



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

**From Challenges to Opportunities:
Towards a Common Strategic Framework for
EU Research and Innovation funding**

**Alma Mater Studiorum – Università di Bologna
contribution to the EC consultation on the Green Paper**

Alma Mater Studiorum Università di Bologna

History and figures

The University of Bologna (UNIBO), founded in 1088, is recognized as the oldest University in the Western World and has maintained its central cultural position during more than nine centuries. Currently UNIBO is one of the largest university in Italy (with more than 83,000 enrolled students), a reference institution in the education and internationalization, and one of the most active university in research and innovation related activities.

UNIBO is organized in a multi-campus structure divided into 23 Schools, 66 Departments, 27 Interdepartmental Research Centres, the Institute of Advanced Studies and the Collegio Superiore (an institution of excellence created with the aim of selecting particularly motivated students and of promoting advanced and interdisciplinary educational programmes), 14 Doctorate Schools and 5 operating sites (Bologna, Cesena, Forlì, Ravenna and Rimini) with an offer of 101 bachelor courses, 119 master degree courses and 9 European specialization courses. Graduate studies are organized in 14 Doctoral Schools, which offer more than 300 graduate-level programs to approximately 1800 PhD students. Since, 1998 the University also has a permanent campus in Buenos Aires.

More than 83,000 students are enrolled at the University of Bologna every year, making it one of the largest in Italy, with over half a million square metres of spaces for teaching and related activities. The academic staff amounts to about 3,000 tenured professors and researchers, and about 3,000 technical-administrative staff.

Research, Innovation and capability of attracting funding

UNIBO is one of most active Italian universities in research and innovation related activities and it is the primary research partner for the Emilia-Romagna region and for the regional branch of “Confindustria”, the Confederation of Italian industry. With 7 Interdepartmental Centers for Industrial Research UNIBO will take part in the Emilia-Romagna Technopoles (employing 1600 researchers) which are co-funded by the 2007-2013 ERDF ROP with 241 M€ investment and build upon the Regional High-Technology Network (45 industrial research laboratories and innovation centres, organized in thematic platforms). The technopoles will support technology transfer laboratories/projects and spin-off creation facilities, which will promote the development of new high-tech enterprises.

UNIBO actively contributed to the European Technology Platforms (chairman of the Integral Satellite Initiative in its initial phase and member of the Steering Board of Artemisia and Aeneas,). UNIBO has also been participating since 2006 in the definition of Strategic Research Agendas and Implementation Action Plans of several ETP. At national level UNIBO has promoted the building up of 7 National Technology Platforms, notably in the KBBE Area.

With regard to the capability of attracting competitive funding for research activities, the University of Bologna is very active both at National and European level.

At the European level, UNIBO successfully participated in FP6 with a total of 103 projects (acting as coordinator in 14 of them) funded by the European Commission in the different specific programmes. In FP7 the University of Bologna is currently involved in more than 160 funded projects (in 27 as coordinator).

At National level UNIBO ranks second for competitive research funding from the Italian Government, with 188 projects sponsored by PRIN 2008 (of which 66 as national coordinators) and 612 PRIN 2009 projects submitted, allowing the University to have in the 2008 competition, a success rate equivalent to 5.44% (against the national average of large universities, which is equivalent to 3.97%).

Education

The number of Professional Master Courses grows every year: 90 Professional Master courses are being currently held, involving 700 instructors in high-level academic activities, carried out in close contact with the professional and industrial world. Attention to career opportunities for graduates has led the University to establish 3,500 agreements with business organizations, which enable more than 1300 students to carry out internships every year. The master course offering is completed by the Alma Graduate School, which is the Business School of the University of Bologna and involves many of the most important economic players of the Emilia-Romagna region.

Furthermore, in the field of postgraduate courses the University of Bologna also organizes courses taught entirely or partially in a foreign language. Summer and Winter Schools are a recent but important addition to the University of Bologna's educational spectrum.

Internationalization

Internationalization has long been considered a strategic leverage instrument for the UNIBO development plan.

In the A.Y. 20010/11, 34 international degree programmes were activated – first and second cycle – leading to double, multiple, or joint degrees, 12 of which were held in English. Currently, the degree programmes offered mainly deal with agriculture, economics, engineering, political science, industrial chemistry and mathematics.

85 educational internationalization projects have been activated in 2009 and 2010; furthermore, UNIBO is the Italian university winning most economic resources within the Erasmus Mundus External Cooperation Window initiative, with about 4 million Euros, distributed over 11 projects.

UNIBO ranks first in Europe for the number of students participating in international mobility programmes. In the A.Y. 2009/10, the mobility grants assigned comprised: 1.473 Erasmus scholarships, 59 Erasmus Placement grants, 164 Overseas grants, 78 Erasmus Mundus External Cooperation Window scholarships

About a hundred teachers had at least one mobility experience abroad as part of the *Erasmus Teaching Staff Mobility* or on monitoring visits.

The number of foreign students regularly enrolled in degree programmes is constantly growing: in 2009/10, there were 5.000, over 6% of all students enrolled (2.080 foreign students chose the University of Bologna in the A.Y. 2009/10 via international mobility projects, and 750 of these participated in Summer Schools).

Overall, the University of Bologna annually welcomes over 7 thousand students and about 200 foreign teachers.

International reputation

Positioning of the University of Bologna among the top **international rankings** (Year 2010):

- 176th position in the international QS - World University Rankings of the world best universities, consolidating its position in the 200 top universities , first among Italian universities
- In the 2010 edition of the CHE Excellence Ranking (which is not intended to make a classification but rather to identify groups of excellence in a particular disciplinary area, through the realization of a multidimensional ranking), exclusively focused on natural and mathematical sciences, the University of Bologna ranked excellent in the chemical area. In the 2009 edition, focused on economic, political and psychological sciences, the University of Bologna distinguishing itself in all three areas. The results are published in the prestigious Die Zeit weekly magazine
- 118th world position in the Performance Ranking of Scientific Papers for World Universities (Taiwan)
- 86th world position, first in Italy, in the Webometrics classification

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1.1. Working together to deliver on Europe 2020

Question 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?

Importance ¹	Important
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To make EU research and innovation funding more attractive and easy to access for participants, simplification measures could be introduced both at proposal stage and during project implementation.

Two-step submission and evaluation procedures could be a way to simplify the proposal stage, especially considering that the investment of time and resources in proposal preparation is significantly unbalanced compared to success rate. However a revision of the current two-step submission procedure would be recommended in order to ensure that the short proposal format allows for proper evaluation of the proposal potential by the EC, while at the same time limiting the investment of resources in proposal preparation, and in order to ensure coherence between the first and the second step evaluation (in case it is not possible to maintain the evaluation panel in the two steps, it should be ensured the second step evaluation is consistent with the first step evaluation).

A possible risk related to the two-step submission is an increase in submission of low-quality proposals and excessive burden on the evaluation procedure.

At project implementation stage, as stated in the Communication from the Commission on “Simplifying the implementation of the research framework programmes” dated 29/04/2010, administrative simplification could be achieved by moving from a cost-based funding system to a result-based funding system, which drastically reduces the administrative efforts concerning cost reporting. Funding would be based on lump sums covering the overall costs of project implementation and the payment of grants would be based on the assessment of scientific outputs. This system would require a reinforced scientific and technical monitoring of projects because the control efforts would shift from the financial to the scientific side. At the same time it would introduce a major simplification on financial management of projects both for the EC and for beneficiaries.

Considering the three options suggested by the Commission in the above mentioned Communication, it would be advisable to implement project-specific lump sums based on ex-ante estimation of total eligible costs and definition of measurable outputs as part of the evaluation and negotiation process. Project-specific lump-sums would be paid on the basis of the acceptance of agreed deliverables and results.

However, this kind of funding system should take into account the intrinsic uncertainty of research activity, allowing a certain level of flexibility in eventually adjusting project objectives and expected results during implementation.

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

Importance	Important
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To cover the full innovation cycle does not necessarily mean to include innovation and market related criteria in all the funding instruments and programmes. A step-by-step approach should be adopted, by avoiding the mix of research and market uptake in a single project.

The CSF should establish funding pipelines which facilitate the access to funding for take up actions following the conclusions of successful projects, not necessarily by the full original project consortium.

¹ How important are the aspects covered in this question? [Very important, Important, Of some importance, Unimportant, Don't know]

The evaluation of the potential for market uptake of project results should be carried out by an EU-framework-associated innovation potential observatory, in charge of identify results that may have real chance to reach the market. The observatory should include, for example, experts in venture capital, and should create and/or facilitate connections between excellent groups/results and venture capital, business angels or companies that may have advantage/interest to support precompetitive results. In spite of a “real help” the small company may receive special (ad hoc) funding from the EU-projects or from the regional environment where the Company is based (on the whole, this suggestion is based on what is done so far in the US to create a “connection level” between scientists and the market through an active involvement of small companies).

SMEs, which decide to engage in the innovation path, should be directly and pro-actively supported with funding and expertise to help with: (i) intellectual property protection, (ii) business development, (iii) ecosystem build-up.

This pipelined funding approach could be highly beneficial for SMEs which may lack internal resources for product development even in case of very successful projects. Large companies should be able to support the innovation path with their own investments, but pipelined funding could provide incentives to maintain cooperation with SMEs to support them in product development (e.g. by covering the cost of internal trials).

The CSF should adopt a broad definition of innovation that includes not only the societal aspects of innovation processes but also social innovation. It should therefore be acknowledged that social innovation has a peculiar cycle that encompasses: the mapping, diagnosis and framing of the problems/needs; the idea generation, with engagement of citizens, end-users and other actors; the prototyping; the sustainability of the idea in everyday practice; the growing and spreading of the innovation (scaling); the systemic change which usually involves business, government, civil society and the household (see the “Study on Social Innovation” prepared by the Young Foundation).

Question 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?

Importance	Very important
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EU-based research creates the way to make institutions and companies able to access funds otherwise unavailable at national level, and to join research efforts in consortia able to reach critical mass and high quality to more effectively tackle particular topics, which could not be reached at national level.

Even if FP7 represents only 5-6% of European public R&D spending, it has very considerable leveraging capacity. CSF should foresee the integration of national, regional, private funds with EU funds. This, however, raises the necessity of harmonizing tools and rules across different funding sources and to align strategic priorities.

Given the different management procedures of national funds, a formal commitment on research priorities (i.e. those selected for the preliminary 10 EC promoted- JPIs) should be followed or accompanied by a formal financial commitment to devolve funds for the achievement of those priorities. Therefore, the national R&D budget should be made available to the EU prior to the launch of any priority-related call and the financial commitment should be guaranteed on the long run (i.e. 5-years programs), whatever is the specific duration of the national research plans of the various MS.

In order to avoid any difficulties, national funding could be commonly managed by the EC on behalf of MS (thus avoiding delays of payments, change of MS priorities or JPI MS composition, etc, that could create problems to the progress of the projects or to the common EC- MS funding initiatives).

In general, we believe that collaborative research is form of EU funding which maximizes the benefit of acting at the EU level. In fact, collaborative projects allow to overcome fragmentation, to carry out comparative studies, to facilitate knowledge transfer and to bring together multi-disciplinary

complementary perspectives - thus significantly increasing the quality of research.

Question 4: How should EU research and innovation funding best be used to pool Member States resources? How should Joint Programming Initiatives between groups of Member States be supported?

Importance	Very important
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Initiatives -such as the JPIs- should be promoted as part of an effective and well-managed overall European process that is impact-led. Mechanisms for co-funding with national funding should be considered, for example national funding for additional regional engagement in EU-funded projects generating policy-related data and national funding for personnel/mobility linked to EU-funded projects.

For countries with less efficient/committed administrations, a too strict dependency on national funding can become a major bottleneck. Evaluation at the EU level and, possibly, the pooling of national funding would assist in such cases, perhaps with mechanisms for compensating Member States showing strong negative imbalances between national contribution to FP and the funding received by its researchers and other stakeholders.

A possible way to encourage the pooling of resources from MS under the EC control is that of enforcing “fair return” rules, whereby MS should see that their investment has a positive impact on entities from their country.

One way through which it could be possible to catalyze funding for research and innovation of the single MS (including the return-on-investment to each MS) is to invest on large scale facilities (i.e. Synchrotron) which can act as drivers for funding return. This should be used as a tool to increase the returns for MS that, to date, are investing more of what they receive back. Enhancing support to large scale facilities and joint research infrastructures can be one way to contribute to solve such challenge. Facilities on an extraordinary large scale (Synchrotrons, Neutron etc) are already funded. However, there are other areas that could greatly benefit from enhanced support. The location of such a facility in a Member State currently or systematically receiving significant less support than the funding that member state provides could be a way of strengthening the community.

National funds to be pooled should be transferred to the EU and managed by EC, so to ensure a unique access point and uniform management rules (i.e. funds distribution, time, eligibility, etc).

It is fundamental to ensure that the management and distribution of funds will be EC-centralized, avoiding the direct financing and management of single countries.

One possible suggestion could consist in foreseeing a national budget allocated to initiatives/priorities (i.e. JPIs) that could be structured in two fractions. For instance, 70% could be directly managed by the EC while the remaining 30% could be retained by each MS and used to integrate the funding allocated to selected projects or to finance national projects on issues that are considered to be a priority in each MS (i.e. typical products) that are not likely to receive EU contribution and that are still falling within commonly agreed research priorities (i.e. JPI “HDHL” main program lines). This would assure to each MS a higher return on investment, providing also a certain degree of freedom in financing MS priorities.

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

Importance	Very important
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First of all, it is worth to clarify that small project does not mean blue sky research and large project does not mean application driven research (we already have example of large scale initiatives carrying out visionary research activities, e.g., FET Flagships, and small projects carrying out down-stream research, e.g. Capacities – Research for the benefit of SMEs).

On one hand, small and targeted projects are more suitable to:

- ensure a wide participation and an easier access to the Framework Programme by research groups that approach EU funding for the first time or do not have consolidated international networks
- ensure a closer and more effective interaction among partners
- carry out focused projects (both innovation projects targeted to a specific technology/application field, and exploratory research projects)

On the other hand, to tackle Europe (world) wide technological/societal challenges requires an integrated,

strategic approach, a critical mass that can only be achieved within large scale initiatives. To face this need for large scale actions, we think it is better to have large integration frameworks, instead of large projects, and then to carry out small scale projects within this frameworks.

As far as SSH research is concerned, small- and medium sized cooperation projects (three to ten partners) are the best way to support sustainable social innovation, since SSH projects are very cost-effective. The amount of resources allocate to SSH research themes should not be monopolized by large projects, whose dimension has proved to create a barrier to the access of new players and new networks.

Question 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?

Importance	Important
Moving towards a result-based funding approach, as proposed by the Communication from the Commission on “Simplifying the implementation of the research framework programmes” dated 29/04/2010, would introduce a radical simplification of rules for participating in research framework programmes that could benefit all types of beneficiaries involved in projects, including SMEs, because it would completely remove the administrative and financial burden related to project implementation.	

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

Importance	Of some importance
The success for an EU funded project can be measured by numbering, e.g, the licensed patents, the start-ups built upon project results, full papers and position papers produced as well as on the basis of the number of young scientists/engineers trained and/or exchanged. Also the number of dedicated and successful workshops/dissemination actions carried in the frame of the project can be counted for such a purpose.	

Question 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 programmes?

Importance	Important
Regional cohesion is important but it should complement FP activities and the latter should not be used to support the former. The use of some share of rural development funding (CAP) for research and innovation would be a legitimate solution for some areas of applied research. Connections to CSF and consistency of objectives are very important to ensure the quality of research at this more local level. There should be some level of harmonization of EU and national research funding. However, there should always be a national funding source that is not wholly dependent on the EU. Through EC-funded initiatives (similar to FP7-CSAs) there should be a survey system for analyzing and monitoring the progresses of national projects on the priority themes in EU, in order to avoid the overlap of initiatives and receive inputs for research priorities. Integration of funds could be reached in different ways:	
<ul style="list-style-type: none"> • Surveillance procedures should be introduced to verify the adherence of national priorities to EU priorities • It could be useful to make mandatory to MS to invest a certain percentage of Structural Funds (whose budget is higher than the one devoted to R&D) to finance R&D activities having an impact on regional development. • A better coordination between the relevant agencies at the regional, national and EU levels would ensure a more effective utilization of research funds. 	
Again, national and regional funding should be managed under the supervision of the EC, enforcing rules	

for “fair return”.

An improved coordination among FPs and Structural Funds could strengthen the support to social innovation. For example, specific funding schemes should be devised to fund all stages of the innovation process - from conceptualizing, testing and assessing to scaling potential solutions. Funding should also be available for proof of concept and prototyping of socially innovative models that bring together actors, resources and processes so as to address a societal problem/need. Social training and capacity-building activities should be explicitly foreseen within these projects.

1.2. Tackling societal challenges

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

Importance | Very important

It is good to have a clear view on societal challenges, especially to achieve impact in the short-medium term, but this should not be the strategic focus. In fact, a stronger focus on societal challenges will inevitably entail less curiosity-driven research and more agenda-driven activities. Real breakthroughs that have completely changed our lives come from curiosity driven research. EU should not only dictate the agenda for applied research, which tends to be the “development” of R&D, but leave adequate support for basic science.

Enabling technologies should remain as the main focus even in the future, as they hold the potential for solving thousands of societal challenges (even those which we do not foresee today); the research on enabling technologies should not be linked to product related dynamics.

Successful funding schemes - such as the collaborative projects within FP7 Cooperation – should remain also in the Common Strategic Framework. The trend should be to expand these project types in relation to the new initiatives.

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

Importance | Very important

Funding for bottom-up activities could be made available also within programmes tackling major technological and societal needs such as the present Cooperation Programme. In particular, a small part of the budget could be allocated to bottom-up projects, provided that they are consistent with the major challenges and activities of the specific programme. Bottom-up projects could concern not only high-risky exploratory research activities but also downstream innovation activities.

Providing more room for bottom-up activities with the CSF would enlarge the participation to EU research and innovation funding by research centres with excellent skills in areas not covered by top-down calls and by industries and SMEs that might have difficulties in fitting their research and innovation activities in the topics suggested by the EC.

More in general, the bottom-up approach within collaborative research projects should be strengthened so as to facilitate the inclusion of new and unforeseen dimensions, also related to non technological innovation, eco-innovation and social innovation.

Allocating more resources to bottom-up activities would also facilitate the participation of SSH researchers, including the humanities community, whose expertise are rarely covered by top-down calls but whose creativity and contribution are crucial to address the EU2020 targets.

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

Importance | Of some importance

The need for a clear distinction between research and policy should be stressed. Research should provide the basic information on current processes and future scenarios to policy makers, but steer clear of policy making. Although the same individuals could be involved in both processes, wearing different hats (e.g researchers acting as advisors to the EU or national governments, or being involved in JRC activities), it is important to distinguish between advocacy and research, so as to retain the credibility of the latter.

Special EU funding support should be devoted to program increasing perspectives and attitudes of policy-makers towards the use and impact of research. Usually, policy-makers are unequivocal in their support for research and the high value they attribute to it. However, there are structural and informal barriers to

research contributing to policy processes and to the use of research in decision-making specifically. Major barriers to evidence-based policy-making include poor communication and dissemination, lack of technical capacity in policy processes, as well as the influence of the political context. Policy-makers have a variable understanding of scientific analysis and are vague in terms of their use in national decisions. EU funding support should be dedicated to strategies for facilitating the uptake of research into policy included improving the technical capacity of policy-makers, better packaging of research results, use of social networks, and establishment of fora and clearinghouse functions to help assist in evidence-based policy-making. Effective communication between scientists and non-scientists calls for special grants and EU support. To enhance the quality of their engagement with the public and with policy-makers, scientists need support for the creation of targeted and general dissemination groups and tasks.

Question 12: How should the role of the Commission's Joint Research Centre be improved in supporting policy making and addressing societal challenges?

Importance	Of some importance
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The JRC is charged by the European Commission with a unique responsibility, to support its policy making with its expert understanding of problems on the table. For this reason, it is essential that it retains its current ability to do excellent research. The focus of its activity, however, should be on distilling existing knowledge and exploring options and scenarios through the application of simulation tools, rather than on data gathering. This is complicated by the fact that in some fields it is the only super-national body in a position to collect homogenized data across all EU member states.

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

Importance	Important
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Activities aimed at facilitating the involvement of CSOs and citizens in research/innovation processes and the harmonious integration of S&T developments in the daily life of ordinary citizens (see the current Science in Society programme) should be funded as “horizontal activities” within each Societal Challenge. It should be acknowledged that citizens and civil society are not only end-users or target of dissemination but they are first and foremost crucial players all along the innovation process and participatory methodologies/approaches should thus be strengthened.

It is necessary to better inform the citizens so as to make them aware of the issues and potential benefits derived from research and innovation and their applications. A higher visibility should therefore be given to the programme and its results. Citizens should also be informed about the trend of research funding (budget; priorities) in competing areas of the world.

Greater importance should be attached to the involvement of SSH researchers within S&T projects and to their participation all along the innovation process, from the formulation of research problems, to the identification of market and societal needs and to the market take up of products and services. In fact, not only SSH perspectives can significantly contribute to various grand challenges but they can also contribute to strengthen communication, dissemination and outreach activities, also at national and local level (including for example publications specifically targeted to civil society groups and the organization of discussion forum with citizens).

There are some questions which are crucial to all European citizens and societies (e.g.: How can Europe facilitate social and cultural cohesion in times of increased diversity of lifestyles and beliefs?; How can we increase the employment opportunities for the young generations?) and that can only be investigated by the specific toolboxes and methodologies of social sciences and humanities. A specific programme should therefore be dedicated to SSH. Such a programme could provide an improved knowledge base that would strongly support policy-making by contributing to all types of grand challenges. Moreover, SSH researchers have already established multiple collaborations with a wide variety of stakeholders such as public authorities, policy makers, think tanks, citizen for a, media, NGOs, business and employee’s organisations etc. These collaborations are an asset for EU funded research and they shouldn’t be left behind if EC wants to achieve a greater involvement of citizens and civil society.

The funding scheme “Research for the Benefit of Specific Groups – Civil Society Organisations (BSG-CSO)” has been assessed as problematic and needs to be adapted to the specific needs of CSOs and of the needs related to their collaboration with universities/research centres. Since the participation of CSOs brings significant benefits to research projects their involvement should be promoted. For example, as CSOs/NGOs are non-profit organisations, they should receive 100% funding for all activities. It is necessary to better inform the citizens so as to make them aware of the issues and potential benefits derived from research and innovation and their applications. A higher visibility should therefore be given to the programme and its results. Citizens should also be informed about the major trends of research funding (budget; priorities) in competing areas of the world

In the field of medical sciences, the involvement of associations of patients could bring to the fore unmet needs related to diseases that are currently being studied. They could be involved in various stages: the process leading to the definition of the research agenda and the call topics; advisory boards of projects; advertising of research results with a view to carrying out a lobbying/advocacy action towards policy-makers

In the field of ecology, population and environmental monitoring is essential to determine current status and manage conservation. Institutes often lack funds and manpower to perform large-scale biodiversity monitoring. Several projects demonstrated that citizens are willing to take part in biological monitoring and can contribute both in scientific terms by collecting considerable amounts of data over short time periods, and in economic terms by decreasing costs. “Citizen Science” based research programs can play an active part in monitoring the environment, increasing the environmental education of the public. The benefits of Citizen Science projects are the considerable amounts of data collected over short time periods and at low costs. The successful development of citizen-based monitoring programs requires open-mindedness in the academic community; advantages of citizen involvement in research are not only adding large data sets to the ecological knowledge base but also aiding in the environmental education of the public, and in the interest and involvement of citizens and civil society in research matters and problems. EU funding strategies may incorporate Citizen Science based programs if EU research and innovation activities would attract greater interest and involvement of citizens and civil society.

1.3. Strengthening competitiveness

Question 14: How should EU funding best take account of the broad nature of innovation, including non technological innovation, eco-innovation and social innovation?	
Importance	Very important
<p>The new programme should adopt a clear and consistent operational definition of innovation that explicitly encompasses social innovation, eco-innovation, non technological innovation (business model innovation; workplace innovation, marketing innovation; distribution channel innovation; creative innovation; etc.) and also the societal aspects of innovation processes. The current selection of challenges and their “technology-driven” formulation seem to be far from the actual challenges felt and experienced by European citizens (such as social and cultural cohesion, security, democracy, participation, etc.) The formulation of societal challenges (rationale, objectives, expected impact, keywords) should be broad, i.e. it should include aspects related to culture and society.</p> <p>Funding schemes and calls should encourage collaborative multidisciplinary projects and facilitate the involvement of SSH researchers whose insights can crucially contribute to devising smart solutions to societal problems and can also to facilitate the adoption of innovations. For example, eco-innovation is inextricably related to human and social aspects, i.e. behavioral and lifestyle changes and the ensuing demand for green goods and services. Therefore, along with quantitative social research, qualitative research on lifestyle, perceptions, cultures, imaginaries and identities should be given due recognition.</p> <p>Not only the procedure leading to the selection of societal challenges should be transparent and include SSH research interests and expertise, but a specific SSH-driven societal challenge should be foreseen dealing with the role and responsibilities of Europe in a global context with a view to building innovative and inclusive societies. A society-oriented challenge could take stock of the achievements of past research projects, and incorporates new dimensions with a view to addressing EU2020 goals. Moreover, such a challenge would allow to recognize the specificity of the social innovation cycle and devise funding instruments accordingly. At the moment, many projects on social innovation remain small and under-funded and are not sustainable, therefore having limited impact. A funding specifically intended for developing social innovations would allow to spot, foster and encourage European social innovation practices and harness them in policymaking processes at local or national level. Europe is rich in social innovations (see the study “This is European Social Innovation”) but social innovation must be further supported in order for it to grow, spread and create a more consistent impact on policy-making.</p> <p>The bottom-up approach within collaborative research should be strengthened so as to facilitate the inclusion of new and unforeseen dimensions, especially those related to non technological innovation, eco-innovation and social innovation.</p>	

Question 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 Programme) or different forms of 'public-private partnerships' be supported? What should be the role of European Technology Platforms?	
Importance	Very important
<p>Industrial participation should be strengthened in qualitative terms. In many companies there is a good appreciation of the funding aspect, but only a relatively small subset of EU companies fully appreciate other added values in EU research and innovation, such as international cooperation and partnerships, access to advanced technologies from top research institutions, dissemination and training channels, possibility to train and have access to highly skilled workers.</p> <p>The ETPs clearly play a pivotal role in this direction. The role of ETPs should be strengthened. They have repeatedly proven their worth through the years, with large participation mainly on a voluntary basis. Strengthening PPPs (Public-Private Partnerships) will be essential to ensure the competitiveness level required at the international level. The ETPs should help defining the societal challenges and their goals. Strategic research agendas of ETPs should be increasingly focused on addressing societal challenges They</p>	

should also integrate their strategies to boost horizontal industrial challenging priorities, like the efficient use of resources, climate changes, etc.

While there is agreement on the pivotal role of ETPs, their operational principles and organization can be significantly improved. In particular:

- ETP should play a stronger role in forming or influencing strategic decisions on relevant scientific areas. They should therefore be of high status and prestige and be participated, if not coordinated, by eminent scientists and well recognized and highly respected technical leaders and executives, to distinguish them from mere lobbies.
- ETP should provide some sort of “certification”, “quality tag” based on standardized criteria for enterprises willing to join and participate. Association should not be only a matter of registration and association fees.
- ETP membership should be publicized and made highly visible in on-line portfolios and dissemination events.

Question 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?

Importance	Of some importance
<p>SMEs represent 99% of European business and should receive all possible support at EU level. However, not all SMEs have the necessary size, skills and resources to participate in EU funding programmes. Some SMEs have only very limited research and innovation potential and their technological needs could be more easily satisfied with bilateral research contracts with local research centres or small funding at local, regional and national level.</p> <p>For this type of SMEs, support actions devoted to promotion of innovation culture and international networking could be a useful tool to raise awareness on the potential of research and innovation for increasing competitiveness and facing economic crisis.</p> <p>To identify which SMEs are suitable to participate in EU research and innovation funding, a set of minimum requirements and standards could be established at EU level so that SMEs can accredit themselves before participating in EU projects. For example a sort of quality certification could be introduced at EU level for participation in research and innovation activities.</p> <p>A further distinction should be between research-performing and research-acquiring SMEs because these two types of SMEs may have completely different needs in terms of research and innovation and should be able to find suitable funding schemes within the CSF. In addition, measures should also be adopted to fund SMEs that need to implement prototypes and pilot-scale research results in order to develop new products, processes and services and bring them into the market.</p> <p>The major problems discouraging SMEs in accessing EU programmes at present are the complexity of administrative and financial rules and the lack of resources to invest in proposal preparation.</p> <p>The model of FP5 Exploratory Awards could be also taken into consideration to cover part of the cost of proposal preparation. Within FP5, Exploratory Awards were designed to allow and support the exploratory phase of a project. They consisted in feasibility studies, project validation and preparation and partner search, during a period not exceeding 12 months and during which an eligible proposal had to be submitted.</p> <p>Also, horizontal measures should be funded to facilitate the university-enterprise dialogue, considering that barriers to SME participation in EU research and innovation programmes are also related to cultural aspects.</p>	

Question 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?

Importance	Important
Discussion items	

Open, fast and light implementation schemes (i.e., bottom-up, with continuous submission process, two-steps submission and evaluation) should be applied both to RTD projects (more risky, far from the market) and to targeted innovation projects based on already developed technologies that need further activities to be turned into new products, processes and services.

Funding schemes could also be available to support SMEs in carrying out market surveys, developing marketing strategies and business plans for new products based on research and innovation activities. For these activities, collaboration with research organisations having skills in business and economics could represent an added-value.

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

Importance	
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Discussion items	
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Question 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?

Importance	
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A distinction should be made between pre-commercial procurement (PCP), managed through EU calls for proposals, and Public Procurement, managed by the various commissioning bodies. For the latter, attention should be paid to compatibility issues between national and EU procurement rules. In particular, it is important to verify if tenders can include not only requirements for the product/service, but also specify a desired level of innovation in the delivered products/services. This can be achieved by including innovation among the evaluation criteria.

Pros and cons of inducement prizes (such as DARPA Grand Challenges) should be evaluated. This model works well in some areas where a grand challenge can be precisely formulated and the degree of success in meeting the challenge can be quantitatively evaluated. Mixed schemes are also possible, where partial funding is awarded to consortia/institutions which demonstrate preliminary results or have a strong track record. Simplicity and flexibility are key requirements.

Question 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?

Importance	Important
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As general principle, especially if research projects are funded by the EU, IPR rules should guarantee that the access to and dissemination of results are stimulated as much as possible.

When companies and public research institutions cooperate in EU funded projects, it can frequently happen that companies claim IPRs on Foreground or, alternatively, the freedom to operate in the Foreground commercial exploitation, usually by setting strict limitations to the dissemination activities made by academia.

It could therefore be useful to create different structures of IPRs rules, distinguishing projects having high commercial interest from other categories of projects. In the former kind of projects, IPRs should ensure to companies the right to protect and exploit Foreground, providing public institutions with a royalty free and perpetual right to use the Foreground for further developments, possibly funded by the companies that received EU funding.

However, there must be a balance between the monopoly of the IP holder (usually private companies) and the public interest (including the interest in the dissemination of the knowledge).

In general, a fair balance requires IPR policies enabling the IP to be appropriately exploited for proper reasons, by eligible parties and for a limited period of time .

It could be useful as well to provide exploitation rules based on flexibility, exemptions and exclusions to

safeguard vital public interests, if needed. A review on projects could be carried out by the EC, with the help of external experts, to assess their potential in terms of concrete exploitation of Foreground.

If the situation is excessively unbalanced in favour of the Industry, as it frequently happens in EU funded projects involving both public research institutions and companies, IPRs end up by fostering a monopoly that cannot be justified by the need to recover the costs of innovation (supported by EU). In such cases, the EU funding become a chance to pursue single and not public goals.

Possible solutions could envisage:

- providing extensive safeguards to ensure that patent rights are not exploited inappropriately or for inappropriate reasons (e.g. prohibit others from patenting or designing around patented inventions);
- introducing a legal limitation to the duration of rights on patents, copyright and other IP coming from EU funded projects, so that it is possible to recover the research and innovation costs without gaining excessive profits. For example, some mechanisms to orient the private profit towards the public interest can be considered;
- limiting the prices of public interest goods, coming from EU funded projects, to ensure that the right of consumers to access essential goods and services is guaranteed;
- enforcing IPR rules including specification on licensing practices, conditions avoiding an adverse effect on competition and on EU economy, and appropriate measures to prevent or control such practices (e.g. grant back conditions, coercive package licensing, etc.).

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

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

Importance | Very important

Discussion items

Within FP7, the European Research Council has provided the means for supporting world class excellence through a bottom up approach, curiosity driven and centred on the role of the PI.

This approach should be continued and enhanced, possibly through a substantial increase of the budget, however:

- It is recommended that more room is provided to starting grants rather than advanced grants in order to stimulate future research careers rather than providing a recognition of past careers. This would also acknowledge for a larger possibility of access to other sources of funding by established researchers with regard to young ones.
- In order to identify excellence, much attention should be devoted to evaluation procedures, in order to ensure a fair and solid assessment of proposals. Evaluators should be selected with care and rigour and provided the means to really represent excellence. Procedures should be made more transparent (evaluators, distribution among panels/thematic areas, etc.).
- Particularly with regard to starting grants, evaluation should not be based only on results already achieved, but on the potential to achieve them. Achievements are in fact very much dependent on the country of origin of the researcher, and its specific research conditions (e.g. level of funding, infrastructures, publishing language, etc.). A certain balance should be established especially in evaluating the CV of the candidates, in order to maintain excellence as the core criterion, but to measure achievements in relation to his/her research environment. This depends also on the knowledge of the evaluators of the different European research environments. The current FP7 evaluation risks to promote the concentration of excellence in those countries/territories which have more favourable research conditions and further favour the migration of talented researchers to these territories rather than also encourage a general development and improvement of European research overall.
- The budget dedicated to SSH should be increased, with a special attention to the humanities, since humanities research priorities are rarely covered by top-down agenda-driven programmes.
- In view of the Europe 2020 approach, specific sub-programmes aimed at funding 'excellence' in e.g. industrial research could be considered for inclusion within the ERC granting portfolio. Careful consideration should be given as to the opportunity to keep ERC devoted to basic research. In any case, a fair balance should be found in order to allow also for basic research to be supported, as the "fuel" for all future innovation activities.
- Enhance recognition of ERC grant winners by:
 - further enforcing host institutions to provide certain non negotiable standard conditions during the execution of the projects (through e.g. specific guidelines);
 - promoting, especially with regard to starting grant winners, the possibility to consider ERC grant winners as "extra status" researchers, e.g. enforcing the possibility to offer permanent positions
 - promoting (also in order to effectively achieving the above) a more consistent approach among national systems, in order to remove those barriers and regulations which are inconsistent with the ERC approach and which in fact create disparities among the different MS in potential hosting of ERC beneficiaries.

Improve financial regulations related to ERC grants: in FP7 ERC projects were claimed to be characterised by more flexibility in management with regard to their Cooperation fellows. However they all refer to the same financial rules and guidelines, so that a true diversification does not seem to be achievable.

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

Importance	Important
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The EU has potentially a very important and determinant role in assisting Member States in building excellence, thus in fact encouraging more consistent and cohesive research policies across Europe. Some points on which the intervention of the EU is desirable are the following:

- make sure the single national systems selection criteria (for projects, for tenure track positions) are based upon merit and excellence;
- determine European standards to be enforced;
- establish a European monitoring process with regard to the research framework conditions in the MS and provide regular feedback at EU and national level;
- establish a European evaluation procedure/standard for research results at individual and institutional level;
- support networking and benchmarking opportunities between both national ministries and single institutions.

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

Importance	Important
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Marie Curie actions should be strengthened, since it is demonstrated how mobility of researchers is fundamental in developing research capabilities and therefore promoting excellence in research. In particular:

- Marie Curie actions should continue to follow a bottom up approach, considering both basic research and, in view of the Europe 2020 strategy, could consider specific action lines devoted to the whole innovation cycle. Under this perspective the concept of excellence could be rethought (genius or skills?).
- Mobility should be promoted since an early phase of the researcher career (when, furthermore, less barriers to mobility are present), e.g. since doctoral studies. The EU could consider to introduce targeted mobility schemes for doctoral students.
- Promote the application of more consistent and homogeneous non negotiable employment conditions across Europe, also through a direct action with individual MS, so that individual regulatory frameworks are consistent and in order to avoid advantaging certain MS in hosting researchers. Remove current administrative barriers (tax systems, portability of pensions, work permit/visas).
- More attention should be paid to the possibility by the host institutions to offer complementary training, other than that on the specific research field (e.g. language, local system of rules and relations, management, access to funding, innovation related issues, IPR, entrepreneurship, etc.).
- Enhance recognition of MC grant winners after the mobility by standardising the appraisal of mobility periods as a plus in the CV evaluation e.g. for applications for posts, especially permanent ones
- A reduction in the number of current FP7 schemes (and relative specific rules) is desirable to favour access and easy identification of opportunities by potential beneficiaries and host institutions. Some more funding for management costs in the HI is highly recommended.

The funding for Marie-Curie programmes needs to be increased substantially, especially to strengthen the support to the initial training of researchers, i.e. to improve young researchers' career perspective. Allocation should consider the heterogeneity of the different MS. Some will be at a clear disadvantage as compared to others.

Moreover, the concept of intersectoral mobility should not be limited to industry but also open to all sectors, including public institutions and civil society organizations (e.g.: social enterprises). Societal challenges need collaboration of science with industry and markets but also with public authorities and

civil society.

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

Importance	Important
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There are two main levels of gender dimension to be taken into consideration which foster each other:

1) Gender balance in academia

To increase the gender balance in the academia and strengthen women participation, the CSF should:

- foresee gender sensitive positive measures such as the Gender Action Plan of the 6FP;
- provide child care services in EU events & conferences' context;
- introduce evaluation criteria for gender-diverse research teams;
- foresee women's quota in advisory boards and/or steering committees.

2) Gender dimension of the research themes.

In order to include gender dimension in research themes/activities, it is important to define Innovation as a broad concept sensitive to the complexity of our society. Therefore the CSF should:

- support the transversal gender dimension within all research themes, including gender perspective wherever relevant: research questions, as well as hypotheses and results, are sensitive to gender issues.
- Clearly and positively evaluate (in score systems) gender analysis as sex disaggregated data collection, analysis and dissemination.
- Improve the gender dimension in EU policies bringing a change in how women are perceived by researchers and policymakers. It should be recognized that women are a stakeholders and at the same time a fundamental target group, but they are also key players whose contribution and perspectives are crucial for addressing the Societal Challenges of Innovation Union

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

Importance	Important
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Question 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?

Importance	Important
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The cooperation with non EU Countries in RTD projects should be developed and managed in the frame of a cooperation between the EU Commission and the public governmentally identified Institutions supporting RTD in the non EU Country. The EC and such institutions should jointly identify common RTD needs and priorities and finance jointly or in parallel consortia working on them. They should also jointly develop strategies for evaluating project results and manage IP issues.

The development and operation of joint research infrastructures is a key element for ERA further development, both (i) for the economy of scale that this makes possible, and (ii) for the further development of truly international research teams working on the same infrastructure. A special case is that of distributed infrastructures (e.g. Long-Term Ecological Research sites, or Free Air Carbon Enrichment and other ecosystem manipulation studies), for which special provisions should be made in order to reach the second aim. It is also important that other monitoring initiatives at the European level are harmonized or merged with EU infrastructures.

Question 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?

Importance	-

1.5. Other inputs

A proper budget allocation to the three main CSF pillars should be:

Science	Societal Challenges	Competitiveness
40%	25%	35%

Funding percentage for the different activities within the different funding instruments should maintain the current criteria:

- High risk research: 100% funded
- Applied research: 75% funded
- Demonstration: 50% funded
- Take-up, innovation, technology transfer, etc.: 30%

EC should stimulate the involvement of National Governments in EU projects (e.g., external board, support actions, etc.). This would be very important to make National officers more aware and informed about EU research (priorities, dynamics, tools, etc.).

As far as Social Sciences and Humanities are concerned, SSH research has proved to be very attractive for the scientific community since FP5. However, success rates of the current SSH programme are too low to guarantee the long-term involvement and commitment of the best European researchers. Moreover, a large amount of excellent research proposals cannot be funded due to budget limitations. Therefore, it is crucial to guarantee the stability of a specific European funding programme for SSH collaborative research but, in order to make such a programme even more attractive, it is important to increase its budget share (in FP7 less than 2% of the Cooperation budget was dedicated to SSH).