Italian National Agency for New Technologies,
Energy and Sustainable Economic Development

CONTRIBUTION TO THE GREEN PAPER

Common Strategic Framework for future EU Research and Innovation Funding





16 May 2011

ENEA

ENEA is the name for the Italian National Agency for New Technologies, Energy and Sustainable Economic Development.

Pursuant to art. 37 of Law no. 99 of July 23rd, 2009, the Agency's activities are targeted to research, technology innovation and advanced services in the fields of energy – including nuclear.

The Agency's main research issues are as follows:

- ***ENERGY: Renewable Energy Sources; Energy Efficiency; Advanced Energetics; Nuclear Fusion; Nuclear Fission.***
- ***SUSTAINABLE ECONOMIC DEVELOPMENT: Environmental Characterization and modelling, Prevention and Recovery; Environmental Technologies; Seismic Engineering; Radiation Biology and Human Health; Sustainable Development and Agro Industry Innovation.***
- ***NEW TECHNOLOGIES: Radiation Applications; Material Technologies; Environmental Energy Modelling; ICT; Robotics***

ENEA also provides agency services in support to public administrations, public and private enterprises, and citizens: Energy efficiency (support to public administration, information and training); Technology dissemination and transfer; Component and system qualification; Radiation protection; Metrology of ionising radiation; Support to the national programme of research in Antarctica; Technical and scientific products and services.

The nine ENEA Research Centres and five Research Laboratories – located all over Italy – are endowed with a wide range of expertise, advanced facilities and instruments put at the disposal of both ENEA's research programmes and the Nation's scientific and productive world. ENEA also operates through:

• a network of territorial offices providing information and consultancy services for local public administrations and enterprises

• an ENEA-EU Liaison Office in Brussels with the purpose of promoting and strengthening the image and participation of ENEA within the EU framework.

ENEA has currently about 3.000 employees and its Headquarter is located in Rome

ENEA Research Centres and Labs

The answers provided by ENEA to the Green Paper questionnaire on the CSF for R&I represent a follow up of the " Reflection on FP8" (non-paper) issued by ENEA on July 2010 (downloadable at http://www.bruxelles.enea.it/Eventi/PositionPaperENEA072010/PositionPaperENEA%20072010.pdf**).**

Introduction

In the frame of the current debate on the European research policy and the forthcoming Research Framework programme, ENEA wishes to contribute to the dialogue by providing his position on the matter.

A preliminary document was already submitted in July 2010 and the answers included into this document represent a follow up which takes into account the scenario developments which have happened after that moment.

The structure of this position paper is therefore in-line with the set of questions posed in the Green Paper questionnaire with an attempt to provide a more extensive answer to them in a format of "position answer".

Given its wide range of areas of expertise, its strong linkage with industry and its European Dimension, ENEA took the approach to give an extensive answer to all the points included into the questionnaire so to provide the overall vision of one of the major Italian research bodies.

Information about the respondent

- I am answering as: **Government body**
- Country of location: **Italy**
- My organisations' main activity is **Research**
- The name of my organisation is **ENEA, Italian National agency for New Technologies, Energy and Sustainable Economic Development**
- My organisation has received funding from: (RUNNING) **FP7 (Cooperation, Ideas, People, Capacities, Euratom), CIP, other EU programmes (LIFE+, COST, EUREKA, EUROSTARS, EMRP, Agrigenres, E-business, EPCIP, E-Ten, FESR, EU Cross-border cooperation, EU Transnational cooperation, Interreg, EuropeAid…) and EU Call for Tenders.**

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?

Setting homogeneous funding rules in all the European programmes concerning research and innovation would simplify the management and would favour the participation of different stakeholders. The two-step submission of proposals should be enlarged to most of the CSF's calls.

The rules for participation should reflect the features of the tools adopted which, in their turn, should address the policy objectives pursued by the CSF. On the matter, we recommend the Commission to take into great account the feedback coming from (potential) beneficiaries and stakeholders on the set of rules applied so far (i.e. FP7 and CIP), in order to understand and tackle the main hurdles hampering the participation of interested parties, in particular those hurdles related to the Grant Agreement provisions. On this regard, we think it is strategically important to get a concrete and timely feedback from SMEs and (potential) partners (academia and industry) from third countries (e.g. USA).

Furthermore, the integration among cohesion, research and innovation policies and its tools should be effectively implemented. In particular, the link between cohesion policy and support to transnational R&D&I activities should be supported along two main lines: 1) by reinforcing the alignment and increasing the synergies between cohesion policy and R&D&I policy, thus addressing the present fragmentation of EU funding instruments on the matter, and 2) by foreseeing adequate measures which could combine the cohesion goals with scientific excellence ones. The goal of excellence is compatible with the cohesion goals and it could represent a booster to accelerate the bridging of the gap between least developed and

more developed regions in the scientific field. The transnational component of the support offered by FPs is pivotal and will help actors to better compensate weaknesses and harness their potential.

Finally, if CSF intends to seriously target Social Innovation, funding mechanisms must assure capacity to fund it, especially in terms of risk-taking tighter link with Structural Funds and higher flexibility in regulation interpretation.

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

A critical stage in the innovation lies in the transformation of academic research results into industrial innovation. Progress has been accomplished by the specific SME programmes and measures at EU level, but this remains an issue on which Europe is lagging behind the US. There is gap between the end of research activities and the stage at which not only industry but also banks and even business angels are ready to invest. This gap is often referred as "proof-of-concept", i.e. this small bit of development necessary to demonstrate that a technology can be applied industrially. It is then essential to attract investors. As public funding often stops at the pre-competitive level, there is the need to fill the gap between pre-competitive research and commercialisation of the end-product or process. SMEs should be able to benefit from specific grants (i.e. new funding instruments) to foster the Transfer of Technology from Research to Industrial Application. In line with the EU 2020 goal of developing "the potential of innovative financial instruments", the Commission should establish mechanisms to support those who are ready to make substantial effort in marketing their technology and carrying out a proof of concept. Concretely, this funding mechanism would be different from the demonstration activities covered in FP collaborative projects because it should have a bottom-up approach (like ERC, COST, or SMEs actions), it should fund individuals, university research teams, universities spin-off, SMEs which are not (necessarily) involved in well-structured consortia which already combine universities and industrial partners, and it should foresee several application dates every year with proposals evaluated within a short deadline by a panel of experts.

In order to address the full innovation cycle the approach must be coordinated and comprehensive, taking into account a wide range of flexible (funding) instruments, some of which are already available. Fundamental, applied and pre-competitive research have different characteristics in terms of objectives, activities and budget. Furthermore, many researchers do not have the knowledge, experience and tools to assess the potential exploitation of their own ideas, the economic impact, marketing and commercialization of their research products/processes and very often do not take into account (or think about) the following phases (e.g. business plans, public procurement, standards, regulation, IPR, etc.) of deployment and market uptake. Therefore, the EU funding of the full innovation cycles, whether or not in the frame of the so called ‘grand challenges’, must be incremental allowing for the implementation of different calls each of them covering different parts of the entire cycle. By foreseeing adequate coordinated funding measures that address each and all parts of the innovation cycle, the CSF will avoid full innovation cycles projects to be hampered by the possible interruption of part of them that might be due to a lack of project or financial engineering.

Finally, the instruments devoted to the deployment of technologies on real production processes/products should be flexible and easy to access so to be widely used even by SMEs

to reduce the "risk of investment" which is always behind any innovation. A source of inspiration for such instruments can be taken from the "Take-up actions" that the DG INFSO used for such a purpose in the 5th Framework programme and which shown to be very effective.

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?

It is un-doubtful that the main characteristic of the EU funding is represented by the fact that a lot of Pan European collaborations would not have been possible without the projects funded thanks to it. Furthermore, EU funding has been very effective in gathering critical mass, increasing the efficient use of resources and facilitating the modalities of collaboration among researchers who got familiarity with the competitive collaborative research instruments. The drawback which lies behind this is however represented by the fact that once the projects are expired, such collaborations normally end and cannot be sustained without further funded actions. It is then necessary to create a framework where such collaborations on topics of clear European added value can continue to exist and an approach based on programmes instead of on projects should guarantee this follow-up. It is fundamental to maximize the application of results to a dimension greater than local trials as the latter impedes a full exploitation of Community investments. Furthermore, in order to implement true European common policies, the balance between national and Community financing of trans-national strategic topics should be liaised with a proper political-geographical representativeness of consortia.

Where programmes are not justified, however, the "by project" approach should be in any case maintained. Thus, the use of EU funding should be rethought in order to continue to support specific projects where the existence of programmes is not justified but also to support programmes where these are necessary.

Moreover, in the case of programmes , the EU funding should represent a leverage to attract and/or optimise the use of other sources of funding like for example national or regional funds through instruments taking inspiration from existing schemes like Art. 187 or JTIs. This requires the alignment and the increase of synergies between Member States and European Commission in terms of R&I policy, funding instruments and evaluation mechanisms based on international peer review. At the same time, leveraging industry funding should be pursued.

In any case, collaborative projects need to be continued in view of the value given by an interconnected world. See also our reply to Q4 and Q8.

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?

New collaboration schemes to enhance European research are currently appearing. Such innovative approaches (European Innovation Partnerships, Joint Programming Initiatives, Thematic Strategic Research Alliances) together with existing schemas (ERA-NET, Art. 185 – ex 169) are all pointing towards the establishment of joint pan-European programmes of research through harmonisation, optimisation and coordination of national activities/resources. Such schemes are definitely necessary to guarantee an efficient pooling

of research and innovation resources, and need the EU funding support to guarantee them to be put in place. However, the experiences made with some initiatives have shown some deficiencies and a lack of coordination among Member States and the European Commission with the consequent risk of failure of trans-national programmes or projects. The lack of a strong political and financial commitment of Member States together with the absence of an efficient governance are the main obstacles and can compromise stakeholder support and interest on cooperation among Member States. Despite the fact that the involvement of all actors, including ministries, agencies, etc., represents a great challenge, there is the need to harmonise initiatives, funds and rules among the participating countries that should also provide a strong support service to all interested stakeholders.

In addition, the implementation of new initiatives that aims to pool Member States' resources (i.e. JPI) should be limited to those areas where there is a real commitment from the participating countries, avoiding a proliferation of a larger number of JPIs (as occurred with ETPs and JTIs). Before implementing any other joint scheme or initiative, the EC (and Member States) should first of all proceed with the coordination of the existing initiatives and second assess the mechanism used so far to consider potential corrective measures, if needed. EU should implement mechanisms that support a bottom-up approach also in the JPI perspective in order to foster the competitiveness at National level as well.

Every field of research has too many topics to be tackled by a single institute while on the other side there is a wide European number of research centres with considerable knowledge in all scientific fields. In order to accelerate the achievement of results, the creation of European Thematic Strategic Research Alliances in joint coordination with related thematic Joint programmes could represent a potential solution as demonstrated by the successful example of the European Energy Research Alliance (EERA) in the framework of the SET PLAN (which has a lot in common with the EIP concept). In such alliances, the research centres create joint programmes of research in a specific field by aligning national programme's resources and coordinating themselves to avoid duplication of effort and fragmentation. See also our reply to Q10.

It will be finally necessary to reinforce the role of the European Commission as facilitator/supervisor for the creation and the implementation of such models at country level. This will be of key importance in order to avoid a "two speeds" Europe in contributing to and taking advantage from the establishment of joint research programmes whatever the instrument for their implementation will be.

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

Smaller targeted projects may be useful if included in a bigger scheme of calls that would enable the scientific and technological community to develop a research theme continuously during time. This should not be, however, isolated topics "now or never". Lessons learnt and project results are, in this framework, aspects that should be further taken in consideration, in the draft of the Work programmes and evaluation/selection procedures. . Coordination actions can provide a good tool for pooling, clustering, exploiting and disseminating the results stemming from several small targeted projects. Larger projects may feature the capacity building aspects as well as being "all inclusive" when the topic has the potential of technological transfer and thus need to include ethical, economical aspects and more in

general the impact on society. These projects may also be useful when paving the way to new Member States integration.

A simplification of the current framework could, however, better streamline and coordinate research activities on the European territory. On the one hand, the diminishment and simplification in the typologies of projects through the homogenization of rules would allow a better approach for applicants in the submission of proposals in different calls and topics. On the other hand, pursuing towards the establishment of common initiatives, such as the above-mentioned schemes (joint pan-European programmes of research, thematic Alliances, European Innovation partnerships and others) would lead to a better harmonisation, and coordination of European research activities and projects.

Unifying current larger and strategic projects, which should take the shape of common EU and national programmes, could, in this perspective, align European and national research priorities, strengthen the overall European research capabilities and competition and maximise complementarities and synergies among EU member states. Smaller projects, submitted and selected in the framework of the bigger ones (programmes) would increase the concept of a real European common research, strengthening its positioning in the international arena.

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?

ENEA welcomes a number of documents put forward by the Commission during the last period addressing the need of simplification in the rules and procedures of participation to the Framework Programme. At the same time, the set up from the EC of a FP8 Preparation Committee as well as of the Framework Programme Steering Group to facilitate discussion within and between the DGs is really appreciated.

The issue of a common system with common eligibility rules that will allow simplification and a better management of the several initiatives and programmes launched at European level is of major importance. Unfortunately, till now, harmonization of participation rules between different programmes is lacking. Furthermore, within some new initiative (e.g. JTI, Article 185 – ex 169, PPP) rules for beneficiaries are different and not user-friendly creating some misunderstanding and demotivation in the scientific community. ENEA strongly encourages the harmonisation of easy-to-use funding measures, at least within the same initiative or scheme, and the utilisation whenever possible of FP-like rules and procedures of participation in order to avoid any misinterpretation rules and/or mismanagement of projects.

Being the SMEs arena very heterogeneous (e.g. micro-enterprises, family business, start-ups, etc.), SMEs need flexible measures and less heavy administrative burdens. Such flexibility is not in contradiction with the need to standardise rules, which is particularly important in order to overcome different contract law regimes at Member States' level that could represent an obstacle to cross-border activities of SMEs. This aspect underlines again the need for a clear policy commitment by Member States towards a common frame regulation to push innovation and competitiveness of SMEs. See also our reply to Q16.

In order to obtain acceptance from the research community and to increase competitiveness, the regulatory framework should support risk-taking and should also be trust-based. Research

is based on risk, so the regulatory framework must be established on the basis of a widely shared definition of "tolerable risk". The balance between costs and benefits of controls must take into account also the margin of risk that is necessary to help scientific research. Furthermore, audits should be limited to the project life instead of ex-post.

Coordination among several DGs and Commission's Agencies must be ensured. It has become evident that due to the complexity of portfolio and intervention mechanisms there is a lack of coherence and consistency among DGs with regard to the interpretation and application of some rules and procedures. A common approach by all DGs and Agencies is required including the support by the EU project officer in facilitating the guidance along the different mechanisms and throughout the lifetime of the project. This will certainly facilitate the participation to the next research Framework Programme.

A more structured approach to the timing of the call publication is required. Apart from the need to avoid deadlines directly after common break periods (e.g. after summer, beginning of the year), the possibility to have fixed launches and deadlines as well as permanently open calls (with cut-off dates), as it is already occurring with some EU funding instruments, should be envisaged.

Transparency in the definition of work programmes is more and more required. While the role of Programme Committee, Advisory Groups and other similar bodies to individual parts of the Work Programmes should be maintained if not reinforced, the evolution of the annual Work Programmes and priorities that will be probably object of future EU funding should be at earlier disposal of the scientific community. Because of fairness and transparency, earlier access to draft Work Programmes should be ensured in such a way that all parties have equal access to the same set of information at the same time across Europe and worldwide. This openness and disclosure does not prevent the Commission, the PC and similar bodies to change part or all of the specific work programme.

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

This question is very important, because the existence of proper indicators means the possibility of measuring the degree of success in relation to specific targets that could be fixed by the Commission during the seven years of duration of the CSF. Indicators and targets are the *condicio sine qua non* to be able to monitoring performance during the course of the research and innovation programme and making a performance evaluation at the end of a predefined period.
Performance indicators belong to different categories, each of which should be represented:

- Practical achievement of results (e.g. commercial products/services launched during the project and after the end of the project);
- Knowledge transfer activities (number of licences, new businesses/ventures launched, related revenues and asset generated, etc.);
- Techno-scientific results (number and quality of publications, IP assets, patents, etc.);
- Economic and social impact indicators (the most important but also the most difficult to calculate, they measure the effects on the end user/final stakeholders or the performed work). Economic impact can be taken into account by measuring the impact on employment (number of new positions created) and in terms of total turnover increase etc. Societal impact could be measured through a qualitative assessment of the impact on e.g. safety, health, ageing issues. It could be also relevant

to monitor the geographical impact of R&D results (at reginal, national, trans-national and international level);

- Contribution to the EU, e.g. in terms of contribution to Standardisation activities (measurable by the number of technical standards to which a project has contributed) and to the Regulatory framework (measurable by the number of EU, international or national regulations /directives to which a project has contributed);
- Communication impact: relevance and efficiency of the communication, number of tools developed, number of researchers/ end users reached, number and involvement of the media and scientific journals;
- Economic productivity (it measures the ratio between economic input and output);
- Administrative efficiency (it measures the administrative progress e.g. of a project);

For each funding mechanism performance indicators will assign a different weight to the different components, proportionally to what is the main focus of the action. However, the mechanism of fixing indicators and specific targets in a predefined timeframe and thus monitoring the progress in the following years should be based on common rules and approaches, as any performance management activity usually is characterized by. Reporting obligations should be tailored in a way to allow the indicators to be fed it. However, too burdensome obligations may be avoided and the cost due to the need of evaluating the performances must be kept as low as possible.

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?

Despite the support provided by the EU to national and regional innovation projects, a lack of coordination between direct EU R&D&I funding and regional/local programmes still persists. This is also due to the fact that all Member States have explicit national/regional policies but different approaches apply. In some states there are clear links between the national and regional policies, while in other, there is no connection between the two dimensions. In other countries, further, the RTDI regional dimension is, for the most part, supported by funding covered through the Structural Funds or a weak allocation of these funds towards the RTDI objectives is foreseen in the regional operational programmes.

In order to make the EU "the most competitive and dynamic knowledge based economy", it is of course necessary to fund excellence projects, but is also crucial to allow actors located in Convergence or poorest regions to improve the accessibility, the innovation and research environment, as well as the skills of the human capital. On the one hand, initiatives like Regions of knowledge constitute an attractive and positive instrument to improve local investments in RTDI projects. Cohesion policy, on the other hand, allocates funding to RTDI initiatives and projects at regional level. Nevertheless, a better planning and coordination among EU Research and Innovation funding, EU Regional policy and national/regional programmes should be set up, trying to overcome the fragmentation in the approach to R&D&I regional strategies. The establishment of a common agenda or a platform, bringing together representatives from the European Commission and national/regional actors, could surely lead to a common streamline, allowing a better allocation of EU and national funding and supporting in a more efficient way the drafting of regional strategies. With regards to the Cohesion policy, see also our reply to Q1. See also our reply to Q3 and Q4.

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?

The new approach chosen by the EC to focus on societal challenges with the creation of specific JPIs and EIPs is shifting the balance more on the side of short-medium term applied research with a rising importance to technology transfer. It seems that the space provided to curiosity driven research is going to be reduced. On the other side, without curiosity-driven research the number of potential technologies that can be transferred to industry through applied research followed by technology transfer could be affected by the proposed approach change (less curiosity driven research = less input for applied research).

This calls for the need, as even underlined in other points of this document, to:

- Reinforce the ERC role so to have a strong reservoir of excellent potential transferrable research results
- Reinforce and enlarge in number of thematic areas covered, the EIT, given its peculiarity of governance of the knowledge triangle even including curiosity driven research.

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

ENEA very much supports bottom-up programmes and initiatives such as IDEAS, Marie Curies, FET Flagships, SMEs actions, COST, etc. All of them should be continued and reinforced with substantial investments as they all represent a source of future industrially exploitable results which are necessary to keep European competitiveness on an appropriate level . Some schemes, such as the FET Flagships initiative from the ICT should be transferred and extended to other relevant areas like Energy, Materials and others where multidisciplinary visionary high risk long lasting projects can pave the way to future technological trends in such fields where Europe will then play a major role worldwide.

Having said that, it must be stressed that the question should not rely on whether or not there should be more bottom-up or top-down activities but on the fact that a right and equal balance between the two approaches should be ensured allowing the scientific and business communities to research and innovate within their strategic direction (bottom-up) and those based on priorities defined at EC level (top-down). A good example is represented by the SET-Plan - EERA where objectives and instruments are decided by the EU (top-down) while joint programmes and their activities are implemented by leading research centres (bottom-up) who are sharing knowledge, facilities and human resources to develop next generation of energy technologies on results from fundamental research and maturing technologies to the point where they can be embedded in industry driven research. This approach aims also to align, harmonise, optimise and coordinate existing national resources/activities, avoiding duplication of effort and fragmentation. The latter implies the need for the creation of specific general organisational models to be applied at country level (mirroring initiatives, or other forms of organisation) so to maximise the potential involvement of all the relevant stakeholders in the above mentioned initiatives (with specific reference to the ‘new’ ones).

In order to accelerate the achievements of results, ENEA strongly supports the creation of similar (top-down/bottom-up) European Thematic Strategic Research Alliances in other key areas like Climate change, Materials, Food and many others as part of the CSF. Moreover, specific actions to interlink such alliances with corresponding thematic Joint Programming Initiatives should be considered (maybe inside the related European Innovation Partnerships). This will probably have a great impact in the definition of national funding programmes and research policies especially if, as said in the previous paragraph, mirror national alliances will be created with the aim of maximise the contribution to EU alliances at the single country level.

Despite the fact that even what could be considered as a top-down approach is not as such because it arises from a open consultation of the EC with relevant stakeholders such as networks, platforms, alliances, etc. (then it can be considered as a mixed approach), ENEA is concerned that some top-down or industry-driven initiatives such as JTIs are perceived as closed box. It is therefore necessary to reinforce the role of the EC as facilitator/supervisor in order to favour an open and transparent consultation and interaction among relevant stakeholders (bottom-up) that include also research teams and SMEs that are not necessarily involved in structured consortia or lobbies.

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

Knowledge-based support to European policy making is already effective, and also research has demonstrated to be forward-looking so far yet, when necessary R&D should have a direct channel with those expertise bodies that support the decision making process, that are the agencies like EEA, ECHA, EFSA etc. This already happened when some emergencies arose (e.g. BSE, avian flu crisis, African swine fever, natural disasters) but could be done constantly to avoid such situations. At the same time, progresses in high-technology areas (e.g. KETs) have provided science managers, policy makers and funding bodies new opportunities and cutting-edge technologies to set up innovative approaches in more problem-oriented and applied research areas.

EU RTD funded activities have very often supported policy makers in developing relevant policies of EU and Member States in some sectors and related policy areas such as regulations, legislation, tax incentives for innovation, education policy and standards. A certain level of foresight activities has also been supported in several thematic areas through CSA and targeted call for tenders. In addition, specific consultation processes have been carried out on "voluntary" base (e.g. many ETPs visions) or on particular demand in strategic sectors (e.g. SCAR foresights). Such an approach is relevant and must continue to be financially supported because it highlights the need for a vision, rather than for a simple list of defined research priorities. Furthermore, most of the R&I performers have a strong knowledge and expertise on foresight exercises for particular sectors and on monitoring and planning mechanisms for public policy.

Such a critical thinking has become widely used in many Member States for medium- and long-term local, regional and national planning and decision-making processes, allowing the analysis of multiple scenarios and alternative paths of development, the setting of priorities, the identification of new business fields and of the innovation capacity of a specific sector, business or country. All aspects that are strongly in line with the EU 2020 and the Innovation Union initiative. Therefore, the CSF must take into consideration these aspects and strongly

provide funding of RI activities in support to policy and planning through initiatives (e.g. CSA, tenders) that take advantage of the experiences of competent stakeholders (both R&I performers and enterprises).

It should be noted that these types of R&I activities also require a participatory approach (not limited to networking) and the 'ability' to translate R&I results into terms that are easy-to-understand by the public (non-specialised people). Very often communication among and beyond scientists, lacks sometimes of proper sharing of scientific outcomes, impeding broad dissemination, understanding for the general public and access from business. Too often, the technical language or the lack of exploitation of existing instruments fail in reaching the proper audience. The establishment of a targeted strategy through specific models for communicating research results under the CSF should be set up, in order to share the value and the potential of European research flagship scientific achievements. Scientists should be brought closer to communicators, fostering the potentialities and exploitation of the best cases of the European research. As a natural effect of a proper communication, the general welfare, the economy and the sustainability of the European territories would benefit from the application of the research results into reality. In doing so, the trends and instruments provided by current information and communication society should be exploited, so as to make research more comprehensible, attractive and accessible to European citizens..

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

JRC is efficiently supporting the Commission policies by providing science-based policy options/opinions. Yet, although distributed into the EU territory JRC has little impact on the Member states. JRC should foster collaboration with local counterparts in order to channel a bottom up flow of information from Member States scientific community to EU (not to be confused with the MS policy- or the Committees- opinions).
For this reason, JRC should be involved as much as possible in Joint Programming Initiatives.
In addition, the JRC could act as an EU advisor for the monitoring of scientific, technological and social consequences of EU RDI activities

We think that JRC could provide useful contributions on a wide variety of topics (through a flexible degree of involvement, according to the different scientific domains and policy issues). As regards the involvement and the support to the Innovation Union initiative, we think that the JRC can provide a strong contribution *inter alia* on strengthening the ERA knowledge base and reducing fragmentation, performing research and studies on Innovation Union indicators and scoreboard, favouring the pooling of resources to achieve breakthroughs (European Innovation Partnerships and Joint Programming), favouring the training of researchers and policy support on knowledge transfer and intellectual property rights. As regards the last topic, we think that the JRC could play a strategic role concerning:

- Commitment 21 of the Innovation Union, in particular as regards the strengthening of knowledge transfer offices in public research organisations;

- IP training and IP management support (to EC and stakeholders) on CSF programme/instruments.

For all those reasons, a budget within the CSF should be set apart for JRC activities and adequately reflect the tasks that will fall under its competence.

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

Citizens and civil society are the end users of the results of the research and innovation activities that are carried out in the framework of EU Programme. Their involvement is therefore of the outmost importance. The priorities in R&D and innovation are directly linked with the needs of the civil society, in terms of quality of life expectancy.

The money that is spent comes from the taxes of the citizens, therefore they have the right to know how and how efficiently it has been spent. Their involvement is useful to better focus the major Research and Innovation areas, by means of public consultations as in this kind of documents. Moreover they should be constantly involved during the course of the CSF and at the end of it, when conclusions are drawn, with reference to efficacy and effectiveness of the total devoted resources, both in terms of human and financial ones. The means of capturing the attention of the citizens are all those usually devoted to the dissemination of the R&D results: the most conventional as press, magazines and scientific journals, the TV and internet, social networks included, dedicated events like conferences, workshops, focus groups, exhibitions "Open Days" *et alia.*

Civil society, should therefore be further involved in the identification of the funding activities and priorities, in the evaluation of the reached outcomes and in the identification of the opportunities capable to strengthen the "knowledge triangle model", linking research to education and innovation. The role of education and training, in fact, is a fundamental factor in social and economic development, able to improve the workforce's skills and make the European research area and economy more competitive at world level.

Citizens representatives, like NGO's, should be regularly invited in taking part in the debate and in the consultative/advisory groups of the financed projects, providing their inputs in terms of expectancies and needs and to bring the research's results closer to European citizens. See also our reply to Q11.

Among the performance indicators (see our reply to Q7), social impact indicators could also include the "usability" parameter, namely the validation by the end users of projects' product/process/service and the assessment of the differential between the achieved and expected results in terms of improvement of life's quality.

<u>Strengthening competitiveness</u>

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 broad nature of innovation is recognized by the EU support specifically dedicated to innovation services. It has been outlined in the Doc. "Challenges for EU support to innovation in services" SEC (2009) 1195 of 09.09.2009 that *service companies, generally, do not innovate less than manufacturing companies but differently.* Also in the field of service innovation *most important sources for new ideas in service companies are employees and customers.*

Service innovation, social-innovation and eco-innovation do present a huge potential in all those fields that are crucial for the population, as energy and food security, the challenges of the global climate change, the ageing and well-being of the European citizens, etc. Moreover services do represent one of the most important economic sectors in Europe. The "service economy" is rapidly growing and the high-tech (or knowledge intensive) services sector can have an important impact on the European competitiveness.

There is the need of connecting this kind on innovation with the technological innovation, modelling new partnerships that link R&D organizations, with enterprise (especially SMEs) both in the service and in the manufacturing sectors. In one word, services need to become more R&D intensive and the CSF can have an important role in this virtuous process.

As regards non-technological innovation, we underline the need of avoiding as much as possible confusing terminology, in order to clarify what it is meant and what it should be addressed. In particular, marketing and organisational innovations (which are often considered as the most evident example of non-technological innovation) are often related to technological development. Furthermore, product and process innovation are often obtained without formal R&D or technological development (note that, moreover, technological developments are not necessarily associated with formal R&D). Failures in targeting the support to non-R&D innovation activities and to non-technological innovation have been due in the past also to lack of clarity in the definition of the scope of related interventions.
Similarly, as regards social innovation, a risk of confusion and lack of clarity in terminology exists. As indicated in a recent report drafted by Agnès Hubert, an adviser in the Bureau of European Policy Advisers, Social innovation is about new and effective solutions to pressing social needs, created by individuals or organisations (in a logic of "diffused empowerment") with a social, and not necessarily a commercial, imperative. It is an asset in responding to the large and complex social challenges that we need to deal with: Global warming; sustainable cities; lifting people out of poverty; improving education and health systems; new models of social care for ageing populations.

Successful Social Innovation is often: Experimental (testing out a range of alternatives and assessing which ones work); Cross-cutting (for example responding to ageing requires changes to everything from employment law and pensions to new models of self managed care); Collaborative (making use of the full potential of network technologies to boost productivity in the social fields and to speed up learning); Able to engage citizens as co-creators; not meant to replace social services. Those aspects should be adequately taken into account when shaping programs (and related tools, evaluation criteria etc.) to foster Social Innovation. Among the proposals to strengthen the Social Innovation dimension in CSF, the creation of an "Open Social Innovation" digital platform (where European-wide policy problems can be posted, and ideas and solutions can be put forward by citizens and stakeholders across Europe) and a hub of networks of social innovators across Europe (to brings together a range of partners from across Europe, including multinational companies, development agencies, NGOs and research institutions, and including associate organisations in every member state) seems the most promising, along with the establishment of a annual European Social Innovation award (to highlight social innovations in various policy domains, raise awareness and reinforce networks).

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?

The implementation of new funding schemes/initiatives such as JTI, PPP, ETP has characterised the current FP7. The longer duration of the FP7 represents an advantage as it could allow for a proper assessment of the potential new instruments that might be introduced in the CSF. It is in fact mandatory to avoid "shocking" effects that might cause an initial decrease in participation of key players including SMEs and lead to the need to revise such instrument in the CSF. ENEA strongly suggests that before implementing novel forms of PPP or new JTIs, an analysis of all the mechanisms used so far must be carried out and eventually "experimental calls" for new forms of PPP or JTIs should be created during the last period of FP7 allowing to consider potential corrective measures, if necessary, before fully entering into the CSF. In any case, collaborative research instruments that proved to be successful need to be continued and improved so to guarantee an appropriate "known framework" to those stakeholders that do not have the necessary dimension or timely approach to face big changes. In addition, possible new instruments or funding mechanisms that might arise during the time frame of CSF should be financially covered by supplementary budget avoiding the reduction of the CSF budget once it will be defined.

As already mentioned, there is an enormous proliferation of ETPs, and the number of JTIs (and possibly JPIs) is following the same trend. Before implementing any other form of PPPs/JTIs/ETPs, the EC should carry out a deep analysis of the state-of-art, impact and relevance of the currently running public-private partnerships (JTIs) and ETPs. There are unfortunately some disappointing experiences with some of these initiatives, which in the case of JTIs are linked to the perception that industries follow its own convenience (business) and interests instead of a true European relevance, to the strict regulation of JUs and to the problems encountered with the co-funding (national and EU) in the two JTIs ARTEMIS and ENIAC. In general terms, the PPPs initiative seems to be more appropriate

With regards to the ETPs, a strong review of the several ETPs should be performed by the EC as some ETPs are 'silent' and do not fulfil their aims and community expectations. Those ETPs that fall in this unpleasant situation should be cancelled and not recognised as such by the EC. At the same time, some ETPs related initiatives (e.g. lead market initiative) should be revised in order to assess their effectiveness and relevance to the CSF.

The above comments stress again the need to reinforce the role of the EC as supervisor and observer for the monitoring and implementation of these initiatives in order to guarantee a concrete, open and smooth cooperation between the public and private sectors if the proposal to tackle societal challenges and to accomplish the ERA are to succeed.

See also our reply to Q4 and Q10. Concerning the industrial participation see our reply to Q6 and Q16.

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?

The involvement of SMEs in research and innovation must be increased with the urgent needs for translational research by extending the bottom-up approach of several programmes already in place (Research for SMEs, Eurostars, targeted ERANET, etc.) to other initiatives, giving the possibility to both research-performing and research-acquiring SMEs to participate. ENEA strongly supports more resources for cooperation between research-acquiring SMEs and RTD performers (i.e. Research for SMEs of FP7) as this type of actions have proved to be the best solution for supporting innovative SMEs that do not have in-house research resources. Furthermore, taking into account that only a small amount of specific SMEs are able to participate in large collaborative projects, SMEs need earmarked calls for small size and short-medium term RI projects. Any eventual SME-specific programme of the CSF must remain open for collaboration with RTD performers for obvious reasons, without separating different beneficiaries into separate programmes. SME participation to EU research funding has been hampered by the administrative burden and sometime the delay in payment of the EC. Except for rare exceptions, participating SMEs experienced financial problems in co-funding the payment of personnel dedicated to a project due to such type of burdens and delays. To facilitate the participation of private, especially SMEs, an economical advantage should be envisaged or in alternative i) an easiness to join a R&D programme in terms of shorter time to contract, quicker payment, ii) relate the amount of co-financing from SMEs to their own dimension (turnover, number of employees…), e.g. by reducing up to zero the financial contribution from newly established ventures likes spin-offs and start-ups, iii) participation as subcontractors that would then rely on a national research body to implement the project (subcontracting is already present in the FP but it is not welcome), iv) favouring the participation of SMEs cluster to national and international funding programmes by creating specific targeted calls and iv) supporting the open-lab concept (sustainable PROs-SMEs partnership) in such a way that SMEs can take advantage of the resources (in terms of scientists and facilities) of excellent research centres and both SMEs and research centres will profit from their enhanced collaboration and share of knowledge that will finally increase the exchange and transfer of innovation to and from the private sector, a fact that ultimately will increase the effectiveness and impact of market driven R&I.

Given that SMEs often feel at a disadvantage due to the need to negotiate consortium agreements with much large, better financed and more specialised participants, IPR rules in CSF should aim to allow parties to negotiate IP conditions on an equal footing. Specific provisions to ensure fair negotiations could be envisaged and a default regime globally favourable to all parties could be foreseen, leaving the possibility to participants to deviate from this regime in order to fit to the project needs. The CSF should envisage an appropriate mechanism to mediate when individual parties feel their interests are not respected.

In parallel, CSF participants could be asked to negotiate an agreement on the main terms and rights concerning ownership of foreground, access rights, exploitation strategy, etc. Such an agreement could be part of the Grant Agreement, therefore any initiative to amend it should comply with a specific procedure and require the authorization of the EC in order to verify the compatibility with the CSF IPR rules. On the matter, different forms of support and help (training, helpdesks, model (consortium) agreements), as well as funding in relation to IPR, could have a positive impact on SMEs participation. Furthermore, support and training

measures for the public partners of SMEs should be foreseen in order to favour cross-fertilization and improve the skill of the scientific community in dealing with the entire innovation chain.

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?

The CIP has demonstrated to be an important new instrument aiming at promoting the innovative potential of European enterprises. However, major concerns related to its effectiveness regard the establishment of adequate synergies with the other funding programmes (especially those R&D supporting) and the lack of critical mass, which affect the perceived impact of such programme.

On the other side only a limited number of SMEs are open to innovation mostly due to the high risk investments needed to implement it in existing production processes/products. Normally, the major part of industries react to innovation by investing in it when real examples of benefits achieved by their competitors in implementing it are appearing on the market thus making innovation a need to stay competitive. It is then necessary to create a set of best practices that, appropriately and widely disseminated, can take a large group of industries (especially SMEs) to follow the examples shown.

The number of Best Practices produced is indeed of importance, as bigger it will be as larger will be the potential impact created. Such best practices, conveniently grouped in thematic clusters (by technology or by reference industrial sector for example) will be subject of a wide European dissemination campaign aimed to create the so called "replication effect".
This leads to the need to create new funding instruments which have to be easy to be accessed, with simple administrative rules, contain no research but only technological adaptation activities and have schemes allowing for wide dissemination of the success stories created. The low budget needed to implement them should also ensure a high number of launched projects.

A good example of such a scheme can be extracted from the past FP5 in the ICT sector where take-up action scheme projects, included in big thematic clusters like for example EUTIST-AMI, EUTIST-M, EUTIST-IMV, ASP-BP had exactly the listed characteristics.

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

First of all, it is of pivotal importance to streamline the financial instruments available, thus having one instrument for equity investments and one for loan guarantee ones, in order to improve fund accessibility, harmonize rules for accession and improve the understanding of those instruments.

As regards the loan-related instrument, we think that the financial support should not be limited to R&D related activities, but it should also cover more downstream initiatives, namely innovation-related (thus closer to the market) projects. Moreover, preference should be given to those projects involving a higher participation of industrial partners (SMEs in particular), in order to increase the impact on the economy. Synergies with projects funded under the CSF should be encouraged and exploited and the availability of financial support

widely communicated, in order to raise awareness on funding options and increase the overall participation to R&D&I programs.

As regards the equity investments, the experience of the CIP programme has demonstrated the strong leverage effect of EU support to venture capital (main problem has been the lack of critical mass). The report of European Investment Fund (EIF) on the CIP shows that the EU contribution of €400 million (loan guarantees and equity) up to the end of 2009 has leveraged €9 billion (22 times more) and benefited 68.000 SMEs.

Venture Capital is particularly suited to support high innovative companies. Taking the form of share capital (equity) is more appropriate than loans, as new and fast growing technology based companies need time before they can generate the necessary cash-flows to pay interests and capital. Considering the hurdles many Venture Capital funds are experiencing in attracting the necessary capital for the launch of new funds, it is of crucial importance to ensure an adequate support to equity investments. Support should give preference to those initiatives which comply with EU priorities and needs (e.g. investments in clean technologies, focus on early-stage investments, ensuring transparency in the asset management etc.). We believe this support can have a beneficial effect to motivate institutional investors to reconsider investing in this asset class.

Finally, we believe that available budgets for equity and loan guarantee support should be revised, taking into account the expected increase in the requests for support.
The collaboration with the EIF (and synergies with existing instruments like Jeremie, within the policy for the use of EU Structural Funds) should be reinforced, especially in the light of the recent Council conclusions (4th February 2011): " the Commission is invited to […] explore options for setting up an intellectual property rights valorisation instrument at the European level, in particular to ease SMEs' access to the knowledge market".

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?

Public procurement of innovative products and services is of pivotal importance in order to improve the quality and efficiency of public services. It may prove particular importance in order to maximize the benefits of the research carried out in strategic sectors (e.g. security). In certain areas of research (e.g. security), it may prove effective (in terms of economic impact) to leave the IPR ownership to the contractor, while paying a price lower than the one paid in normal procurement process where the procuring entity (e.g. the Commission) keeps the IPR.

The issue is to find the right balance between the need of controlling (and owning) the assets to be procured and related type funding (full or partial cost). The more IP rights (ownership or user rights) are left to the contractors, the less should be the amount to be paid by the EC.
Such an approach may create beneficial spill-over towards the Member States and the way they manage the procurement of innovative activities, thus inducing them to adopt an approach more risk-taking and conducive to innovation.

The CSF could try to contribute to solve some of issues hampering the creation of a common procurement market for innovative solutions, in particular issues related to harmonization of administrative requirements and approach to risk). In order to sustain trans-national procurement of innovative solutions, a network of public procurement Contact Points could

be proposed and established, in order to diffuse information and support the potential applicants in the Member States.

We recommend to draw inspirations from the study recently commissioned by DG Enterprise on the future EU support to public procurement of innovative solutions.

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?

The focus on competitiveness aspects should be reinforced, in order to foster the impact of the CSF results on our economy. In particular, IP aspects should be taken into account along the whole project life, from the proposal stage to the end, as well as after the project termination. This aspects entails a change in the evaluation criteria (which should reflect the emphasis on IP management and exploitation) , as well as in the evaluation and negotiation process (e.g. by involving experts with the required know-how on IP management and technology transfer). Those changes should correspond to appropriate reporting obligations for the projects beneficiaries, in order to get evidence of IP management and exploitation efforts. Moreover, a "use it or lose it approach could be envisaged, in order to induce participants to exploit the results obtained through the projects within a reasonable time.

In order to raise awareness on IP aspects, appropriate support, training and tools should be made available to (potential) participants. EC project officers should be the first line of support; therefore they should have the necessary know-how and training to follow-up, provide support and /or signposts to relevant expertise on IP-related issues.

Dissemination of scientific results should not conflict with IP management and exploitation needs. The initiatives carried out by the EC in FP7 to foster “open access” should continue. Possibly, the EC could create an appropriate repository (at least for the contributions coming from MS and Associated Countries) in order to collect and disseminate the relevant research works.

In order to increasing the impact of the projects on competitiveness and innovation, the establishment (at project level) of a structure in charge of knowledge transfer activities should be considered and warmly encouraged. In particular, a possible idea is to foresee the establishment, at the project consortium level, of an " Intellectual Property and Knowledge Transfer Board", which should have the task of addressing and monitoring all type of IP&KT issues that may arise (e.g. results disclosure, licensing, dissemination, protection, definition of background, definition of exploitation strategy etc). This Board would bring together the representatives of each consortium participant (and, possibly - external experts, whose cost could be covered through part of the co-funding).

Along the lines of the recent Council's conclusions, information about publicly financed R&D&I should be better disseminated, whilst respecting intellectual property rights, notably through the establishment of an inventory of EU-funded R&D&I, linked to similar inventories of R&D programmes funded at national level.

However, IP exploitation and dissemination rules should also reflect the other policy objectives endorsed by the CSF (e.g. simplification and coherence among the different instruments, while leaving room to flexibility where needed; increasing the participation of

SMEs and industry; increasing the participation of third countries participants, while ensuring reciprocity).

Considering the relevance of policy objectives and expected impact, we think that the new IP rules should be discussed and negotiated in details with the representatives of stakeholders (i.e. SMEs and industrial associations, large companies, academia and PROs, civil society, institutions). It is of paramount importance to differentiate between project data and project results: the former must be public, being cognitive elements that represent an investment to be re-used avoiding useless duplication (e.g. physic, geographic, socio-economic data, cartographic elements, etc., whose components, following an agreement at the start of the project, may be considered as sensitive or not and, if not sensitive, can be made available in accordance with the rules of standardization developed over the years at European level).

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 ?

The role of the ERC should be strengthened and should also represent a source of future industrially exploitable results in order to keep the European competitiveness on an appropriate level. For this purpose we suggest some improvement to the "IDEAS" Programme:

- more funds and consideration for "frontier applied research": the new ERC "Proof of concept" scheme has been launched to provide additional funding to ERC-funded projects to be brought to a pre-demonstration stage, but it's not enough to strengthen the European competitiveness. The ERC should take in greater consideration technological innovation's projects arising from applied research. The "frontier research" should be a more advanced concept than basic research: it should look at basic research but also at applications;
- the "ideas" should be the core of the evaluation process: the project mark should weigh more than the Principal Investigator mark;
- a new funding scheme for excellent projects to be submitted by Principal Investigators not meeting requirements of Starting or Advanced Grants should be introduced in order to enhance further brilliant ideas and innovation; in fact, so far, excellent researchers without PhD are not eligible to submit proposals in the ERC Programme;
- a stronger integration between research and education could be achieved through the Principal Investigators' training to the next generations of top researchers;
- only around 3% of Principal Investigators come from non EU Countries; the ERC should establish a "less conservative" approach in order to attract external researchers (such as more attention to "ideas" than to "CVs", researchers without PhD also eligible to submit proposals) and should assign a budget committed to Principal Investigators coming from non EU Countries;
- the ERC Executive Agency should increase transparency for procedures such as selection of reviewers and ranking order of evaluations; evaluation letters should be sent out at the same time to the applicants of each sub-call (Physical Sciences and Engineering, Life Sciences and Social Sciences and Humanities);
- the ERC should provide more information on the results of funded projects.

We recommend the EC to define IPR rules (related in particular to ownership assignment and access rights) which take into account the IP issues due to trans-national mobility (e.g. conflict with the regulations in force in countries like U.S.A.). We firmly believe that neglecting the potential consequences stemming from those issues may negatively impact on the involvement of third countries organizations and deprive our researchers of highly qualifying career opportunities.

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

EU should show consistency in the funding planning, avoiding that excellent consortiums and proposals are lost for 0,5 in score after months of preparation, a system of "recycling" second best proposal to national systems, moreover the call should indicate a path of research needs and not open a single window opportunity as happened e.g. in some FP7 calls. JRC could have an important role in building up excellence in Members states, especially when interacting with equivalent counterparts. See also our reply to Q5 and Q12.

Also ERC not funded proposals, having been evaluated of high quality but not sufficient to be funded, should be recommended for national funding by the EU. A list of excellent projects, ranked as basic or applied research, could be officially published by ERC so that Ministries, Foundations, National Agencies, industries' associations and venture capitalists can give them the chance to be funded.

The EC could also launch a new action aimed at co-funding Member States' calls for young excellent researchers, in order to build up excellence at a national level.

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

Marie Curie actions are a fundamental tool to turn ERA into reality. Nevertheless, MC actions should be simplified both in number and in rules governing each action. In particular, even recognizing its positive role, the budget devoted to Career integration grants should be used to support more structured actions (i.e. Individual fellowships).

Concerning COFUND, the introduction of rules allowing to combine and integrate different forms of funding (i.e. EC cohesion funding) would encourage a stronger participation of Italian public bodies/agencies.

Individual fellowships should be re-confirmed and/or reinforced. The world fellowships (IOF, IIF and IRSES) should be strengthened because Europe needs to increase competitiveness towards the rest of the world: Marie Curie Actions can increase cross exchange and cross fertilization between european and non european researchers, reinforcing european host institutions. The total budget for the world fellowships is still too low (13,5% of the total budget 2012).

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

Since gender equality is a pre-condition and a fundamental element for the realisation of a sustainable growth, the gender dimension should become the factor marking the overall EU

research and innovation. In order to strengthen the role of women in science and innovation the following actions are proposed:

- promoting cultural change with respect to gender in science, policymaking and civil society.
- promoting structural change in the organizational culture of science and research through the application of 'diversity management' to human resources in all phases of a project life-time: concept, proposal, evaluation, project management.
- promoting women leadership in science and research. Vertical segregation of women in science and research is one of the fundamental issues to be addressed in order to promote a true change in science, both in practice and in contents.
- promoting policies of reconciliation and sharing not only as specific measures concerning women only. Such policies invest men and women, and social and labour organisations.
- "Genderizing" research contents not only pursuing a larger presence of women at all levels, but also integrating the gender dimension in its contents by earmarking of a percentage of funding for the parts/activities where the gender perspective is actually embedded and earmarking of programmes' budget for projects directly investigating gender issues.
- Definition and application of an Ethical Code of Conduct in support of differences in coherence with the attribution of gender issues to the Unit Ethics and Gender, paying particular attention to gender diversities within the Ethical Code of Conduct itself.
- Consider the opportunity to include among the eligible costs of a project those expenses related to baby-sitting services: this should be done only in case of absences linked to projects' travels and missions, with a limited number of days/mission and missions/year, utilising the lump sum scheme.

25. How should research infrastructures (including EU-wide e-Infrastructures) be supported at EU level?

To improve the research effectiveness at EU level in the framework of collaborations like the ones presented before (Research Alliances, Joint Programming Initiatives), European Research Infrastructures support should be reinforced to accelerate the establishment of the ERA. Such infrastructures must be designed and realised in a sustainable way so to contribute to the achievement of the objectives of the Flagship Initiative "Resource efficient Europe" defined in the EU 2020 strategy.

New instruments to fund the realisation of such infrastructures after the currently funded design and planning phase should be considered and put in place. Such instruments should stimulate national investments and could even make use of or exploit the current financial facilities managed by the EIB.

The co-funding of research infrastructures should be also stimulated through the use of Structural Funds.

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?

In R&I, international cooperation should be supported first of all by the establishment and the implementation of a coherent international research policy characterized by prioritisation of objectives and activities, taking into account the different geographical and thematic areas.
International cooperation with key partners and geographical areas should be stepped up where mutually beneficial and the international cooperation activities should be guided by excellence and reciprocity. Furthermore, the concept of geographical approach should in some case be reinforced: as an example, the Mediterranean basin should be considered as a whole and not – as it happens in some programmes – fragmented in different geographical "portions" that do not allow the development of coherent support policies.

Besides, a better interaction with MSs in their policy towards third key countries should be ensured by reinforcing the dialogue and partnership with MSs (i.e. with a better use of SFIC) ensuring a consistent general INCO policy. Moreover it should relevant to identify the most important thematic areas, such as energy, new material, rare earths, environment, climate change, to attract the participation of industries to the research programs financed by EU and produce a more strictly collaboration between the researchers and industries to boost the international cooperation with an holistic approach.

Technical assistance, S&T capacity building and scientific cooperation should continue to be encouraged. This type of international cooperation, nevertheless, should not be confined to mere research cooperation, but also to technological and innovation transfer into local economic/social domains, thus flourishing local business tissues and establishing useful relations beyond the research field between Europe and these countries. To this end, INCO policy should aim to create a common understanding of safety standards (e.g. EHS), definitions (e.g. product labelling), and technologies (e.g. compatible energy –smart- grids), in order to foster a "shared knowledge-based economy" that could facilitate technological transfer and trade among EU and non EU-countries.

Efforts should be put in place in order to understand which are the hurdles that in the previous Program hampered the participation of third countries' entities. In particular, some aspects of the Grant Agreement provisions could have been perceived as too burdensome (e.g. on liabilities), as well as procedural aspects.

The involvement of partners of third countries should be perceived as an opportunity, and not as a risk. In particular, as regards IPR aspects, the IPR rules developed for FP7 seem not have represented a problem: potential problems, instead, may have derived from the poor enforcement of IP provisions, rather than from the rules themselves. This calls for the need to raise the awareness of Commission officers on the relevant safeguards to be included in CSF concerning the involvement of third countries.

The relations with external actors play a key role for the positioning of the European research into the international scientific arena. Through exchange, comparison and collaboration, the European Research Area can benefit of external inputs and put into practice own research potential into new fields of application and demonstration. In this perspective, relations with competing countries and emerging economies may lead to better address the opportunities given by an interconnected world. It is not a matter of basic cooperation, but also of developing the attractiveness of Europe as a research partner, strengthening current links with

external actors and making the most from those synergies with countries which are better positioned or lead novel technologies in a given scientific field. Some key areas should be regarded as potentially relevant for the development of a new economic framework for EU SMEs (Mediterranean, Middle East …).

The implementation of the already mentioned Thematic Strategic Research Alliances (see our reply to Q10) can increase the attractiveness of Europe as a research partner. These alliances, by allowing to present a European critical mass of research centres, competences and workforce in any area of relevance could help to increase the image of Europe as a "single referential actor" which is certainly of value in the potential relationships with countries like USA and Japan.

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 to be addressed by CSF can be grouped into the following categories:
1) obstacles to a well-functioning labour market for R&D
2) achieving the required "critical mass" in EU R&D activities
3) availability of updated research infrastructures
4) difficulties faced when converting an invention into a successful and concrete application ("valley of death").

In order to achieve a strong progress towards a better functioning labour market for researchers (point 1) European commission should increase its effort in the direction of:

- horizontal coordination between higher education system and research carrier (already on-going process with the centralisation of education and research issues on a unique Directorate)
- vertical coordination between EC and Member states to overcome legal and administrative burdens affecting European mobility.

As regards the second aspect, due to the nature of most research activities no single Member State can provide the necessary financial or personnel resources to reach an adequate critical mass, therefore actions at EU level is highly required. In particular, this should occur where a large research capacity is needed and resources must be pooled to be effective or where there is a strong requirement for complementary knowledge and skills (e.g. in highly inter-disciplinary fields) – as required e.g. in space research, ICT , etc. The critical mass argument does not apply only to scientific R&D, but also to innovation 'policy intelligence' (to gather and process analytical data for better policy making in innovation) and the related innovation 'policy learning'. This type of approach may critically contribute to better policies and tools for supporting businesses in bringing innovation to the market.

As regards the third aspect, advances in many science and technology research fields depend heavily on the availability of research infrastructures (including e- infrastructures). For instance, most scientific discoveries today involve computing and data-intensive research performed by communities of researchers collaborating across disciplines in virtual environments.

As regards the fourth aspect, through the CSF the Commission should try to tackle all the constraints hampering the translation of R&D results into concrete applications (e.g. lack of

funding to support investment readiness, hurdles in matching demand and offer of new solutions, lack of support on IPR aspects and business development, lack of understanding of the link between standards and research results in key sectors etc.).
Among those aspects to be addressed through other instruments, the need for harmonisation of intellectual property rights at EU level plays the most important role. In particular, the creation of unitary titles at European level is required by the goal to create a single market. Efforts should be focused on the creation of unitary patent protection and of a European Patent Court, on tackling the fragmentation of utility model protection, on the creation of a legal framework for Europe-wide management of copyrights (due also to emerging issues related to cloud computing and software as service – SaaS- distribution).

Secondly, efforts at legislative level are required to foster cross-border procurement (especially of innovative solutions), in the light of the results likely to emerge from the study recently commissioned by DG Enterprise on the future EU support to public procurement of innovative solutions.

Closing questions

Are there any other ideas of comments which you believe are important for future EU research and innovation funding and are not covered in the Green Paper?

In order to improve the formation of new and valuable partnerships, the partner search instrument should be reinforced, and its use widely promoted (it is a tool that requires enough critical mass – in terms of number of users - to work properly).