



**Response to the public consultation about the Green Paper on a common strategic framework for EU research and innovation funding.**

**May 2011**

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**CESAER** - the Conference of European Schools for Advanced Engineering Education and Research - is a non-profit-making international association of leading European universities of technology and engineering schools/faculties at comprehensive universities and university colleges.

**CESAER** stands for scientific excellence in engineering education and research, and the promotion of innovation through close cooperation with industry in order to ensure the application of cutting-edge knowledge in industry and society. It maintains and promotes the highest quality standards.

**CESAER** has a current membership of 57 institutions, representing 25 different countries.

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## **I. Working together to deliver on Europe 2020**

The questions in this section correspond to Section 4.1 of the Green Paper.

### **1. How should the Common Strategic Framework make EU research and innovation funding more attractive and easy to access for participants? What is needed in addition to a single entry point with common IT tools, a one stop shop for support, a streamlined set of funding instruments covering the full innovation chain and further steps towards administrative simplification?**

- CSFRI should be less risk-averse and build on mutual trust between researchers and the Commission. Researchers have to commit themselves to a sound code of scientific conduct and the Commission has to keep to the rules and arrangements defined during contract negotiations. (see also the outcomes of the initiative “trust researchers” <http://www.trust-researchers.eu/> )
- Contact Points for information and assistance for different parts of the future programme that are at present separated should be merged and strengthened in order to offer clearly defined access points at national level and regional level where appropriate. They should work closely together with university based support service ensuring a coherence of information and advice and equal level of quality of services for researchers.
- There is a need for streamlining the instruments, clearly define their objectives and expected impact and ensure complementarity between the different instruments.
- Rules for participation should be simple and should be the same across the whole CSFRI. In addition, it has to be ensured that application of the rules by Commission services has to be consistent across all Directorates General and Executive Agencies involved.
- Financial rules and administrative burden should be optimised ensuring an adequate level of accountability but also considering the specific requirements of research and innovation. Measures for auditing and control should be balanced and costs and resources required for these actions should be adequate and proportional in relation to the research funding.
- Time to contract has to be shortened substantially. Especially when moving closer to the market, speed is an important condition for success.
- True cost funding for university research would make the European programmes more attractive, attract the best researchers and support the pursuit of excellence. EU funding should also cover VAT.

## **2 How should EU funding best cover the full innovation cycle from research to market uptake?**

- It has to be ensured that the new focus on the whole innovation cycle and the emphasis on innovation as such must not compromise and diminish the crucial role of basic research and of pre-competitive research. The CSFRI has to keep its important role of safeguarding and stimulating excellence at European level based on competition between the best researchers and research groups across Europe and attracting excellent partners from all over the world.
- The new CSFRI can be considered as a conducive framework and space for applying the open innovation concept, developing new business models under well defined rules for intellectual property.
- The CSFRI should provide adequate measures for supporting all phases of the innovation cycle taking into account, however, that innovation is not a linear process.
- Before 're-inventing the wheel' it is recommended to re-assess approaches and experiences of past Framework Programmes (FPs) such as the Innovation Programme and the Technology Transfer Projects in FP4, the Technology Implementation Plan (TIP) in FP5. Lessons learned - positive experiences as well as problematic aspects - should be evaluated.
- An additional funding scheme for further developing and implementing promising research results should be considered. Such a scheme should be open to project consortia while at the same time contemplating also on new possible approaches such as e.g. allowing single contractor proposals for the implementation of results under specific conditions taking into account the role of all parties having been involved in developing the results in question.
- The functions taken care of by the CIP in the current programming period have to be fully integrated in the future CSFRI based on a thorough evaluation of its performance in the current programming period.
- Also the possibilities of EIT Knowledge and Innovation Communities (KICs) and European Technology Platforms (ETP) should be taken into consideration using them as implementation platforms under well specified conditions.

## **3 What are the characteristics of EU funding that maximise the benefit of acting at the EU level? Should there be a strong emphasis on leveraging other sources of funding?**

- CESAER strongly supports and appreciates that EU funding is applying the criterion of excellence based on a high level of competition of the best researchers and following the elaborate and proven system of peer review in project evaluation and selection. It is of utmost importance that these characteristics are safeguarded that are supporting the

long-term sustainability of the knowledge base and of top level knowledge as a main driving force in Europe for the benefit of societal and economic welfare and prosperity.

- In CSFRI, measures promoting excellence will be important at the levels of individual researchers, collaborative teams but also institutions such as most importantly universities and strategic alliances of universities.
- Europe is characterised through diversity. This should be taken as an opportunity and strength. The collaborative and interactive approach supported by EU research and innovation presents a competitive advantage because cooperation in diverse environment stimulates creativity and the emergence of new ideas.
- CESAER emphasises that universities of technology and engineering schools/faculties at comprehensive universities are strong actors in the EU research and innovation programmes and will play an important role also in the CSFRI.
- The emphasis of Framework Programmes on cross-border cooperation has strongly supported the development of important competences of European researchers for working in interdisciplinary teams addressing difficult scientific problems and also tackling complex societal challenges. This is a European competitive advantage more important than ever that has to be nurtured also in the future.
- Bottom-up schemes such as the Marie-Curie Actions, ERC and FET are important elements of European programmes and have to be further developed ensuring clear complementarity.
- The ERC is a new attractive and important scheme that should be strengthened in the CSFRI while at the same time the complementarity and connection with other parts of CSFRI should be ensured.
- Research Infrastructures have to be an integrated part of CSFRI and form one of the backbones of the European Research Area.
- Bottom-up coordination actions or Thematic Networks (such as in FP5) are essential for supporting communication and interaction between excellent teams also in emerging fields of research. Such actions will provide the mould or incubator spaces for new ideas and new collaborative activities but also will act as open access gates for young researchers to the European and international science and innovation arena especially for researchers from new Member States.
- The new CSFRI should be very much open to the world and move beyond the focus on European cooperation. The CSFRI has to be the platform where researchers from Member States and Associated Countries join forces and form competitive teams for working with the best possible partners from non-European industrial and emerging countries and regions on a global scale.
- EU funding can and should provide the clue and - when necessary - also co-funding of research for joint activities of programmes of Member States and Associated Countries and – where appropriate – even partners from other parts of the world. Therefore, the leveraging effect of the CSFRI will be essential for promoting collaborative programmes of member States and Associated Countries as well as other countries formed on the basis of variable geometry arrangements that are fit for the specific purpose.

- Facing the new global landscape of knowledge production there is a need for Europe working more closely together in order to cope with challenges of global competition and opportunities from international cooperation. This holds for making the best possible use of knowledge and expertise available in Europe and for putting together financial resources for activities of critical mass being globally visible and competitive.
- The CSFRI has to be open to the world taking into account that the way science and research are performed in the 21<sup>st</sup> century is fundamentally different from the past. Science and research are taking the lead overcoming the boundaries of the nation states and working in global knowledge networks and communities.<sup>1</sup>

#### **4 How should EU research and innovation funding be used to pool Member States' research and innovation resources? Should Joint Programming Initiatives between groups of Member States be supported?**

- Lessons learned from ERA-NETs should be used to develop the cooperation between owners and managers of national research and technology programmes in areas of common interest. Due to the differences in the rules of participation between programme owners and managers from different countries the implementation of ERA-NET actions is often rather cumbersome. Therefore, it will be necessary to improve the interoperability and compatibility of national and regional funding programmes in order to support the further development of joint programmes in Europe. CESAER sees the development of a commonly agreed ERA Framework of rules and procedures as a must.
- The level of EU funding may vary between supplementary funding of coordination and cooperation and substantial co-funding of research and innovation activities where in any case more financial resources should stem from national sources of participating Member States and Associated Countries.
- Cooperation should focus on areas and initiatives where there is clear added value of cooperation at European level. This is certainly the case when activities demand knowledge and financial resources that are not available at the level of a single Member State. In addition, for such initiatives the preferred approach should be variable geometry initiatives being of interest only for some Member States but not for all.
- Lessons learned from 'lead agency' approaches such as the cooperation between Austrian, German, Slovenian and Swiss funding agencies should be analysed and considered for wider application.
- The Strategic Energy Technology (SET) Plan is an excellent example for the strategic orientation of European efforts towards commonly agreed objectives while at the same time ensuring critical mass. The European Energy Research alliance (EERA) plays an important role. In CESAER's view the involvement of universities has to be substantially strengthened. CESAER strongly supports the establishment of the EUA's European

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<sup>1</sup> See e.g.: Caroline S. Wagner. The New Invisible College. Brookings Institution Press. Washington D.C., 2008

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Platform of Universities Engaged in Energy Research (EPUE)<sup>2</sup> and recommends close cooperation with the EERA, being essential for making the knowledge triangle a reality also in such European initiatives.

- CESAER supports the development of a Strategic Transport Technology Plan (STTP)<sup>3</sup> and recommends a strong involvement of universities from the start. CESAER offers its services for building the bridge to top universities of technology in Europe.
- In the course of strengthening the international dimension of the CSFRI also the cooperation with funding agencies in non-European countries should be envisaged, such as the National Science Foundation (NSF) and the National Institutes of Health (NIH) in the USA, the National Natural Science Foundation (NSFC) of China or the Russian Foundation of Basic Research (RFBR).
- The Joint Programming Initiatives (JPI) are important new developments of European research cooperation and should be supported. Complementarity between national programmes, JPIs and the CSFRI has to be ensured in the frame of a general European research and innovation strategy. An important asset of JPIs will be their strategic approach and the long-term orientation.
- JPIs will strengthen the research capacities in Europe and of Europe vis-à-vis international partners and competitors. JPIs are also an considerable step towards 'Europe speaking with one voice' at international level.
- The development of an ERA Framework is crucial and should be promoted as far as possible without compromising the independence of national strategies and programmes. A common framework of rules and procedures will also play an major role in the course of simplification of the boundary conditions of the research and innovation activities in the European Research Area (ERA). Last but not least, JPIs are one of the measures to reduce complexity in the international cooperation between Europe and partners/regions in other parts of the world.

## **5 What should be the balance between smaller, targeted projects and larger, strategic ones?**

- For CESAER, in general, project sizes should be fit for purpose and should not be defined or pre-scribed by 'political' requirements.
- As smaller and larger projects are equally important, transparency regarding different types of projects is highly recommended meaning that horizontal and vertical activities must not be 'confused'.
- Thematic and strategic programmes should be separated: grand challenges should be addressed by the CSFRI while also key enabling technologies and sciences have to be promoted as the base for the European knowledge society and economy.

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<sup>2</sup> <http://www.eua.be/eua-work-and-policy-area/research-and-innovation/Universities-Engaged-in-Energy-Research.aspx>

<sup>3</sup> [http://ec.europa.eu/transport/research/sttp/sttp\\_en.htm](http://ec.europa.eu/transport/research/sttp/sttp_en.htm)

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- The balance between larger, strategic and smaller, targeted projects will depend on the balance between ambitious objectives addressing complex problems in the frame of grand challenges and smaller projects addressing more limited objectives. Funding will depend on the resources needed for achieving the defined goals.
- Regarding project size in terms of number of participants/beneficiaries, experiences of CESAER member institutions show that, in general, smaller projects with five to seven partners are more effective and more flexible – aspects of great importance to research.
- However, it must be emphasised that this is a very general statement responding to a very general question. The appropriate size of a consortium depends on the specific requirements of a project in its specific thematic area or interdisciplinary context. The decision about the adequate size should be left to the consortium and therefore the conditions should be flexible.
- In addition to projects, coordination actions or thematic networks should be foreseen providing spaces for facilitating exchange of information and coordination of nationally funded initiatives as well as for developing new ideas with new partners. The latter aspect is of specific importance for researchers from the newcomer EU Member States and Associated Countries. Coordination actions as thematic networks can encompass a larger number of partners.
- There is a trend amongst universities and research organisations to form long-term strategic alliances. This trend should be supported by the CSFRI offering an adequate bottom-up scheme for supporting strategic alliances oriented towards long-term frontier research.

**6 How could the Commission ensure the balance between a unique set of rules allowing for radical simplification and the necessity to keep a certain degree of flexibility and diversity to achieve objectives of different instruments, and respond to the needs of different beneficiaries, in particular SMEs?**

- CESAER acknowledges and appreciates the Commission's efforts
- When simplified ways for implementing and monitoring the CSFRI are developed the researchers and research institutions and the reality of how research is performed should be in the center of the considerations. Therefore, consultation also with university stakeholders will be most important. CESAER is prepared and interested to be actively involved in that process ensuring that 'real world' views from the universities are taken into account. Future efforts towards simplification of CSFRI should equally be supported by the European Parliament, the Council and the Court of Auditors and an early agreement between Commission and these institutions has to be ensured.
- CESAER member institutions see an urgent need to review the personal liability of the project officers in the Commission services in the course of simplifying the rules and procedures for CSFRI. Also briefing and training of project officers has to be in

accordance with the general ambition to simplify the framework for the CSFRI implementation framework.

- In CESAER's view, as emphasised above already, the key issue is to move from a system focusing on auditing and control to a system that focuses on research and innovation and impact based on trusting researchers. Of course, this approach has to be well rooted in the responsibility of the researchers based on a sound code of scientific conduct.
- As a consequence, the systems for documenting and reporting activities should become lighter and the use of institutions' own accounting systems and practices should be accepted.
- There is a need for SME specific funding. The US SBIR Programme should be used as an example of good practice and the possibilities of its applicability in and adaptation to Europe should be explored (see also Question 17).
- When designing the rules for participation the needs and demands of SMEs should be carefully analysed and considered. Targeted consultations with SME associations will be important in order to ensure the adequate design of the rules.

## **7. What should be the measures of success for EU research and innovation funding? Which performance indicators could be used?**

- Novel indicators for measuring performance and assessing outputs and impacts of activities in the knowledge triangle should be developed and implemented. For universities indicators such as the following are relevant also in the course of university strategy development and management: publications and co-publications, citation rates of publications related to EU projects, patents, long-term cooperative links, and university spin-offs routed in EU projects, co-publications in Europe and with partners in non-European countries.
- All pathways for making use of new knowledge and build new competence should be identified and taken into account in a more holistic and systemic approach, such as the innovation systems approach. Also social network analyses should be used for monitoring and assessing the structural development of the European Research Area (ERA) including also collaborative links with partners worldwide.
- For the development of ERA, national contributions to the development and implementation of ERA initiatives and instruments are relevant indicators.
- For assessing the impact, it will be necessary that outputs of activities based on CSFRI funding can be traced by clearly defined contractual requirements for acknowledging the role of EU financial contributions and their attribution to projects via contract number or other appropriate information; this holds for publication, patents and other outcomes.



**8. How should EU research and innovation funding relate to regional and national funding? How should this funding complement funds from the future Cohesion policy, designed to help the less developed regions of the EU, and the rural development funds?**

- The objectives of the CSFRI and the parts of the Common Strategic Framework for Cohesion Policy (CSFCP) should be complementary, the CSFRI being oriented towards excellence and the CSFCP towards capacity building and providing 'staircases towards excellence'. Actually, 'excellence' should be a general ultimate objective for research and innovation activities supported by EU funds.
- At present, there is little connection or coordination between the Framework Programme (FP), the Competitiveness and Innovation Programme (CIP), the European Institute of Innovation and technology (EIT) and the Structural Funds (SFs). For the future beyond 2013, this separation needs to be overcome and complementarity of and synergies between the future common strategic programmes has to be ensured.
- The rules for participation and implementation of the future CSFRI and the CSFCP should be defined in a way that combination of funding from both frameworks will be possible. This is of specific importance for universities in target regions of both frameworks. It implies that simplification has to be ensured also in the other programmes from the proposal stage, to contract negotiation and implementation.
- CESAER acknowledges the efforts and the successes of the Commission to simplify the implementation of the Framework Programme. However, in the future, simplification should be addressed also in CIP and the Structural Funds. The EIT might have a role of testing new approaches during the current programming period.
- Regional and National Reform and Operational Programmes should be oriented towards the Europe 2020 and the Innovation Union objectives and lay the ground for developing conducive eco-systems for research and innovation taking account of the requirements and opportunities of smart specialisation. The programmes should consider the needs as well as the potential of universities and find especially solutions for the problems of universities to cope with the co-financing requirements.
- The knowledge triangle between education, research and innovation as well as the triple helix between research, industry and government are concepts of crucial importance at regional level and should be the basis when developing regional innovation and smart specialisation strategies. Universities play a central role in regional development, in innovative clusters and they ensure also local-global connectiveness of regions.
- For research and innovation oriented projects and initiatives, also under the CSFCP peer review should be applied. The CSFCP can learn from the long-standing practices and experiences of evaluation practices in the Framework Programmes.
- Furthermore funding for transnational cooperation should be possible under the CSFCP supporting the connectiveness of regions and building sustainable links to partners in other regions of the European Research Area.

- The modernisation of universities and research organisations should be high on the agenda of regional innovation strategies ensuring support for human resource development and researcher mobility, for the upgrading and renewal of equipment, and also for the acquisition and implementation of state-of-the-art equipment.
- Large scale Research Infrastructures as proposed by the ESFRI Roadmap as well as Regional Partnership Centres should be funded by the CSFCP and utilised for strengthening the potential of regions. Design studies and preparatory activities for new major European Research Infrastructures as well as to a certain extent maintenance costs of Research Infrastructures may be funded through the CSFRI.
- CESAER points out that it is crucial to ensure that the funding of Research Infrastructures does not put funding of universities' research and innovation activities at a disadvantage.
- CESAER underlines the role of SMEs in the innovation process in the frame of European knowledge clusters. Also growth of innovative SMEs should be supported through incentives and appropriate financial mechanisms.
- Clusters between enterprises – SMEs and industry – universities and research organisations are schemes to be in the core of CSFCP funding. Cluster schemes that are at present running under different programmes should be coordinated and merged where appropriate.
- The EIT KICs are important pilot activities for both the development of regional strengths in education, research and innovation through the co-location centres while at the same time ensuring local-global via the cooperation and coordination between the different co-location centres.
- It will be essential that contacts and cooperation between clusters and KIC co-location centers are established and further developed.
- CESAER sees an important task for the EIT to disseminate the lessons learned to other parts of Europe where no co-locations centers are established by now. Representing top European universities of technology, CESAER is prepared to support such initiatives providing a platform for disseminating such experiences to their membership and beyond.

## **II. Tackling Societal Challenges**

The questions in this section correspond to Section 4.2 of the Green Paper.

### **9. How should a stronger focus on societal challenges affect the balance between curiosity-driven research and agenda-driven activities?**

- Addressing societal challenges will require interdisciplinary cooperation across different thematic areas in changing arrangements in accordance with the demands of the specific challenges. In addition, in order to nurture the European knowledge base, there

has to be room for developing key enabling technologies and sciences including social sciences. Finally, there has to be space for activities following a bottom-up approach similar to FET<sup>4</sup>-open in FP7.

- This would imply having the present structure according to thematic priorities replaced by a structure with groupings of themes. This would provide spaces where the different paths – addressing agenda-driven activities as well as curiosity-driven research - could be followed.
- A special track for excellence and particularly addressing the science base including ERC, Marie-Curie for promoting individual researchers as well as Research Infrastructures could complement tracks addressing societal challenges and competitiveness working in the collaborative mode.

#### **10. Should there be more room for bottom-up activities?**

- There should certainly be room for bottom-up activities organised in different forms of arrangements.
- Bottom-up coordinated actions similar to FP5 thematic networks or COST actions should serve different purposes:
  - providing access and exposure for young scientists meeting advanced peers at European and international level,
  - offering platforms where researchers can exchange information on nationally funded research activities,
  - stimulating new contacts, and
  - initiating new collaborative projects.
- There is a tendency of universities and research organisations to form new strategic alliances. This supports the creation of partnerships of critical mass. Therefore, an instrument supporting strategic alliances oriented towards long-term frontier research should be introduced (see also below, Question 22).
- Finally, also the approach of ICT Future and Emerging Technologies (FET) should be widened to all appropriate CSFRI areas.

#### **11. How should EU research and innovation funding best support policy-making and forward-looking activities?**

- There is a need for measures supporting EU research and innovation planning and policy development by providing strategic intelligence and policy advice based on forecasting and forward-looking studies.

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<sup>4</sup> FET: Future and Emerging Technologies

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- The global landscape of knowledge production is changing quickly and is becoming more and more complex. Therefore, it is important to provide a sound basis for EU policy making through joint actions for research and innovation policy advice. Such activities will have to address developments in different technological fields identifying also weak signals of newly emerging fields. On the other hand, the developments of research and innovation policies and initiatives in other regions of the world have to be in the focus too.
- Mid- and long-term studies should also provide science and technology roadmaps that have to be updated regularly. As an example, the roadmapping exercise of the Chinese Academy of Sciences towards 2050<sup>5</sup> can be taken as example.
- These activities should complement, support and underpin the traditional preparation processes of EU research and innovation programmes.
- Such activities should be performed by the European Commission's Joint Research Center Institute for Prospective Technological Studies (IPTS) and by consortia of think tanks and science and technology policy research centers at European universities and in the non-university research sector.
- For universities of technology, CESAER can act as a platform for supporting the launch of these kinds of initiatives.

**12. How should the role of the Commission's Joint Research Centre be improved in supporting policy-making and forward-looking activities?**

- The Joint Research Centre (JRC) should focus on research activities supporting EU policy development and on research activities necessarily to be conducted at EU level such as research in connection with testing, developments of standards, safety values and thresholds.
- The special tasks of the IPTS in the area of foresight and forecasting should be further developed and extended also in the context of the above mentioned forward-looking activities (see also previous Question).

**13. How could EU research and innovation activities attract greater interest and involvement of citizens and civil society?**

- The Framework Programme is the largest competitive research programme worldwide. However, the European public is hardly aware of its existence and achievements.
- In the context of the new CSFRI, targeted measures for making EU research and innovation activities better known should be developed. The ERC did a remarkable job in

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<sup>5</sup> Yongxiang Lu (Editor-in-Chief): Science and Technology in China: A roadmap to 2050. Strategic General Report of the Chinese Academy of Sciences. Springer Heidelberg etc. & Science Press Beijing, 2010

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that respect in a very short time and is an example of good practice. The CSFRI should follow that example and learn from the experiences of the ERC.

- When developing new approaches of marketing EU research and innovation activities the Commission should move from a mainly defensive and reactive to a pro-active mode.
- EU research and innovation marketing activities should also include evaluation procedures applied by Framework Programmes as examples of best practice of implementing competitive programmes.
- CESAER and its member institutions - research-oriented universities of technology - is a strong group of participants in European research and innovation and can play a strategic role and be a strong partner of the Commission in marketing and promoting EU research and innovation programmes, activities and results.

### **III. Strengthening competitiveness**

The questions in this section correspond to Section 4.3 of the Green Paper.

#### **14. How should EU funding best take account of the broad nature of innovation, including non-technological innovation, eco-innovation and social innovation?**

- The CSFRI should support all forms of innovation. Social innovation will be necessary in many areas of sustainable development at regional, national and European level. For example, changing lifestyles, new forms of globally connected research and innovation activities utilizing Web 2.0, new business models for open innovation but also challenges of public security will need underpinning research.
- Addressing the grand challenges will require interdisciplinary approaches across different fields of science and engineering, social sciences and humanities.
- Social sciences and humanities will have an important role as integrated partners in interdisciplinary research arrangements. The interdisciplinary integration of social sciences and humanities and science and technology is still a challenge that should be directly addressed in the CSFRI too.
- The European universities of technology forming CESAER have substantial experiences in addressing complex problems in challenging areas such as energy efficiency, new energy technologies, intelligent manufacturing, intelligent transport systems, and planning sustainable cities; they will play a central role in the forthcoming period of European programmes for research and innovation.

**15. How should industrial participation in EU research and innovation programmes be strengthened? How should Joint Technology Initiatives (such as those launched in the current Framework Programmes) or different forms of 'public private partnership' be supported? What should be the role of European Technology Platforms?**

- In FP7, European Technology Platforms (ETPs) play an important role involving industry in the development of Strategic Research Agendas (SRA), long-term technology roadmaps and the definition of annual work programmes. In general, this approach should be continued and strengthened in accordance with the requirements of the new CSFRI.
- ETPs are also the matrix for the development of Joint Technology Initiatives (JTIs) that are research and innovation oriented PPPs with industry in the lead. This approach should be further developed taking into account lessons learned as described and assessed in the Sherpa Report regarding ARTEMIS and ENIAC<sup>6</sup> and the forthcoming reports of the mid-term evaluation of the Clean Sky, the Innovative Medicines Initiative (IMI), and the Fuel Cell and Hydrogen Joint Undertakings.
- The regulatory framework of the JTIs has to be refined in order to become better suitable to the requirements of PPPs.
- CESAER emphasises, that the framework conditions for the participation of universities and research organisations especially with regard to IPR have to be defined in ways ensuring level playing fields and win-win situations for all partners involved. This is an area where there is substantial room for improvement.

**16. How and what types of Small and Medium-sized Enterprises (SME) should be supported at EU level; how should this complement national and regional level schemes? What kind of measures should be taken to decisively facilitate the participation of SMEs in EU research and innovation programmes?**

- Innovative SMEs are important actors in research and innovation producing and exploiting research results and bringing them to the market.
- CESAER member universities are working closely together with SMEs; also university spin-off companies play an important role. The CSFRI should provide a favourable environment for such partnerships and for enhanced cooperation between SMEs and universities in the next programming period where innovation will be especially high on the agenda.
- SMEs are important actors in European knowledge clusters. The CSFRI and also the CSFCP have to provide incentives and appropriate financial mechanisms to stimulate and to support the growth of innovative SMEs.

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<sup>6</sup> "Designing together the 'ideal house' for public-private partnerships in European research". JTI's Sherpa Group. Final Report. January 2010

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- CESAER supports the development of a new specific scheme for SMEs following the examples of the US Small Business Innovation Research (SBIR) Programme and Small Business Technology Transfer (STTR) Programme<sup>7</sup>. For universities - and CESAER member universities of technology in particular – every appropriate measure strengthening the potential of innovative SMEs in Europe is welcome because SMEs are main partners of universities and drivers of innovation in Europe.
- The practicalities of the rules for participation have to be in line with the realities of SME activities. This applies for contract negotiations and time to contract, management and reporting requirements, timeframes of payments, and IPR rules.

**17 How should open, light and fast implementation schemes (e.g. building on the current FET actions and CIP eco-innovation market replication projects) be designed to allow flexible exploration and commercialisation of novel ideas, in particular by SMEs?**

- Based on the positive experiences with the FP7 ICT Future and Emerging Technologies (FET) scheme CESAER supports the extension of this scheme to other areas than ICT in the CSFRI. The characteristics of the FET scheme as “an incubator and pathfinder for new ideas and themes for long-term research ...” and its “mission to promote high risk research, offset by potential breakthrough with high technologies or societal impact.”<sup>8</sup> should be strengthened and the applicability of the approach in other areas should be explored.

**18. How should EU-level financial instruments (equity and debt based) be used more extensively?**

- The financial instruments of the CSFRI and the CSFPC should build on the experiences of the FP7 RSFF and of the CIP GIF.
- The RSFF should be further developed in order to support also the enforced focus of EU activities on innovation and the needs of high-risk - high-gain projects and initiatives developing promising research projects into marketable products and services.
- CESAER supports the recommendation of the RSFF Mid-term Evaluation Expert Group “that the EC and EIB reflect on the use of RSFF as a means of increasing the resources available to universities and research organisations to complement their existing sources of financing, for their investments in Public Private Partnerships as well as to Research Infrastructure projects of European interest, to enable them to undertake investments

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<sup>7</sup> <http://www.sbir.gov/>

<sup>8</sup> [http://cordis.europa.eu/fp7/ict/programme/fet\\_en.html](http://cordis.europa.eu/fp7/ict/programme/fet_en.html)

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necessary to the fulfilment of the smart public policy objectives of Europe 2020.”<sup>9</sup> In such a reflection process, stakeholders should be consulted as well and CESAER is open and prepared for cooperation with the EC and the EIB. In the course of such reflections, however, it has to be considered that only one third of Member States allows universities to borrow money<sup>10</sup>.

- The High Growth and Innovative SME Facility (GIF) – under GIF, EIF invests in Venture Capital Funds to increase the supply of equity (venture capital) for innovative (including eco-innovative) SMEs in their early stages (GIF1) and in the expansion phase (GIF2). In the view of CESAER, such a scheme can be indirectly relevant for universities supporting spin-offs and start-ups. For the CSFRI such a function should be considered after consultation with financial managers of universities particularly from universities of technology from the CESAER membership.

**19. Should new approaches to supporting research and innovation be introduced, in particular through public procurement, including through rules on pre-commercial procurement, and/or inducement prizes?**

- In CESAER’s view, public procurement and pre-commercial procurement are appropriate instruments and can play an important role for promoting innovation and growth and also stimulating the translation of university research results into competitive and marketable products based on close cooperation between universities and innovative companies. The specific needs of universities should be taken into account.
- Schemes for pre-commercial procurement and public procurement are best implemented on the regional level in collaboration between public authorities and regionally based clusters and universities - preferably in alignment with a regional Smart Specialisation Strategy. The European dimension may come in as well in the context of European level initiatives, for example in the frame of the EIT Knowledge Innovation Communities (KICs) and in other cases were different Member States or regions join forces in order to ensure critical mass also in connection with the lead market initiative; besides, future European Innovation Partnerships are possible areas of application.
- CESAER strongly recommends that in the CSFRI a set of standard contracts will be provided in order to help speeding up and strengthening university-industry collaboration in the course of pre-commercial procurement. This is especially important also for the KICs.

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<sup>9</sup> Mid-term Evaluation of the Risk-Sharing Financial Facility (RSFF). Final draft of the Group of Independent Experts. July 31th, 2010, p.8

[http://ec.europa.eu/research/evaluations/pdf/archive/other\\_reports\\_studies\\_and\\_documents/mid-term\\_evaluation\\_of\\_the\\_risk-sharing\\_financial\\_facility\\_\(rsff\)\\_-expert\\_group\\_report.pdf](http://ec.europa.eu/research/evaluations/pdf/archive/other_reports_studies_and_documents/mid-term_evaluation_of_the_risk-sharing_financial_facility_(rsff)_-expert_group_report.pdf)

<sup>10</sup> RSFF Mid-Term Evaluation, op.cit., p. 28

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**20. How should intellectual property rules governing EU funding strike the right balance between competitiveness aspects and the need for access to and dissemination of scientific results?**

- CESAER emphasises that the intellectual property rules (IPR) of the CSFRI will have to acknowledge the new role and position of the universities. In many countries, university laws oblige universities to transfer and exploit technologies. In particular at universities of technology, IPR management plays an increasing role and future IPR rules of the CSFRI have to be formulated accordingly considering the new relationship between universities and industry in this regard.
- CESAER points out that appropriate IPR rules are of specific importance in the case of the KICs and the JTIs, as mentioned above.
- The CSFRI IPR rules have to provide a level playing field for universities and industry forming a conducive framework for university-industry cooperation in the next programming period and facilitating mutual benefit and win-win situations.

**IV. Strengthening Europe's science base and the European Research Area**

The questions in this section correspond to Section 4.4 of the Green Paper.

**21 How should the role of the European Research Council be strengthened in supporting world class excellence?**

- CESAER supports the ERC to be maintained and strengthened as a strong and integrated part of the CSFRI focusing on the two grant schemes for starting and advances researchers that it has developed during FP7.
- Since the whole CSFRI will be oriented towards excellence, every kind of internal separation or any kind of compartmentalisation between the ERC and the “rest of the CSFRI” has to be avoided because it would weaken the EU research and innovation effort. The specific form of organisation of the ERC should not lead to a new aspect of fragmentation of EU research and innovation activities.
- CESAER supports the approach that excellent ERC proposals that cannot be funded by the ERC because of budgetary limitations are funded by national research funding bodies.
- Complementarities and synergies with the Marie Curie scheme should be developed. Marie Curie fellowships as well as the IRSES scheme can play an important preparatory

role paving the way of researchers towards ERC grants but should also be used to further strengthen activities of ERC funded principal investigators.

- In the long run, also the interaction, coordination and cooperation and between the ERC and national research funding agencies should be discussed in connection with the further development of the European Research Area and an optimised overall structure should be developed.
- The ERC should develop a strategy for internationalisation and for supporting the attractiveness of the European Research Area. ERC should attract excellent talent from all over the world but should also play a decisive role for sustaining and further developing long-term partnerships when non-European grantees have returned to their home institutions. Close cooperation with EU science counsellors is encouraged.
- ERC rules and procedures should be consistent with the rules of the CSFRI and simplification should be high on the agenda for the benefit of the researchers.
- CESAER member universities and their worldwide connections are an important European asset that the ERC should take advantage of.

## **22 How should EU support assist Member States in building up excellence?**

- CESAER supports the basic approach that the CSFRI should be clearly oriented towards excellence where universities play a key role developing excellent talent, performing excellent research and turning excellent research results into innovation in close cooperation with industry.
- In the next programming period, the CSFRI and the Common Strategic Framework for Cohesion Policy (CSFCP) should be designed in a way to ensure synergies and complementarity. In the part devoted to research and innovation the CSFCP should focus on supporting capacity building strengthening institutions that are excellent already and promoting other institutions in their development towards excellence.
- The CSFRI should apply the traditional set of instruments for supporting excellence of individual researchers (Principal Investigators) and research teams:
  - ERC grants and Marie-Curie Actions for individual researchers,
  - Collaborative projects for excellent multi-national teams.
- For further developing excellent institutions CESAER recommends two schemes:
  - a highly competitive excellence initiative addressing individual universities in the EU and associated countries fostering the development of lighthouse institutions in Europe;
  - Joint Research Initiatives (JRIs)<sup>11</sup> as science led strategic alliances of universities and possibly also non-university research organisations oriented towards long-term frontier research. JRIs should constitute ‘virtual institutes’ nurturing the European

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<sup>11</sup> See: Report of the Expert Group on the Futures of Networks of Excellence, European Commission, 2008.

knowledge base. There may be two action lines: one bottom-up and one oriented towards grand challenges.

- CESAER sees also a need for a bottom-up networking instrument similar to COST Actions implemented as Coordination Actions<sup>12</sup> (CAs) under the CSFRI. CAs should provide incubator spaces for attracting young talent, gateways for emerging teams from less developed European regions to partners from more advanced regions, and for stimulating the development of new ideas for new cooperative initiatives.

### **23. How should the role of Marie Curie Actions be strengthened in promoting researcher mobility and developing attractive careers?**

- The Marie-Curie Actions should form an important and integrated part of the CSFRI and should be re-integrated in the domain of the DG R&I since their main aim is the development of human resources for research through research.
- The bottom-up nature of Marie-Curie Actions should be maintained as a pre-requisite for ensuring the emergence of new ideas.
- For the CESAER member universities the Marie-Curie Actions play a strategic role not only for the career development of researchers but also for building bridges between host and home institutions of researchers and developing long-term collaborative links.
- Therefore, CESAER recommends developing also an exploratory scheme for developing collaborative projects in the frame of Marie-Curie fellowships.
- IRSES will be able to develop a pioneering role for stimulating international cooperation with particular importance supporting a “European go-out strategy”. It is recommended to integrate also language courses in the scheme which would be of specific importance for international cooperation such as for the European strategy to approach China. Lessons learned should be considered from the former STF (Science and Technology Fellowship) scheme implemented by the Delegation of the EU to China.

### **24. What actions should be taken at EU level to further strengthen the role of women in science and innovation?**

- Efforts to strengthen the role of women in research and innovation have to be organised in an integrated way starting with attracting female students to science and engineering studies. National initiatives like Girls’ Days should be widened to European level and provided with adequate visibility.
- The CSFRI should support a portfolio of measures with European Added Value for “Women in science”. Coordination Actions for exchange of information on best practice

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<sup>12</sup> See also: Mid-term Evaluation of COST. European Commission, 2010.

examples of national initiatives supporting women in science should be part of the CSFRI.

- There is also a need for research on gender issues in research and innovation.
- Specific Fellowships for returning and reintegrating women in academia and research after a break should be considered.
- In mobility programmes (Marie-Curie scheme) a dual career path scheme should be offered.
- In CSFRI evaluation procedures it has to be ensured that unfair treatment of women and gender bias is avoided.

## **25. How should Research Infrastructures (including EU-wide e-Infrastructures) be supported at EU level?**

- CESAER underlines the importance of strong Research Infrastructures (RIs) in Europe and the cooperation of universities with RIs in the support of excellence of science and technology in Europe as important elements of initiatives and activities forming the European Research Area.
- In the development of Research Infrastructures also the knowledge triangle should be made a reality integrating research, education and innovation.
- Research Infrastructures should also be open for SMEs and provide spaces and platforms facilitating their cooperation with universities and large multinational companies.
- CSFRI and CSFCP should work in a complementary way supporting the implementation of the ESFRI road map for realizing new RIs but also for up-grading existing ones.
- CSFRI should support to existing Research Infrastructures (supporting access to and use of RIs in Member States and Associated Countries and at international level) and to new Research Infrastructures (design studies and support for the preparatory phase for the construction of new RIs) as well as Accompanying Measures for policy development and RI programme implementation
- The CSFCP should be used for co-funding the construction costs.
- CESAER supports the initiatives of the ESFRI Regional Issues Group evaluating the EU regional RI landscape, and in particular the participation of the "newer" Member States in RI activities at pan-European level – as well as associated countries - and on their commitments to the development of new RIs (or major upgrades).
- CESAER sees Regional Partner Facilities as important elements of the RI landscape in Europe with a specific role to strengthen the research and innovation eco-systems in the newer Member States. Regional Partner Facilities should be closely linked to universities.

**26. How should international cooperation with non-EU countries be supported e.g. in terms of priority areas of strategic interest, instruments, reciprocity (including on IPR aspects) or cooperation with Member States?**

- The new CSFRI has to have a truly global orientation. CESAER member universities have a clear international orientation in their research and education activities and their work with industry and will contribute substantially to the success of the programme.
- CSFRI rules for participation have to be designed in a way supporting international cooperation and not presenting a major barrier for international partners.
- The CSFRI will be able to benefit from the long-standing cooperation arrangements, activities and experiences of universities with partner institutions in non-European countries. University partnerships can act as innovation hubs for strengthening European collaboration with non-EU countries and regions. Furthermore, the experiences of universities can be a valuable input to strategy development for international cooperation with specific countries and regions.
- The international dimension has to form a cross-cutting characteristic of the CSFRI following specific strategies towards different regions of the world and including all future CSFRI instruments including ERA-NETs, JTI, Art 185 initiatives and Joint Programming Initiatives (JPIs). Also European Technology Platforms (ETPs) should include the international dimension in their Strategic Research Agendas.
- Cooperation of Member States and Associated Countries will be very important in international cooperation ensuring critical mass, overcoming the complexities of 27 Member States and a growing number of Associated Countries approaching third countries separately and in uncoordinated ways. Europe speaking with one voice will strengthen the position of Europe and will be beneficial for all.
- The Strategic Forum for International Cooperation (SFIC) provides an important platform for Member States and Associated Countries working together and developing strategies approaching non-European countries and regions.
- The science and technology dialogues in the frame of the European Union's Science and Technology Agreements with non-EU countries should be strengthened and deepened in order to agree on priorities of mutual strategic interest forming the basis for substantial programmes and roadmaps for cooperation. The same approach should be taken by Member States and Associated Countries in their bi-lateral cooperation programmes.
- In-depth knowledge and information on the development of the research and innovation systems of partner countries has to be ensured. Therefore, information sharing as well as collaborative strategic intelligence between the European Commission, Member States and Associated Countries as well as science policy research institutions has to be further elaborated.
- International cooperation will be oriented towards utilizing the potential of the new landscape of knowledge production:

- Grand global challenges need global approaches and cooperation,
- The strengthened research and innovation systems in emerging economies are an important resource and strengthen the global knowledge base,
- Research and technology cooperation for development plays a major role for improving the situation on third-world countries and regions, and ,finally,
- International cooperation in research and innovation provides also access to new markets.
- Mobility has to play a key role for establishing contacts, providing strategic insights and building long-term relations based on mutual trust. Also establishing joint research councils between funding organisations of Member States and associated countries should be considered.
- The internationalisation strategy of CSFRI should target in specific ways
  - Industrial and emerging countries and regions,
  - Neighbouring countries,
  - Developing countries.
- Specific funding schemes may apply for different categories of countries.
- For industrial countries and regions and emerging economies the cooperation initiatives have to ensure win-win situations oriented towards commonly agreed priorities, mutual interest and co-funding. Emphasis should be put on strategic programme based cooperation and the development of institutional cooperation especially when addressing grand challenges.
- Cooperation with neighbouring countries should be oriented at widening the European Research Area and building sustainable partnerships. CSFRI activities should be coordinated with EU external policies and neighbouring policies.
- Cooperation with developing countries should be coordinated with the EU development policy.
- Europe represented by the Commission has to speak with one voice in international science and technology organisations.

**27 Which key issues and obstacles concerning the ERA should EU funding instruments seek to overcome, and which should be addressed by other (e.g. legislative) measures?**

- Main obstacles can especially be identified at two levels:
    - Narrow national orientations of research and innovation policies, and
    - Problems of complex legal and administrative arrangements of the implementation of EU research and innovation.
  - Too narrow national orientation has to be overcome in order to be able to make optimal use of the European potential for research and innovation. Universities are used to
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European and international cooperation and play a central role in overcoming mental barriers against European and international cooperation.

- Targeted efforts will be necessary for raising the awareness of the importance of Europe joining forces and cooperating creating critical mass on a global scale and overcoming compartmentalisation and lack of synergies and complementarities.
- In international cooperation, CSFRI has a key role for paving the way for Europe speaking with one voice to new strong partners and competitors. Past Framework Programmes have succeeded to induce a European spirit especially in universities and research organisations where cooperation and coordination have become mainstream activities. This European spirit has to be strengthened also at the level of Member States and Associated Countries and “techno-nationalism” has to be overcome.

## **V. Closing comment**

CESAER welcomes the approach of the European Commission providing inputs to the preparations of the CSFRI through an open consultation process. CESAER is open for providing more detailed input to specific issues relevant for universities of technology in Europe.