of the blame for this was placed with the universities which are frequently ‘still run by professors’. It was stated that, whilst universities have successfully collaborated with industry with the support of policy frameworks, the necessary management skills are not ingrained in many universities themselves. Therefore, when they come to do it alone, there is a skills gap. However, it was not felt that ‘retraining professors’ was the answer. Rather universities need to train dedicated technology transfer people and recruit experts. (Effective Collaborative R&D and Knowledge Transfer, pg. 26)

One of the key problems within the university was that the technology transfer office is often not involved in the university’s strategy development, and universities often don’t have ‘innovation strategies’ – in this way they often lack direct support from the top. (Effective Collaborative R&D and Knowledge Transfer, pg. 26)

Consultancy is one of the simplest ways for business to interact with universities and draw on their research. SMEs can become involved for relatively low fees, and the terms are simple to arrange. For larger companies, consultancy offers the chance to get to know a researcher before deciding whether to set up larger research contracts. In particular, increasing consultancy may be one way to bring more companies into contact with universities. It may increase the volume of research collaboration, with many contracts originating from consulting relationships. It may also improve the effectiveness of technology transfer, as more than 50 per cent of licences go to companies known by the academic, and consultancy increases the pool of companies an academic is exposed to. (Lambert Review of Business-University Collaboration, pg. 35)

Partly in recognition of the number and complexity of these relationships, many universities have developed corporate or business liaison offices, with a specific remit to act as the interface with business. These offices have taken on an increasing number of tasks as universities’ engagement with their wider community has developed. These include developing networks of businesses; marketing the research strengths of the university; advising
on consultancy agreements and contract research; arranging complex collaborative research agreements or major joint ventures. \(\text{(Lambert Review of Business-University Collaboration, pg. 42)}\)

**Why should universities engage in knowledge transfer?**

This fundamental question has been addressed in the past by the Commission, which has said that "many European universities still underestimate the potential benefits of sharing knowledge with the economy and society ". The benefits of knowledge transfer – in other words, the exploitation of research - go beyond simple financial return. In fact, even in the US, where knowledge transfer is more developed, only a fraction of such activities generate net profit. The benefit also lies in a number of other, less tangible benefits for research institutions, for industry and for the society as a whole, such as helping research institutions focus their research on the wider needs of society and industry.

**Benefits for industry**

More effective and systematic knowledge transfer in Europe would improve the ability of industry to tap into the knowledge developed by the public science base. Such links can for example be developed through collaborative and contract research. The development of long-term partnerships between industry and research institutions, with priorities jointly agreed and implemented will build trust, improve the contribution of the research organisation and result in a better alignment of interests and benefits.

**Benefits for society**

There are also benefits for public authorities who increasingly need to ensure that their investments in research have an optimal socio-economic impact, e.g. new products on the market (pharmaceuticals, etc.), new jobs and new companies. Moreover, knowledge transfer at the national or regional level potentially has a strong impact on local development.

\(\text{Knowledge transfer between research institutions and industry – Frequently asked questions, pg. 2)}\)

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(\text{The reform of public research centres and universities, pg. 24})

The training could be nationally coordinated and financially supported to ensure conformity and relevance across all universities, and augmented by tailored sections to suit the requirements of individual institutes and universities, to be delivered by the university KTU. The KTUs would be able to design specific training to build on the basics; this might include details of specific by-laws and methodologies in a particular university. The KTU should provide advice about marketing giving examples, of success stories and presentations from invited entrepreneurs. This training is not to turn the researchers into KTU staff, but to furnish them with some know how about spinoffs including basic legal knowledge about establishing and operating a firm (legal function, authorities etc.), business financing models (angels, seed funds, first round, IPO, etc.) and basic training in patenting (submission, approval, PCT, EU patents, etc.), and similar information about licensing. Researchers should be familiar with what is involved and the terminology, but not the fine detail, which should be the responsibility of the KTU personnel. (\text{The reform of public research centres and universities, pg. 26})
Fostering an entrepreneurial mindset as well as the relevant skills among researchers can greatly contribute to the reduction of the cultural divide which exists between research institutions and industry. In order to foster interactions between them, researchers need to be provided with basic knowledge transfer and business skills. Entrepreneurship education should be offered to provide training on how to manage intellectual property, interact with industry, start and run a business. Although tertiary education is normally highly decentralised, there are examples of national strategies for promoting entrepreneurship in higher education (e.g. the Science Enterprise Challenge in the UK). To help address the question of content of such courses, the Commission is currently funding a project to create a core set of training materials to raise awareness of the importance of IP management issues amongst a variety of actors. (Improving knowledge transfer between research institutions and industry across Europe, pg. 10)

Many European universities still underestimate the potential benefits of sharing knowledge with the economy and society, while industry has not developed sufficient absorption capacity to harness the potential of university-based research. Consequently, the cross-fertilisation with the business community and with wider society remains difficult. This lack of openness to the business community is also seen in the career choices of doctorate holders, who tend to pursue their whole careers in either academic circles or industry, and not as entrepreneurs. ("Delivering on the Modernisation Agenda for Universities: Education, Research and Innovation", pg. 4)

Universities should be funded more for what they do than for what they are, by focusing funding on relevant outputs rather than on inputs, and by adapting funding to the diversity of institutional profiles16. Universities should take greater responsibility for their own longterm financial sustainability, particularly for research: this implies pro-active diversification of their research funding portfolios through collaboration with enterprises (including in the form of cross-border consortia), foundations and other private sources. Each country should therefore strike the right balance between core, competitive and outcome-based funding (underpinned by robust quality assurance) for higher education and university-based research. Competitive funding should be based on institutional evaluation systems and on diversified performance indicators with clearly defined targets and indicators supported by international benchmarking for both inputs and economic and societal outputs. ("Delivering on the Modernisation Agenda for Universities: Education, Research and Innovation", pg. 8)

Programmes to support transnational collaboration between research centres, universities and companies have an observable impact on:
– The quality of research in Europe, which they are helping to improve, whilst increasing its visibility, in key areas for growth;
– The dissemination of knowledge and results within the Union, and the ability of researchers to become involved in high-level projects. (Science and technology, the key to Europe’s future - Guidelines for future European Union policy to support research, pg. 5)

University administrators, and their political masters, should set only one goal for the TTO: make money – as much as possible, as quickly as possible, for the sole benefit of the university. Let the head of the TTO choose the means. And then fire that person if the promised results aren’t delivered, and provide bonuses if they succeed (civil servants don’t belong in tech transfer offices). Social goals are right for the rest of the university. A simple financial goal is for the TTO. (The Innovation Manifesto, 9 Ideas to bridge the gap between industry and academia – and make Europe more competitive in global technology, pg. 6)
Sub-optimal research collaboration and knowledge transfer between Public Research Organisations (PROs), particularly universities, and industry are one of the weaknesses of the European research and innovation system. While a number of Member States have done valuable work in this area, they have often only considered the national perspective. As a result, current rules and practices in the EU are fragmented, especially those regarding ownership of publicly-funded research results and contractual arrangements between PROs and industry. More consistent rules and practices across the EU would foster PRO-industry links and maximise their impact. This will help create a level playing field for cross-border university industry research partnerships, and thus contribute to the European research and innovation area. (More Research and Innovation – Investing for Growth and Employment: A Common Approach pg. 15)

The proposed IP Charter should concentrate on highlighting out the issues that need to be addressed in a collaboration agreement and what the possible approaches and solutions exist …

The online consultation also finds that:
- Research institutions should have IPR management systems + policies in place (95% agreement);
- Royalties should be shared with researchers (89% agreement);
- Public authorities should have a non-exclusive licence to use the results (60% agreement);
- Industry should refund the public contribution if they manufacture products outside of Europe (60% agreement);
- All income should be used for research and education (79% agreement);
- EU industry should be given preference when selling the results (60% agreement).

That said, the responses also make it clear that publicly funded results should not necessarily be owned by the research institution, that research institutions should be free to sell their results to industry and finally that SMEs should not be given preference when selling the results. (The European Research Area: Green Paper Consultation, pg. 16)

A stronger outward orientation of TTIs should facilitate closer collaboration between research and enterprises. Thus, the expert group encourages PROs and TTIs to pro-actively seek and foster contacts with enterprises. As good practice examples show, institutionalising such contacts is helpful and can be instrumental in stimulating regional clusters. (“Improving institutions for the transfer of technology from science to enterprises – Conclusions and Recommendations”, 6 – 7 pp.)

Research is indicative of the positive impact and the spillover effects of industry – academia linkages through pronounced flow of knowledge and information between the two partners. This is believed to lead to considerable diffusion of scientific and technical knowledge, which in turn impacts economic development. According to a study sponsored by Alfred P Sloan Foundation and the National Academy of Engineering, academic research in a single discipline often contributes to more than one industry and conversely, a single industrial innovation is usually a result of complementary advances in many fields of research. A major challenge for the universities is keeping pace with the rapidly changing research and human resource needs of the industry. (Industry-Academia Convergence: Bridging the Skill Gap, pg. 6)

Ensure curriculum adaptations moves as fast as the pace of Industry change;
- Build up relationship with industry and career advisors;
- Tailor make education for the unemployed in shortage areas, for Small and Medium size Enterprises (SMEs);
• Collaborate to develop “Learning Models”;
• Develop joint Academic – Industry Degree Models;
• Development of research based teaching material;
• Alumni networking and developing broad based relationships, not one of associations;
• Mutually enabling processes for capacity building of the faculty, students and the companies; and
• Explore possibilities of endowed Chairs in specific areas of management.

(Industry-Academia Convergence: Bridging the Skill Gap, pg. 8)

In the Quadruple Helix model, it is not only the commercial, political and theoretical parts of innovation systems that are regarded to be of interest, but also the non-profit aspects. In its multitude of actors, areas and aspects, the Quadruple Helix model partly overlaps with Lundvall’s (1992) notion of a broad approach to innovation systems, emphasising the importance of people, skills, relationships and interactions besides the importance of basic research, workplace development and low technology sectors. NGOs with limited financial resources are seldom perceived as key actors in the partnerships for local and regional growth in Sweden (Lindberg, 2010). A broader approach to innovation systems, as e.g. manifested by the Quadruple Helix, acknowledges the important role of civil society and the non-profit sector and might bring about a change in the view of the contribution of NGOs within regional growth policies and innovation policies. (Bridging the gender gap in entrepreneurship: A study of a Quadruple Helix innovation system project in the Baltic Sea region, pg. 11)

2. Constraints and Limitations

Informal networks between SMEs and academia are difficult to create because SMEs have scarce financial and human resources to find research contact in academia. However, their development is essential for innovation in Europe. (Mobility of Researchers between Academia and Industry, pg. 20)

Academic staff is often trained for a career in academia and do not always possess the necessary skills to find a job in either the one or the other sector. They also need lifelong training to cope with their new environment (e.g. career appraisal) and changing functions (e.g. from professor to chancellor…). Researchers in academia also need skills to work efficiently with industry. (Mobility of Researchers between Academia and Industry, pg. 20)

Most interactions between research institutions and companies involve large firms. This is due to the fact that such collaborations are considered to be more durable and regular than with SMEs. (Improving knowledge transfer between research institutions and industry across Europe, pg. 13)

Monitoring knowledge transfer activities has several purposes including helping research institutions promote what has been achieved for the public good. While several university rankings exist, they mostly rely on academic indicators such as publications and numbers of PhDs, and do not consider performance in the exploitation of R&D results. There is evidence that the benchmarking of “innovation-related activities”, especially if conducted on the basis of comparable metrics across the EU, would allow research institutions to compare their own achievements at European as well as at national level. (Improving knowledge transfer between research institutions and industry across Europe, pg. 13)

Collaboration between university and industry is necessary for more reasons than one, one of them being the scarce human resources. Collaborating should be realistic, it is not unusual
that senior academics (professors) commit themselves, meaning their research group, to a project and face the fact that they cannot find the necessary personnel (e.g. Ph.D. students) for the work. This is not solely the case for a university; also industry is faced with this problem, even in collaborating with a university. (*Effective Collaborative R&D and Knowledge Transfer, pg. 21*)

The **weakness of demand from industry** is a crucial matter, and is mainly (but not entirely) an SME issue. These smaller enterprises have significant impact on economy but tend to focus on short term solutions rather than longer term strategy/innovation. (*Effective Collaborative R&D and Knowledge Transfer, pg. 24*)

Consequently, through lack of communication and misunderstanding, it was felt that parties to collaborative projects often do not recognize their strategic differences and differing objectives. (*Effective Collaborative R&D and Knowledge Transfer, pg. 25*)

Universities were also criticised for **holding on to patents for too long** and for patenting unnecessarily. Their professionalism in dealing with patents was also questioned. In particular, industry representatives often thought university patents to be often weak due to a high likelihood of academic publication at some point in the process (even if accidental). In addition to this, **students and postgraduates were often thought to be unaware of the conditions surrounding industrial collaboration and IP**. (*Effective Collaborative R&D and Knowledge Transfer, pg. 27*)

When establishing collaborative research partnerships it is important to **determine at the outset the ownership and exploitation rights for any intellectual property (IP)** that may be generated. Business and universities both report that negotiations on the terms and conditions of IP ownership and exploitation can be extremely lengthy and costly. Small companies may be deterred from establish research partnerships because of the legal costs and time involved. (*Lambert Review of Business-University Collaboration, pg. 40*)

**Comprehensive education programs** should be modular-based and must provide and/or improve the core-skills identified below:
- Business development
- Negotiating (internally & externally)
- Networking & interpersonal skills (communications & relationships)
- Marketing & selling
- Personal organisation (multiple projects & skills integration)
- Coaching / leadership
- Project management / finance
- IP management / legal
- Contacting
(*Work stream 2, pg. 84*)

Universities in the US, Canada and many European countries have adopted a **wide range of different policies on patent ownership and royalty-sharing formulas** between researchers, the researcher’s department, the technology licensing office and the university itself. Anecdotal evidence from a number of countries shows that lack of a clear policy on royalty-sharing and the exclusion of any benefit to the inventor/researcher or his/her department have resulted in a lack of incentive to patent and exploit inventions as well as, on occasions, university researchers patenting under their own name. (*“Research and Innovation Issues in University – Industry Relations”, pg. 5*)
Lack of expertise is often perceived as one of the most limiting factors in managing the commercialization of IP by universities. Bernhard Hertel, managing director of Garching Innovation points out that “the right mixture of scientists, lawyers and businessmen and a well-organized back-office is the basis for success in technology transfer.” This contrasts with many Technology Licensing Offices (TLOs) where emphasis was devoted to technical expertise at the expense of legal and business expertise. Limitations in terms of expertise and human resources often leads to the outsourcing of part of the work to patent agents, technology brokers, business consultants, etc. Studies in the US6 note that the vast majority of university TLOs outsource the preparation of patent applications to external patent agents in order to make sure that people with the appropriate technical expertise are selected to draft each patent application. ("Research and Innovation Issues in University – Industry Relations", pg. 6)

Despite the plethora of collaboration models, many of the most successful models do not provide open access to data or resource sharing. This protective approach to data management limits innovation. Although sharing data is part of the mission and culture of universities, it does not fit within the traditional competitive business models practiced by most companies. However, there are emerging examples of new open business models that support open innovation. The continued development of such open business models will be as crucial, if not more crucial, than technology development to sustain highly innovative collaborative structures between industry and academia. It is the hope that such open research collaborations will lead to the development of new paradigms to approach disease treatment, yielding high-value therapies and testing technologies that better define those patients who will benefit from a given therapy and therefore provide true value based on healthcare outcomes. (Open innovation networks between academia and industry: an imperative for breakthrough therapies, pg. 2)

Entrepreneurial mindsets do not develop in professional life, but already do so in the early phases of socialisation. Therefore, education is in a process enhancing or process-triggering position. Entrepreneurial thinking and acting must be developed in a long-term process. Entrepreneurship Education needs method pluralism with a strong focus on experience-based learning, not new method monism. It is strongly linked with economic education, but is an interdisciplinary task for various subjects and additional personality-based offers (e.g. coaching, extra-curricular working groups, portfolio folder). (Entrepreneurship Education between economic educational philosophy and key competence for lifelong learning, pg. 8).

3. General Regulatory Framework and Financial support

Cohesion policy’s main instrument, the European Regional Development Fund (ERDF), is used to support incubators and science parks (infrastructures and accompanying services) which are an effective means to spin-out knowledge into the market place and can help create better SMEs – university links. Well-run incubators and clusters have significant advantages which make them outstanding instruments of knowledge transfer, most notably for high technology. A distinctive feature is that services are available which increase the likelihood of knowledge transfer occurring successfully. However, as well as support for infrastructure, the ERDF provided co-financing of around €4 bn in the period 2000-2006 for innovation and technology transfer and for establishing networks and partnerships between business and research institutions. The ERDF therefore played a significant role in facilitating interaction between public research organisations and industry, both in terms of regional and trans-regional

interaction. *(Improving knowledge transfer between research institutions and industry across Europe, pg. 14)*

The *European Social Fund (ESF)* provides financial support through the assistance to persons (training, guidance, etc.), and for the development and modernisation of educational structures and systems. In the new programming period (2007-13), there is an increased emphasis on strengthening research and innovation, particularly through knowledge transfer. *(Improving knowledge transfer between research institutions and industry across Europe, pg. 15)*

Transnational knowledge transfer has always been at the heart of the *Research & Technological Development Framework Programme (FP)*. Indeed, most FP projects involve a mix of participants from the public and private sectors, from several countries. Certain thematic areas, such as the ICT sector, have been particularly successful in this respect: more than 90% of projects involve research institutions - industry collaboration. This clearly facilitates the development of technologies ready for commercial exploitation. As well as R&D projects, the FP also funds the intersectoral mobility of research staff, including university-industry exchanges. *(Improving knowledge transfer between research institutions and industry across Europe, pg. 15)*

The new *Competitiveness and Innovation Programme (CIP)* supports all forms of innovation, public-private partnerships and measures to improve access to finance including loans, venture capital, and "business angel" finance. It also funds novel ways to facilitate knowledge sharing between research institutions and companies, in particular for SMEs, as well as new transnational clustering initiatives. In the area of eco-innovation, it in particular supports the market up-take of innovative technologies and practices through pilot and market replication projects. *(Improving knowledge transfer between research institutions and industry across Europe, pg. 15)*

**Joint funding:** favour collaboration by providing **jointly funded research grants and fellowships.** Joint funding will foster collaboration. Experience shows that companies (both large and SMEs), which contribute financially to training fellowships, tend to become more committed in the training of researchers, incorporating them in core projects of the company. *(Mobility of Researchers between Academia and Industry, pg. 18)*

**Awards and individual funding:** provide extra funding through **awards** for exceptional collaboration between the private and public sectors, e.g. rewarding "entrepreneurial academics". Develop new initiatives, e.g. **funding actions** for **retired people from industry,** who could bring their expertise to academia. *(Mobility of Researchers between Academia and Industry, pg. 18)*

**Performance indicators:** parts of the national public funding for academia should be linked to performance indicators based on allocating public funding in relation to, among others, the number and size of industry collaborations. *(Mobility of Researchers between Academia and Industry, pg. 18)*

An example of existing good practice is the Netherlands’ **innovation vouchers** scheme whose main objective is to enable SMEs to buy knowledge and strategic consultancy from research institutions through innovation vouchers (worth €7500) and thus to stimulate interaction and **exchange between the knowledge suppliers and SMEs.** The knowledge supplier can then hand in the voucher to the Innovation Agency *SenterNovem* and receive payment. State aid
rules allow supporting such consultancy with public funds. (Improving knowledge transfer between research institutions and industry across Europe, pg. 13)

Each research institution should develop and implement policies regarding at least the management of intellectual property, staff incentives and conflicts of interest. Thus regarding **Intellectual Property (IP) Policy**, the research institution should define and communicate a long-term strategy in relation to the management of IP and Knowledge Transfer (or more broadly innovation), including a strategy as to how these activities should be pursued. A written policy explaining how IP management relates to and supports the overall mission of the research institution should be developed, published and implemented. This policy should include guiding principles relating to the emphasis the research institution places on the financial and non-financial benefits of the effective management of IP exploitation of Knowledge Transfer. (Improving knowledge transfer between research institutions and industry across Europe, pg. 6)

Intellectual property rights (IPR) constitute an **important framework condition** for knowledge transfer. Commercialisation of research results through patents and licensing is important, although sometimes overemphasised. Proper treatment of IPR is a prerequisite of collaborative research although their economic relevance differs greatly between different fields of technology. The legal framework at HEIs differ also. Specialised supportive infrastructure is a prerequisite for the successful use of IPR. (Good practice in industry-science relations, pg. 35)

It is the **regions** however that have the **greatest opportunity to turn strategic policy into practical results** in the short and medium term. The concept of regional or local environment is important in the innovation process because it is geographically proximity, the nearness of the people that work in the firms, research centres and universities, sharing a common culture and a lifestyle that facilitates patterns of cooperation and interaction between firms, institutions and public administrators. (R&D-Industry Co-operation to Foster Innovative Firm Creation, pg. 141)

Several reasons why universities patent IP:
- Universities are not organisations to keep trade secrets.
- In order to protect its knowledge, universities should patent.
- At least in some sectors, the existence of a patent eases the negotiation process with industry.
- Universities patent inventions to increase the potential use.
- Universities patent for profit.
- Universities patent in order to facilitate the subsequent processes of spin out and value creation through acquisition.
- Universities should not patent their IP, but instead should establish the partnerships with firms that can manage the process professionally.

(Effective Collaborative R&D and Knowledge Transfer, pg. 12)

**Lack of clarity over IP ownership** increases the time and cost involved in negotiating research collaborations and prevents some deals being completed. Many universities and businesses say that disagreement over IP ownership is a major barrier to research collaborations. The costs of protracted negotiations in some cases can be high, both financially and in tying up staff. This in itself deters some organisations, especially SMEs, from trying to collaborate with universities in research. But more important, several businesses and universities have failed to reach agreement and walked away from collaborations because they found it too difficult to reach agreement on IP ownership. (Lambert Review of Business-University Collaboration, pg.50 )
Maximum **creative use of IP** allows the full economic potential of a research collaboration to be unlocked. The business sponsor needs to have the rights that are required to bring the technology to the market. But universities also have important interests. Publication of their research results is of benefit to the wider scientific community. Continuing research in the same field may lead to new scientific developments. Universities may also want to explore other applications and uses of the IP in different scientific fields. Recent reports from the CBI, the Royal Society and the Patent Office confirm that these freedoms are important.12 If business negotiates full ownership of IP with strong restrictions on university use, this may reduce the total economic impact of the IP in the future. *(Lambert Review of Business-University Collaboration, pg.51)*

The Review has identified a number of objectives for improving the management of IP in research collaborations:
- It would be useful to establish a simple set of ground rules for IP ownership, which would be the default position on which to build most negotiations.
- There should be maximum flexibility in the use of IP, to stop it being locked up in a way that limits its exploitation across as wide a range of areas as possible.
- At the same time, the Funding Councils and Research Councils should make it clear to universities that public funding is intended to promote the public good rather than to raise revenues.

Academics should continue to receive incentives from universities to produce commercial IP.
- Companies should have secure rights to the IP they want to commercialise.
- Ownership should be proportionate: the party which makes the biggest contribution (intellectual as well as financial) should have first rights on the IP ownership.

The Review believes that the best way to meet these objectives is to introduce an IP protocol. This would provide simple ground rules for negotiations and encourage the flexible use of IP by both universities and business. In most cases universities make a significant contribution to collaborations, so the default position should be that they own the IP. But companies could own the IP whenever their contribution is significant.

It is unlikely that the protocol would affect negotiations for strategic relationships between large companies and universities. These are usually designed to benefit both parties, and involve significant contributions from each. The likely impact would be highest on SMEs and those larger businesses that have fewer relationships with universities, and on universities that have less developed industry research links. *(Lambert Review of Business-University Collaboration, pg. 51)*

Institutional policy on IP for universities should also consider issues relating to IP ownership within collaborative research programs and/or other contractual agreements with various partners (including other universities, sponsors, companies, public sector bodies, etc.). "Research and Innovation Issues in University – Industry Relations, pg.5"

In many institutions, **TLOs** also play an active **role in sensitizing researchers and students** on the existence of the office, on the benefits of considering exploitation of their research results and on the appropriate procedures for disclosing inventions, patenting and licensing. Training and awareness raising therefore constitutes an important added function of the TLO. "Research and Innovation Issues in University – Industry Relations", pg.6)

In all Member States there are schemes to promote intersectoral mobility and training in industry; however, a few good practice examples as regards public to private sector mobility can
be identify. In Italy, for instance, academic researchers can be seconded to industry at low costs to the industry and with financial support from the ministry to replace such researchers. The French law on innovation and research of 1999 provides some measures to facilitate mobility from academia to industry, including the possibility to create or to be associated with the creation of a spin-off company exploiting the research, without losing the status of civil servant for up to six years and taxation relief for companies employing young PhDs. Austria is moving towards a system where researchers in the public sector are no longer civil servants and therefore not part of the specific civil service pension system. Some countries have developed significant opportunities for start-ups and spin-offs. For example, in the Netherlands, a large programme has been created in the area of life sciences. In any case, efforts to increase networking between industry and academic institutions should continue. ("Raising EU R&D Intensity, Direct Measures", pg. 68)

In the area of “Incubator”, “Bridge” or “Conversion Gap”, lessons from past experience and emerging good practice suggest that policy makers need to:

- **Recognise an important gap** in the technology transfer process, not restricted to specific regions or countries, between the completion of a grant-funded research project in a university or research institute, and the development of a high-growth business start-up proposal, based on this innovation, that should be capable of attracting outside risk capital investment on reasonable terms.
- **Establish programmes** that have secure financing and realistic expectations of costs and revenues, including adequate public or educational sector sponsorship. Their continuation should not depend on generating investment returns or private-sector fundraising that can distort project selection and divert management time.
- **Utilise private sector commercial management** to select much less narrowly than would an early-stage investor from individual research projects with some definite commercial potential. ("Raising EU R&D Intensity, Risk Capital Measures", pg. 22)

Supporting RTD are:

- **Direct Measures**, i.e. measures involving the direct transfer of financial support from the public to the private sector via grants, loans etc.;
- **Fiscal Measures**, i.e. measures whereby the public sector foregoes tax income from the private sector in exchange for approved R&D investment behaviour;
- **Risk Capital Measures**, i.e. public measures affecting the flow and use of risk capital for innovation-related activities likely to increase R&D investment levels;
- **Loan and Equity Guarantee Measures**, i.e. measures whereby the public sector tries to encourage additional investment in R&D by offering to share part of the risk involved in the provision of support for innovation-related activities. ("Raising EU R&D Intensity, Fiscal Measures", pg. 1)

**Build Relationships with Local, National and International Stakeholders**

Identify the various stakeholder groups (such as heads of schools, administrators, teachers, parents, school boards) and provide information that focuses on the broad benefits of EE.

- Organise and link national, regional and local awareness campaigns to provide open communication and transparency among all stakeholders.
- Recognize involvement by stakeholders outside of the education system in EE activities and programmes.
- Encourage the creation of multi-stakeholder partnerships with the mission of creating learning communities to foster entrepreneurial mind-sets.
Engage international organizations, donor organisations, NGOs, and foundations

International NGOs and donor organizations might provide funding to innovative pilot projects, programmes and schemes, establishing and expanding international partnerships, networks and linkages between key stakeholders to promote entrepreneurship education and training. These organizations can also be engaged directly in social entrepreneurship and enterprise projects with students and may even become future clients of the students. (Building Business and Entrepreneurship Awareness: An ILO experience of integrating entrepreneurship education into national vocational education systems, pg. 9)

Encourage the creation of multi-stakeholder partnerships

Encourage the creation of learning communities with the mission of fostering entrepreneurial mind-sets, by building links between the public and the private sector, involving schools, academia and employers’ organizations, as well as relevant intermediary organizations. Recognize the role of intermediary organizations dedicated to the dissemination of entrepreneurship activities within academia as well as to building links between academia and the business world. (Building Business and Entrepreneurship Awareness: An ILO experience of integrating entrepreneurship education into national vocational education systems, pg. 12)

The ILO’s KAB entrepreneurship education programme was first introduced in Kazakhstan in 2001 and pilot tested in five professional colleges and lyceums. By the end of 2008 around 10 primary vocational schools in Kazakhstan were teaching KAB to 3000 students. It was in April 2009, however that with the financial support of the two largest oil companies in Kazakhstan - Chevron and Baker Hughes - USAID launched a project in support of KAB implementation which was administered by the Kazakhstan Small Business Development Project. Thanks to these new partnerships and private funding, within two years, the Ministry of Education & Science had decided to adopt the full version of the KAB course in the amount of 80 hours (as recommended by ILO) in vocational education, 619 new teachers had been trained to deliver KAB in all 14 oblasts, and the number of KAB students per year had increased from about 2,400 to about 114,800. (Building Business and Entrepreneurship Awareness: An ILO experience of integrating entrepreneurship education into national vocational education systems, pg. 12)
At the same time, the results indicate that for the sample analyzed, the best results were obtained consistently by partnerships of the three agents, where government provides seed capital, universities assist and manage resources, and privates exploit their innovative business ideas. The reasons of such findings are not explored in deep in this work, however, it seems like the triple helix model in supporting new business ideas, and which considers the knowledge transfer from universities to entrepreneurs is a key element to successfully start up. From our sample, the companies subsidized and which successfully partnered with university incubators were also closer to the high-impact start ups, than those firms partnering private consulting firms. The good results for the triple helix cluster may be linked with the reputation and visibility of incubators, based on reputational factors as well as marketing resources, networks, and systematic access to relevant experiences and cases of study. The last may imply that universities are perceived as better partners for the best projects, and therefore there could be a selection bias, but not necessarily that the university factor explains completely the better performance. The scope of our study and our sample size do not provide enough empirical data to predict that triple helix will always outperform the traditional subsidies to entrepreneurs, but at the exploratory level, it raises interesting questions like deeper studying the link between partnering with universities and performance of the start up, which can be universities attracting the best projects (selection bias) or universities affecting the process of starting up and growing (universities transferring knowledge). (Start-ups success using public funds: university versus industry sponsorship, pg. 8)
The Canada Foundation for Innovation supports and engages in two types of partnerships:

- partnerships between researchers and institutions that undertake research activities; and,

- partnerships between research funding agencies to coordinate funding and improve outcomes.

Both types of partnerships are effective in promoting world-class research, improving the management of multi-institutional research infrastructure, coordinating access to financial support and reducing the burden on applicants.

Partnerships in support of world-class research: Collaborative research initiatives in areas such as physics, genomics, health sciences, material sciences and oceanography require the use of large-scale, state-of-the-art infrastructure and extensive national and international collaborations. As a result, research infrastructure is becoming increasingly complex and expensive. In many cases, no single institution, and in some cases, no single country, can afford to tackle these projects alone. Partnerships can help address this challenge by combining the expertise of researchers and the resources of several institutions and countries.

At the institutional level, the CFI Outcome Measurement Studies indicate that the intentional grouping of research infrastructure within institutions is fostering multidisciplinary research partnerships that focus on problem-oriented research. The studies also indicate that inter-institutional partnerships to develop and manage research facilities have a positive effect on research productivity and quality of the research outcomes. Supporting partnerships between researchers, institutions and the private and public sectors will increase the return on CFI investments by fostering dynamic interaction between sectors and facilitating the flow of research knowledge into the innovation system. (Canada Foundation for Innovation: CFI Strategic Roadmap 2012-17, pg. 13)

On the side of government there is a need to ensure:

- public policies which are well co-ordinated horizontally and vertically, but also flexible and adaptable to change;
- effectively-functioning channels of communication within multi-level governance arrangements that are open to inputs from the bottom up;
- recognition within the policy process of local diversity and the potential strength of local actions, as well as the value of evidence from local practice; and
- facilitation of the development of a supportive environment and trust relationship in which local actors are able to contribute efficiently to problem-solving in the partnership area.

In addition, on the side of partnerships there is a need to:

- ensure transparency and accountability of partnership structures, and create trust networks to improve the social capital of their area;
- improve local and regional information systems through better use of local data and indicators in order to work on the basis of sound local knowledge and expertise;
- demonstrate a strategic approach which goes beyond the delivery of projects and programmes that can adapt to the new challenges of the post-crisis economy and which can help directing the global economic system towards more social cohesion and quality of life for everybody;
- develop foresight capacity and take account of challenges and opportunities offered by emerging sectors (for example, in relation to climate, technology and demographic changes);
- open up to align with new partners to create the basis for long-term development strategies;
- network partnerships at the national level and learn lessons from international experience to ensure efficient dialogue with government
- demonstrate a capacity to enhance policy outcomes through appropriate monitoring and evaluation.

*(Vienna Action Statement on Partnerships, pg. 3)*

### 4. Specific Support Instruments

**For Public Research Organisations (PROs)**

Without abandoning the Open Science Model, PROs should seriously consider taking a proactive role in the innovation process by managing IPR arising from research results. This is an important strategic decision, which requires establishing a clear mission, realistic objectives, appropriate resources and a dedicated professional transfer office.

Industry and PRO associations should develop and implement by mutual agreement voluntary codes of conduct and guidelines to optimise the opportunities for a range of strategic relationships that can be entered into. Both of these key stakeholders should recognise the mutual benefits that such interactions can yield.

("Management of intellectual property in publicly-funded research organisations: Towards European Guidelines", pg.1)

**KTUs are centres of specialisation.** The commercial effects of collaboration with the industry are limited compared to those of a network of KTUs. The expertise and experience stemming from a KTU active in knowledge transfer can be augmented by the network. There are established networks that collect and disseminate the joint experience of several KTUs, allowing each to benefit from a wide base of experience, and speeding up the learning process. Networks enable the creation of specialized centres for specific activities and referrals among KTUs, thereby reducing costs and inefficiencies (a KTU specialised in spin-off could assist another specialised in knowledge transfer.

This joint experience could result in reduced training or other fixed expenses (joint spin-off website, collaboration in technology fairs and workshops, shared platforms and personnel, etc.) and would exploit size advantages. Individual KTUs could thus be of small size, and need not have the capabilities to cover the full range of expertise of knowledge transfer activities, including spin-offs and licensing. The network should be nationally supported with this support decreasing over time counterbalanced by the increased support of the KTUs within it.

It is recommended that national/regional networks relate to other networks within the ERA, to maximise learning effects, and work towards a unified work methodology. *(The reform of public research centres and universities, pg. 22)*

**Rationale**

To support spin-off activity the KTU needs a specialist infrastructure, including expert personnel, an evaluation system, supporting network. Since the KTU generally will opt for the most efficient way of transferring knowledge, it may favour licensing over spin-off activity.
However, the authorities (government, local or regional) should encourage KTUs to develop spin-off expertise. Support in the form of both funding and training should be provided. Spin-off activities are complex and intensive. For example, an entrepreneur (and sometimes a whole team) is needed to lead the project, something that is not required for licensing. It requires contacts in the VC and financing community, the building of a reputation and good screening and business planning capabilities. Such a major investment necessarily requires long term commitment to spin off activity. (The reform of public research centres and universities, pg. 23)

Alignment of interests;
- **Strategic collaboration** is a deal as any other and both sides must strive to achieve a ‘win-win’ situation. Each party must clearly state their objectives, their understanding of the collaboration strategy, and their own position in it. If the goals are clear, then at least the partners can attempt to find a solution. Unless both parties are happy with the terms of the collaboration – each should be willing to say ‘no’ to the project. (Effective Collaborative R&D and Knowledge Transfer, pg. 25)

The **measures referred** to would include the following:
- Introduce sweeping changes to current regulations and bylaws, to reduce red tape that impedes the process. To be effective, these changes have to be recommended by the University administration, mandated by the Government, and overseen by joint committees.
- **Encourage faculty members (expats and nationals alike) to reach out to the industrial sector** to cultivate meaningful contacts, develop (one on one) connection with their counterparts, and search and find potential areas for collaboration, within their field of specialization. This would invariably result in faculty members gaining relevant experience that would eventually be passed on to students.
- Institute a **Faculty Fellowship Program**, where tenured or tenure-track engineering faculty could spend 10 weeks, a semester, or an academic year, gaining valuable industrial experience(on site) in their field of technology, or in an allied area, compatible with the interests of the Industry and the College.
- Set up advisory boards to: facilitate collaborative efforts, provide logistical support and resources to collaborators, and monitor progress of joint activities. (On Industry-Academia Relations in the Arab Gulf States: Steps toward Building Strategic Partnership, pg. 5)

**Resources are scarce** and, as such, the **decision on which research area** they should be **focused** in order to obtain the best results for society is **one of the most difficult and important** for policy makers at all levels. One of the best ways to optimise public investment is to identify areas in which there will be the greatest number of beneficiaries – it frequently takes the form of a **Cluster**. (R&D-Industry Co-operation to Foster Innovative Firm Creation, pg. 136)

This feedback process also generates new services offered by the university itself that strengthen its work and can lead to the birth of a particular technology cluster that could elevate the research institution to international levels more rapidly. And, indirectly, the process enhances the professional opportunities available to students through the growth of the regional economy as a whole. At a regional level, the ability to identify emerging sectors can help to direct resources to support the creation of high-growth enterprises that have the greatest impact on the socio-economic well-being of the region. (R&D-Industry Co-operation to Foster Innovative Firm Creation, pg. 137)

Large companies are **consolidating their relationships with university research departments**. Whereas in the past they may have had scores of short-term research contracts with different departments across the country, today many prefer a small number of substantial
longterm collaborative research partnerships. *(Lambert Review of Business-University Collaboration, pg. 38)*

Collaborative research often involves academic researchers working alongside company employees on **shared projects**. The contributions of each side to the partnership will vary, but the company may provide long-term secure funding along with company data, staff and equipment. In return the university department will offer access to skilled researchers and an international network of academics. A pioneering example of this type of relationship is the **Rolls-Royce network of University Technology Centres (UTCs)**. Many other multinationals, for example British Nuclear Fuels, BAE SYSTEMS, and GlaxoSmithKline have also developed this type of longer-term strategic relationship. *(Lambert Review of Business-University Collaboration, pg. 38)*

Awareness in the academia (PROs) as well as in industry must be created regarding the meaning and importance of “academic freedom” and working together. Too quick and too easy a decision is made, that in a partnership the concept of academic freedom is violated. This hampers two ways an intended partnership. *(Effective Collaborative R&D and Knowledge Transfer, pg. 20)*

Conduct evaluation of teams/groups and institutions with a view to give credit to academia-industry collaborations. As science is more and more team-based, evaluation of groups, research teams or institutions provides incentives for joint experiences. Evaluate positively academia that includes industry representatives in its organisation structures and decision making-bodies, for example by participating in the management board, advisory committees, or in the design of programmes, etc. *(Mobility of Researchers between Academia and Industry, pg. 19)*

Develop the concept of **consultancy by academic staff** as one of the simplest ways for academia to interact with industry and exchange research expertise. The legal arrangement terms of short employment contracts are relatively simple in comparison to other short term mobility. For large companies, consultancy offers a chance to get to know academic researchers, while SMEs can benefit from consultancy for a relatively low cost. Consultancy is often seen as a **first step towards other collaboration**. Much collaborative research in academia originates from consultancy relationships. *(Mobility of Researchers between Academia and Industry, pg. 13)*

Behind the formal procedures such as joint supervision or placements in business, successful long-term university-business cooperation processes are holistic, – i.e. the soft part of the relationship is very important and continuous face-to-face experience is mandatory to build trust and durable partnerships. *(European University / Business Forum, slide 12)*

Fiscal R&D incentives allow companies to reduce their tax payments as a reward for carrying out innovative activities. Most EU-15 countries operate some form of tax measure to stimulate business enterprise R&D, as do Australia, Canada, Japan, the US and China. The use of fiscal incentives for R&D has increased in recent years. Some examples of the types of schemes employed are given in the following table.
Overview of types of fiscal schemes

<table>
<thead>
<tr>
<th>Corporation Tax Schemes</th>
<th>Italy: (only for firms in Objective 1,2 and 5b areas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume based</td>
<td>United Kingdom: (separate schemes for SMEs and large firms)</td>
</tr>
<tr>
<td></td>
<td>Canada (federal and state level schemes)</td>
</tr>
<tr>
<td>Corporation Tax Schemes</td>
<td>Belgium (per additional member R&amp;D staff)</td>
</tr>
<tr>
<td>Incremental</td>
<td>France, United States, Japan, Korea</td>
</tr>
<tr>
<td>Corporation Tax Schemes</td>
<td>Austria (three parallel schemes), Portugal, Spain (national level and some regional fiscal schemes), Australia</td>
</tr>
<tr>
<td>Mixed systems</td>
<td></td>
</tr>
<tr>
<td>Schemes based on employers’ share of wage tax and social contributions</td>
<td>Netherlands</td>
</tr>
<tr>
<td>Fiscal schemes to attract foreign “key personnel” * through personal income tax</td>
<td>Finland, Sweden, Denmark, Netherlands (all have favourable income tax rates)</td>
</tr>
</tbody>
</table>

* These schemes are not exclusively for R&D staff but for all “key personnel” which could also include other staff e.g. management, engineers.

(“Raising EU R&D Intensity, Fiscal Measures”, pg. ix)

Tax incentives targeting Young Innovative Enterprises as introduced by some Member States can have a positive effect on R&D activities and said companies’ growth. They can take the form of a corporate tax exemption or a time-limited exemption on social security payments associated with the employment of highly qualified personnel (e.g. researchers and experts), thereby lowering the costs for young R&D–based businesses. Member States are invited to consider offering specific tax incentives for this strategically important category of enterprises.

VAT on R&D costs incurred by taxable persons is deductible where the goods and services in question are used for VAT-taxable transactions. The current rules of the 6th VAT Directive concerning exemptions, public authorities and subsidies may affect this deductibility and hence place an unnecessary burden on certain research activities. The Commission has committed itself to reviewing these three issues, which need to be modernised. When reviewing the legislation, the Commission will critically examine the restrictions on the recovery of VAT on R&D expenditure. It will also consider to what extent the current rules on public authorities and subsidies hamper the creation of public-private partnerships and cost-sharing arrangements, including in the research field where such structures are increasingly being used to conduct R&D efforts requiring the pooling of resources from public and private entities or the outsourcing of research by private entities to public ones (contract research). (“Towards a more effective use of tax incentives in favour of R&D”, pg. 11)

In the longer term, it is desirable to seek an EU-wide tax definition of R&D and innovation and to give such expenditure favourable tax treatment in the common consolidated corporate tax base (CCCTB). The Commission will include this in the relevant working group discussions with Member States, with a view to defining a coherent and well-balanced solution in line with other
possible incentives within the CCCTB. ("Towards a more effective use of tax incentives in favour of R&D", pg. 12)

There is a need for complementary actions to make firms ware of the opportunities and threats, but also the necessity, of innovation and going 'international' and of measures to encourage their entrance to new, more innovation-demanding markets. Without these, direct R&D-supporting measures to encourage them to be involved in R&D and innovation, collaborate with research organisations, and the like, or indirect measures such as tax incentives, may still have limited results in terms of increasing the private investments in R&D. ("Raising EU R&D Intensity, Direct Measures", pg. xiv)

The Commission has been an active proponent of through the "Marie Curie Industry-Academia Strategic Partnership" scheme which supports the development of such long-lasting collaborations via the exchange of researchers. The new research, development and innovation State aid framework has also introduced a measure on aid for the loan of highly qualified personnel from research institutions (or large companies) to SMEs. (Improving knowledge transfer between research institutions and industry across Europe, pg. 10)

Develop graduate and doctoral programmes in partnerships with the business community, including with SMEs, as programmes jointly developed will better suit future employers’ needs. Industry involvement in defining and reviewing academic training programmes will also help adapting them to constantly changing market needs. (Mobility of Researchers between Academia and Industry, pg. 10)

Provide entrepreneurship training to nurture a new category of researcher: the “entrepreneurial academic”. Entrepreneurial skills allow researchers to exploit their knowledge and develop the commercial of their work. Senior researchers should also be trained or retrained in this sense. Set up technology, innovation and research management training programmes in order to equip experienced research with strategic and organisational skills. (Mobility of Researchers between Academia and Industry, pg. 11)

Employ staff specialised in industrial relations. Partnership between academia and industry can only flourish with staff specially designed to take care of the relations with industry, while working in academic premises. This can take many forms such as Technology Transfer Offices (TTO), or development or liaison offices. This is especially important for establishing cooperation with SMEs, which have not often established direct contacts with academia. For further information go to http://www.eif.int/tech_transfer/ (Mobility of Researchers between Academia and Industry, pg. 16)

Joint research programmes, which promote direct collaboration between industry and science, are a well-established policy intervention mechanism, which has a significant effect upon the level of industry science relations (ISR). In this area, good practice particularly refers to thematically focused programmes which apply a bottom-up approach of defining joint research themes, have a long-term perspective of cooperation and rely, at least partially, on an 'infrastructure' approach, i.e. the establishment of institutions and/or facilities that are operated both by enterprises and science institutes and maintain cooperation after funding has ended. With respect to such programmes, a competition-based approach of allocating funding has proved to be effective. Such an approach stimulates the involvement of a large number of applicants but restricts funding to promising ‘best practice’ cases, which may serve as orientation points for other actors. (Good practice in industry-science relations, pg. 13)
The need for greater professionalism in managing and handling collaborative R&D and knowledge transfer requires that universities train people accordingly. Both students and academics need this training. Basic IP course (single modules or greater depth) should there be offered as a standard part of degree programmes and as on-the-job training. (Effective Collaborative R&D and Knowledge Transfer, pg. 17)

Collaborative projects should be managed professionally from both sides, respecting each other’s skills and expertises. Although a split in responsibilities between the scientific and project management is recommendable, it is also recommendable that the scientific project leader has a basic understanding of managing a project. A (short) training course to this end should be developed focusing at researchers (both in academia and industry). (Effective Collaborative R&D and Knowledge Transfer, pg. 21)

Geographical and inter-sectoral mobility needs to increase substantially. The proportion of graduates who have spent at least one term or semester abroad or with experience in industry should at least double. This is even more true for researchers. All forms of mobility should be explicitly valued as a factor enriching studies at all levels (including research training at doctoral level), but also improving the career progression of university researchers and staff. National grants/loans should be fully portable within the EU. Full portability of pension rights coupled with the removal of other obstacles to professional, international or inter-sectoral mobility is needed to foster staff and researcher mobility and hence innovation. (“Delivering on the Modernisation Agenda for Universities: Education, Research and Innovation”, pg. 5)

Member States should build on initiatives such as that taken in France to make employment contracts for researchers in publicly funded institutes flexible to allow their reasonable participation in spin-out companies. (“Raising EU R&D Intensity, Risk Capital Measures”, pg. 24)

Promoting innovation and disseminating new knowledge can be successful as long as intellectual property issues are understood and managed professionally. Interaction on these points can be facilitated by tools such as the CREST decision tree, model contracts such as the UK’s Lambert agreements, or guidance such as the Danish document on Contacts, contracts and codices, as well as through awareness initiatives by the European and national patent offices. The Responsible Partnering initiative, developed by 4 major European university and industry associations (EIRMA, EUA, PROTON, EARTO), presents key insights into how effective research collaboration can be created. Member States have a role in the development and delivery of such initiatives and should support them actively. (Improving knowledge transfer between research institutions and industry across Europe, pg. 10)

In many countries, research institutions have created reward systems whereby the inventor receives a share of any profits made when licensing or spinning off inventions. An illustrative model is one where profits are split evenly between the researcher, the research institution and the business partner. However, although some financial incentives may apply, many staff remain reluctant to take part in such activities, especially as they are not taken into account for career progression. It is therefore important that the appraisal criteria also take into account other activities such as patenting, licensing, mobility and collaboration with industry. (Improving knowledge transfer between research institutions and industry across Europe, pg. 11)
Member States should make full use of the available funding sources, and encourage research institutions to do so. Cohesion policy funding (the European Regional Development Fund and the European Social Fund), national funding in line with the new Community framework for State aid for research and development and innovation (RDI), and the European Framework Programmes should all be used to leverage more links between industry and research institutions. (Improving knowledge transfer between research institutions and industry across Europe, pg. 11)

Continuity is critical for the accumulation of skills and the achievement of the necessary competence. It can only come from having core group on long-term career contracts rather than being assembled only for a project term. An important part of continuity is technical sustainability. The Applied Research Groups should therefore have some links with academic research to avoid senescence. (Promoting Enterprise-Higher Education Relationships, pg. 25)

From the university’s perspective, contract research can lead to longer-term collaborative research projects. It also helps university researchers to keep up-to-date with the latest developments in professional practice and to gain external research income. From the business perspective, many large companies have cut back their corporate R&D laboratories and smaller businesses often have limited financial resources to conduct their own R&D. Contract research in universities can be a flexible and cost-effective way for companies to undertake research. (Lambert Review of Business-University Collaboration, pg. 36)

Objectives and actions of the COSME Programme

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Actions</th>
<th>Total budget 2014-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving framework conditions for the</td>
<td>Activities to improve European competitiveness: Studies, impact</td>
<td>EUR 101.7 million</td>
</tr>
<tr>
<td>competitiveness and sustainability of EU enterprises</td>
<td>assessments, evaluations, conferences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Activities to develop SME policy and promote SMEs competitiveness:</td>
<td>EUR 64.5 million</td>
</tr>
<tr>
<td></td>
<td>Meetings, reports, databases</td>
<td></td>
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<tr>
<td></td>
<td>Tourism: Projects, prizes, surveys, events</td>
<td>EUR 131.4 million</td>
</tr>
<tr>
<td></td>
<td>New business concepts for consumer goods: Market replication-type</td>
<td>EUR 86.8 million</td>
</tr>
<tr>
<td></td>
<td>projects</td>
<td></td>
</tr>
<tr>
<td>Promoting entrepreneurship</td>
<td>Activities promoting entrepreneurship: Erasmus for Entrepreneurs</td>
<td>EUR 86.8 million</td>
</tr>
<tr>
<td>Improving access to finance</td>
<td>Financial instruments</td>
<td>EUR 1.4 billion</td>
</tr>
<tr>
<td>Improving access to markets</td>
<td>Enterprise Europe Network (EEN): Support services, partnership proposals</td>
<td>EUR 424 million</td>
</tr>
<tr>
<td></td>
<td>Support to SMEs abroad: Studies, helpdesks, platforms, events,</td>
<td>EUR 99.2 million</td>
</tr>
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<td></td>
<td>promotion activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support to international industrial cooperation: workshops, meetings</td>
<td>EUR 12.4 million</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>EUR 2.4 billion</td>
</tr>
</tbody>
</table>

(Differences and Similarities between CIP and COSME, pg. 8)
The dominant model in the industry is that of independent teams which raise funds from institutional investors, mainly pension funds, university endowments and financial institutions. These funds are structured as Limited Partnerships. This is why investors are called Limited Partners or LPs and the team which manages the fund acts as General Partner or GP. GPs are usually asked to invest a significant portion of their own net worth in the fund. Along with the carried interest (section 3.3), this is an important way to ensure a good alignment of interest between LPs and GPs.

There are several reasons why the limited partnership became the dominant venture capital structure in the US and, increasingly, in the rest of the world: (i) many of the LPs are tax exempt institutions, such as pension funds and the limited partnership structure allows gains to be passed from the fund to the investors without taxation; (ii) it is well suited to investors such as endowments or pension funds with long-term investment horizons; (iii) it can be restricted to a limited number of experienced investors and therefore has not required registration with securities authorities; (iv) the distribution system allows for the distribution of a carried interest to the managers which is a powerful tool to align interests between investors and fund managers to ensure they work towards the same objectives; and (v) it has a limited lifespan which implies that the fund managers have to raise a new fund every three to five years based on their track record. This is the basis for a very efficient mechanism for selecting managers: successful managers are able to raise new funds, unsuccessful managers exit the market.

The term of the partnership is usually 10 years with an extension option of 2 years. The investment period, during which new investments are made, is usually 3 to 5 years. The team is authorized to raise a new fund once the investment period is closed. (Why Venture Capital is Essential to the Canadian Economy, pg. 9)

5. Venture Capital

The Enterprise Europe Network offers support and advice to businesses across Europe and beyond and helps them make the most of the opportunities in the European Union. The services are specifically designed for SMEs. By the end of 2010, there were 78 framework partnership agreements signed within the EU and 14 with CIP participating countries. Additionally, there were 14 cooperation agreements signed with third countries (Japan, Tunisia and additional regions from China were added in 2010). Five more cooperation agreements are expected to be signed in the near future. The Network now covers the EU and, EEA countries and major economic areas such as USA, Russia, South Korea, Japan and China. It is present in 48 countries and has 589 partners in total. An amount of € 64,710,000 has been committed to cover part of the network grants for the second operational cycle within the same framework partnership agreements. An amount of € 3.5 million was originally planned for Network animation; € 700,000 of this amount was reallocated to Network grants. Nearly 100% of this budget has been committed. (2010 EIP Implementation report, pg. 6)

One way of activating more risk capital is through business angel networks. The current low levels of informal risk capital in Sweden strengthen the bargaining power of venture capitalists in regard to entrepreneurs but weaken the long-term supply of entrepreneurs and the emergence of new viable projects. In order to improve access to private active investors, a national business angel network called SwedBAN was founded in 2001. This is a for-profit association based on private and some public support. From the start, SwedBAN was considered also to be the national umbrella organisation, but that role has ceased. The national initiative has since been in the hands of NUTEK, which has stimulated the creation of
some **20 regional networks** through grants of SEK 150,000 each. NUTEK also runs a website for business angels and supporters. At present it is arranging conferences and workshops aimed at promoting the creation of a national organisation. This organisation is then expected to take over NUTEK’s role. In order to succeed in this work, NUTEK should increasingly join forces with local, private and experienced players and organisations. In order to improve the transparency in the business angel and informal capital market, matchmaking events should be organised and include collaboration with universities and incubators on a regional level. This would encourage the various players to collaborate and would also expand awareness about business angels and the possibilities for entering partnerships with incubators. *(The Role of Venture Capital, Global Trends and Issues from a Nordic Perspective, pg. 87)*

Access to seed financing is crucial to the growth platform of new young companies and the venture capital market as a whole. **Seed financing is highly profitable to the overall economy.** But markets are prone to rapid shifts following changes in investment or market sentiments, which makes the supply of finance to potential high-growth companies in the early stages of development distinctly erratic. As for venture capitalists, one of the greatest benefits deriving from their activity is the ability among investors to alter the balance between risk and growth prospects. As discussed, they have a high capacity to shift risk away from the single entrepreneur onto a diversified investment portfolio. On the other hand, venture capitalists are **not willing to back ventures subjected to genuine uncertainty:** they do not let innovators and entrepreneurs have it their way in trying out **blue sky projects.** In addition, the recent years’ development in markets has turned investors more risk-adverse and venture capitalists have been shunning early stage investments. *(The Role of Venture Capital, Global Trends and Issues from a Nordic Perspective, pg. 91)*

The CIP is divided into three operational programmes. Each of them has its specific objectives, aimed at contributing to the competitiveness of enterprises and their innovative capacity in its own areas, such as ICT or sustainable energy:

**The Entrepreneurship and Innovation Programme (EIP),** with a budget of € 2166 million, has as objectives:

- Better access to finance for SMEs through venture capital investment and loan guarantee instruments
- Business and innovation support services delivered through a network of regional centres: The Enterprise Europe Network
- Promotion of entrepreneurship and innovation
- Support for eco-innovation
- Support for policy-making that encourages entrepreneurship and innovation

**The Information Communication Technologies Policy Support Programme (ICT PSP),** with a budget of € 728 million, aims at:

- Developing a single European information space and strengthening the European internal market for ICT and ICT-based products and services
- Encouraging innovation through the wider adoption of and investment in ICT
- Developing an inclusive information society and more efficient and effective services in areas of public interest and improving quality of life

**The Intelligent Energy Europe Programme (IEE),** with a budget of € 727 million, aims at:

- Fostering energy efficiency and the rational use of energy sources
- Promoting new and renewable energy sources and energy diversification
- Promoting energy efficiency and new energy sources in transport.

*(What is CIP: Increasing competitiveness through innovation, pg. 1)*

**Economic activity**
The economic size and growth of an economy, as well as the wealth of its citizens, influence the number of start-ups. This key driver captures the state of a country’s economy (i.e., the GDP,
inflation levels and unemployment levels), all of which, intuitively, affect its VC attractiveness. An economy's size is an indicator of the number of corporations and deal flow opportunities. Economic growth should lead to demand for finance. If the economy is growing quickly, more attractive opportunities exist for entrepreneurs. *(Back to basics: Global venture capital insights and trends, pg. 21)*

**Entrepreneurial culture and deal opportunities**

**Access to viable investments** is one of the most important factors for the attractiveness of a regional VC market, especially for early-stage or start-up deals. This key driver reflects a country’s capacity for innovation and R&D, as well as the ease of starting and running and closing businesses in terms of time, costs and administrative requirements, and the quality of the IT infrastructure. Industrial and academic research and development (R&D) expenditure significantly correlates with VC activity. The innovative capacity of a country and the technical sophistication and literacy of its people affect the need for venture capital. *(Ibid.)*

**Depth of capital markets**

A well-developed stock market that permits venture capitalists to exit through an initial public offering is crucial for the existence of a vibrant VC market. This key driver captures the size and liquidity of the stock market, level of IPO and M&A and debt and credit market activity. Venture capital firms provide temporary financial support for young businesses, but must divest their exposure and eventually return the proceeds to their investors. For that reason, the divestment conditions must be favorable — that is, the M&A and IPO markets should be liquid. A bank-centered capital market tends to be less effective in supporting an efficient VC infrastructure not only because it lacks a strong stock market, but also because its secondary institutions compromise entrepreneurial activity, given the bankers’ conservative approach to lending and investing and the social and financial factors that reward entrepreneurs less richly and penalize failure more severely. *(Ibid.)*

**Investor protection and corporate governance**

In general, a strong legal infrastructure, the protection of investor and property rights, robust corporate governance and the presence of deal-supporting institutions, (such as banks, auditors, lawyers and consultants) are important to facilitate VC investments and influence the attractiveness of a VC market. This key driver takes into account the level of corporate governance, security of property rights, quality of legal enforcement and regulatory quality within a country. The legal environment strongly determines the size and extent of a country’s capital market and local companies’ ability to receive outside financing. Furthermore, experienced law firms, and even more important, a high-quality legal system and law enforcement possibilities are required to handle potential issues in VC contractual obligations. *(Ibid.)*

**Taxation**

Lower corporate taxation, more tax incentives and fewer administrative burdens are also crucial for a vibrant VC market. This key driver assesses a country’s tax incentives and administrative tax burdens. Corporate tax rates strongly affect entrepreneurship. Greater entrepreneurial activity takes place in countries with lower corporate taxes. Indeed, some countries create start-up incentives by taxing personal income higher than corporate income. On the other hand, less entrepreneurial activity emerges from countries where the government poses substantial hurdles that increase administrative efforts and start-up costs for entrepreneurs. *(Op.cit, pg. 22)*
Human and social environment
National culture shapes both individual orientation and environmental conditions, which lead to different levels of entrepreneurial activity in particular countries. This key driver incorporates the quality of education and human capital, labor market rigidities, levels of bribery and corruption and costs of crime within a nation. In order to foster a growing risk capital industry, research culture, especially in universities and laboratives, plays an important role. Rigid labor market policies negatively affect the evolution of a VC market. To allow entrepreneurs and VCs to harvest the fruits of their efforts, the costs and efforts needed to recruit, hire and lay off employees must not be so high as to be discouraging. Finally, the highest societal barriers and costs for start-ups in different countries are associated with corruption, crime, a larger unofficial economy and bureaucratic delay. (Ibid.)

Finally, an important new development is that smaller U.S.-based high-tech companies, and even start-ups, are facing considerable pressure to engage in innovation offshoring. In fact, venture capitalists in Silicon Valley now require start-ups to present an “offshore outsourcing” plan as a precondition for receiving funding. The emerging business model is to keep strategic management functions like customer relations and marketing, finance, and business development in Silicon Valley, while increasingly moving product development and research work to offshore locations.

In the view of Hautamäki and Lemola (2004), the current situation in Finland is paradoxical. The general attitude on entrepreneurship is increasingly positive, the market continuously boasts grand opportunities, education of the workforce is at a demonstrably high level in global comparison, but still only few Finns start their own company. Hautamäki (2003, 33–34) uses Silicon Valley as an example of combining high knowledge and high technology to respective attitude towards entrepreneurship. In Silicon Valley, people respect entrepreneurs and seek prosperity, but still money is not the only motivation. Therein, a genuine interest to put new technology to work in the market is a remarkable driver for new venture activity. In Finland, people seem to appreciate security more than adventure, social equality more than prosperity. This helps explain the acceptance, in Finland, of high income tax levels. Also, it helps explain why high income tax levels do not promote entrepreneurship, although capital gains tax levels are much more competitive in Finland, in international comparison.

Consequently, founding entrepreneurs are not driven by extreme growth aspirations. In result, also due to historic differences in fiscal and social security policy, there is a shortage of high net worth individuals dedicated to business angel activity. Also, due to the larger role of government in the V2C space, among other reasons, the VC community is not as vibrant as in the USA. Because of the government’s policy to control for the delivery of public resources to the growth ventures, a relatively massive network of various advisory, business development, and incubator organisations – those who live off the growth company process, rather than the success of individual growth companies – has emerged, in Finland. (Performance of the government venture-to-capital activity, pg. 4)

Norton then explores the importance of geographical proximity to the entrepreneurial innovation that is hypothesized to lie at the heart of the new economy. This is where he draws on Micklethwait and Woodridge’s anatomy of the apparent success of Silicone Valley as an innovative cluster, concluding that tolerance (of failure or treachery), risk-seeking, restlessness, reinvestment in the cluster, meritocracy, collaboration, variety, product-obsession and low entry barriers compromise the culture of this economic community, the capital of the new economy, ‘a milieu conducive to spin-offs and start-ups’. His conclusion is that Silicone Valley, and other, lesser, though also new economy places are characterized by the
geographical concentration of scientists, engineers, entrepreneurs, and venture capitalists looking for value from technological discontinuities, the more disruptive, hence rarer, the better. (The venture capital market, pg. 97)

The key mechanisms facilitating the flow of knowledge, whether intra-regional, inter-regional or international, are knowledge itself, resources (particularly finance), and human capital. In strong market systems, venture capitalists that are proactive in seeking and assessing knowledge competences in laboratories are crucial links across the exploration/exploitation boundary (Kennedy, 2000). They are increasingly highly attuned to the nuances associated with specific, advanced fields of research, the ‘star’ scientists associated with leading edge research, and risk assessment associated with its commercialisation. In systems such as Silicon Valley some scientists and engineers are highly attuned to stock markets, prospects for venture funding and initial public offerings (IPO). It is clear to see that the systemic nature of the likely interaction between scientific research, i.e. ‘knowledge generation’ (itself involving exploration and examination knowledge, the latter involving trialling and testing competences), and innovation or ‘knowledge exploitation’ is massively assisted by these ‘boundary crossing’ competences. To that must be added the prevalence of ‘academic entrepreneurs’ managing a spinout firm while keeping an academic post in a nearby university, and receiving business management support from venture capital. These and their staff convey knowledge of distinctive kinds across boundaries too, and the micro-system of the firm operates as a seamless web. But added value comes from the fact that venture capital invests in portfolios of proximate and non-proximate firms among which, at the inter-firm and inter-research centre levels, comparable knowledge transfer occurs both formally and informally. It is this network form embedded in market transactions and some ‘untraded interdependencies’ that typifies the ‘open systems architecture’ of the ERIS or Entrepreneurial Regional Innovation System. (The regional development agency in the knowledge economy, pg. 12)

A substantial body of literature suggests that venture capital firms operate successfully because they are embedded in many social networks that play a critical role in reducing information asymmetries or in compensating asymmetries through their reputation. This facilitates selecting start-ups to invest in and increases venture capitalists’ capacity to provide some form of added value to their portfolio companies, for example in linking with specialized providers or services/inputs. Proximity and the consequent localized reduction of information asymmetries increase the ex-ante assessment of the reliability and sustainability of the entrepreneurs and the other partners (Sorenson and Stuart, 2001). On the other hand, venture capital firms can build up a professional reputation within circumscribed social networks. This is a key element in attracting new venture proposals and in building the syndication networks that may lead to the creation of the start-ups. (Op.cit, pg. 7)

Knowledge-intensive property rights traded on a public stock market provide the best exit opportunity for venture capital firms. We argue that venture capital could not develop to the levels already reached without a dedicated and public market for knowledge-intensive property rights. Venture capital needs a market for equity where as many customers can purchase ‘slices’ of the new knowledge intensive companies as possible in a context where much information is available about the characteristics of the firms and there is the largest possible number of potential customers. Exchanges on stock markets are ‘public’. They differ sharply from private transactions, not only in the quantity and variety of agents involved both on the demand and on the supply side, but also and particularly in the density, frequency, recurrence, and concentration of transactions. Moreover, the quality of information about the firms listed is standardized on a stock market and inspected by the regulatory authorities. Each transaction is public and everybody can easily access the relevant
information about the structure of transactions in terms of density, quantities, and price fluctuations. This has clear benefits for prospective investors and the general public. (Op.cit, pg. 11)

It is imperative that the public sector strives to operate so as to compensate for the lack of private capital provision in areas where there is a strong social motivation for investment, but also so as to catalyse better functioning private markets. In addition, the public sector needs to give high priority to ensuring appropriate conditions for the individual entrepreneur and risktaker – in other words, an operational risk-reward ratio for the human being who ultimately stands behind any potential high-growth venture. (The Role of Venture Capital, Global Trends and Issues from a Nordic Perspective, pg. 91)

There is also a need to push reforms so as to alleviate the distortions that deter risk-taking. The risk-reward ratio confronting the individual needs to be scrutinised and improved in many cases, for example by tax reforms and initiatives to improve societal attitudes towards entrepreneurship. Necessary tax reforms that may be considered include the reduction of capital gains taxes, which could stimulate more risk-taking and entrepreneurship. This must be combined with consistent reforms that raise the ability of institutional investors to diversify sources of venture funding. There is also a need to strengthen business angel networks and their links to technology incubators and complementary support services. (Op.cit, pg. 93)

Supporting capital formation begins with a tax policy that rewards long-term investment and encourages calculated, entrepreneurial risk taking. Tax differentials, such as favorable rates for capital gains and carried interest, serve as important tools for encouraging investment in emerging growth companies. In our current financial system, venture capital is the only source of long-term, institutional funding for such companies. When government increases the tax burden on venture capital, however, it inhibits the flow of dollars to innovative young start-ups.

Venture-backed companies also require a reasonable, efficient and predictable regulatory apparatus. Due to the relatively long-term investment horizons (typically five to seven years and often longer) and the uncertainties inherent in new product development, venture capital is already one of the most risk-intensive asset classes in the world. Additional delays and uncertainties caused by swings in regulatory policy, inconsistent guidelines and processes for federal agency approvals and slow-moving bureaucracies can push the risk profile of even the most exciting innovation beyond what a venture capitalist can consider acceptable. A promising company has a greater chance of receiving venture funding if there is transparency around the regulatory approval process through which it will move.

Finally, the government has an important role to play in the funding of basic research. It's from this pipeline of scientific advances in fields like information technology, life sciences and clean technology – achieved at government and university labs – that the venture capital community has traditionally drawn its innovations. VCs then commercialize these advances through a process called applied research. In this way, the government and the venture capital community have enjoyed a symbiotic relationship in bringing new discoveries to market. Without government funding of basic research, however, this pipeline would dry up. (The Economic Importance of Venture Capital-Backed Companies to the U.S. Economy, pg. 22)

Another noteworthy issue for policy makers is the fact that neither VCs nor CVCs spend much time or money on the earliest, seed and pre-seed stages of a company. What these micro-firms
need—even more than money, according to the interviewees—is coaching and management support to help them get to the stage of professional investment. In order to fulfil this need, our suggestion is that the EC could promote and organise incubation activities that provide active and professional guidance to starting entrepreneurs. In that way, the EC could help many start-ups to take the first steps needed to become ready for early-stage investment provided by VCs and CVCs. This would close the funding gap for many seed and pre-seed companies. Based on the finding that start-ups tend to be limited in their mobility, the EC could play a role in bringing these start-ups into contact with well-performing investors by stimulating international mobility of entrepreneurs and start-ups. This will help to broaden the startups’ communities and accelerate their growth.

Finally, this research suggests that the EC could contribute to making funds available for professional investors by creating a central, early-stage actor, and potentially a professionally managed fund. This central actor should look after the needs of venture capitalists, differentiating them from the private equity investors. The idea would be to assist venture capitalists during the screening and investment process, and to help them connect to well-performing international investors. Potentially, and only under a professional and experienced management, this organization could also include a fund that contributes to the high-tech entrepreneurial ecosystem. (Investors Driven Innovation: What can we learn from the way professional investors spot ‘Winners’, pg. 5)

Venture capital partners, it seems, have a ‘style’ of exit and are more likely to IPO, have a high value exit, fail or do none this these with a greater likelihood if they have done it before. This is true even on a relative basis among partners inside the same firm. Furthermore, we find generally that the firm level attributes are unimportant for performance compared to partner human capital. This implies partners would join together, but only to the extent that it lowered transaction costs such as accounting, or other support services or surrounding fund raising. Our results suggest that venture capital partnerships are not much more than the sum of their partners. Partners are often significantly different from each other, but ‘good’ firms are those with a group of better partners. Thus, firms that have maintained high performance across many funds may have simply been able to hire/retain high quality partners rather than actually provide those partners with much in the way of fundamental help. (Is a VC Partnership Greater: Than the Sum of its Partners, pg. 26).

6. Other Recommendations

Policy makers are well advised to improve industry-science relations by taking up good practice examples, putting them into the context of their respective national innovation systems and integrating ISR into the broader policy context with the objective of improving the overall system. (Good practice in industry-science relations, pg. 39)

Funding of new initiatives, whether applied research groups or new centres, should be based on award through open competition among the full range of providers—universities, institutes of technology, national and international research providers. The Groups should be well resourced with facilities and equipment of a high standard, awarded following a competitive process open to organisations nationally and internationally. The Strategy for Science, Technology and Innovation 2006-2013 allocates close to €400 million over the eight year period to support for enterprise collaboration with Higher Education. The development of applied research groups
Human resources are a core determinant of quality in higher education and research. Universities must therefore work to enhance their human potential, both qualitatively and quantitatively, by attracting, developing and keeping talent in the teaching/research career. Excellence can only emerge from a favourable professional environment based in particular on open, transparent and competitive procedures. Vacancies, at least for rectors, deans, professors and researchers should be advertised publicly, and where possible internationally. Researchers should be treated as professionals from the early stages of their career. Physical and virtual mobility (whether across boundaries or between university and industry) and innovation leading e.g. to university spin-offs should be encouraged and rewarded. Compensation should reward quality and achievement in the performance of all tasks, including a share of income from research contracts, consultancies, patents, etc. These measures would over time reinforce world-class excellence at European universities, thus reducing the attractiveness gap with other world regions and benefiting all of Europe - through highly qualified graduates moving or returning to more regional universities, whether immediately or later in their careers. (“Mobilising the brainpower of Europe: enabling universities to make their full contribution to the Lisbon Strategy”, pg. 6)

European universities also need to become more attractive partners for industry. Lasting partnerships are a condition for structured staff exchanges and for curricular development responding to industry’s need for well trained graduates and researchers. But the development of commercially relevant training/retraining, research and consultancy services demands investment over some years before these activities start paying for themselves – all the more so if public subsidies are correspondingly reduced. This means that the development of sustainable partnerships with industry may well hinge (initially, at least) on the availability of tax incentives. (“Mobilising the brainpower of Europe: enabling universities to make their full contribution to the Lisbon Strategy”, pg. 9)

EBAN recommends that action be undertaken at three levels: EU level; network; and individual. Our recommendations are based on activities aimed at increasing the awareness of potential women investors, changing the operations of business angel networks, and developing publicly-funded financial instruments to stimulate active participation of women in this market. Namely:
1. Research the impact of current women members on their business angel networks and develop best practices to expand their membership and financial participation.
2. Execute an EU-wide awareness-raising campaign, delivered with the support of local BANs and/or other appropriate organizations.
3. Deliver a tailored investor-readiness programme for women investors across the EU, with appropriate local partners.
4. Ensure that professional standards and codes of conduct developed at European level by EBAN and at national level encourage diversity and participation of women in the early stage investment market.
5. Support the creation of an EU-wide, umbrella organization for the female investor community.
6. Explore the deployment of new financial strategies (such as co-investment funds) to stimulate women business angel investment.
(Strengthening European entrepreneurship by enrolling more women in early stage investing, pg. 2)