Ministry for Science, Technology and Higher Education, Government of Portugal

On the evolving nature of EU research funding:

H2020 interim evaluation and directions towards the next framework program (FP9) in an increasingly diverging Europe

A Position Paper

Initial version presented in Lisbon, February 20,
for further discussion towards a national position

February 2017

Ministry for Science, Technology and Higher Education, Government of Portugal

On the evolving nature of EU research funding:

H2020 interim evaluation and directions towards the next framework program (FP9) in an increasingly diverging Europe

A Position Paper

Initial version presented in Lisbon, February 20, for further discussion towards a national position

Summary

Three years after launching the current EU Framework Program for Research and Innovation, Horizon 2020, and after a decade hit by recession and economic and budgetary problems, together with the emerging debate associated with the impact of BREXIT, research and innovation policy formulation in Europe must take into account countercyclical measures to adequately **strengthening knowledge-based cohesion platforms across Europe, promoting opportunities for pre-competitive research, together with European added value**.

Collaborative research and innovation in all branches of knowledge must be promoted all over Europe in an effectively inclusive way and oriented towards the continuum of knowledge production and diffusion processes, encompassing all stages from curiosity-driven to market-oriented research. The EU Framework Program for Research and Innovation should also act against the unidirectional migratory flows of skilled people from the peripheries to the center of Europe, promoting brain circulation, the advanced education and employment of skilled human resources all over Europe. The promotion of scientific employment all over Europe, together with knowledge-based European added value, requires persistent actions to foster pre-competitive collaborative research and innovation, together with fully European collaborative research laboratories involving public and private stakeholders all over Europe, as well as further internationalizing knowledge and innovation networks.

Overall, this will require that further drawing of funds from the H2020 budget to finance other European Programs are avoided and that the funding level of next EU Framework Program for Research and Innovation is enlarged and oriented towards pre-competitive research with European added value. This should clearly be assessed on the basis of research excellence, research openness and impact (namely in scientific and social terms).

Six main issues should be considered to guide the successful continuation of Horizon 2020 (i.e., for 2018-2020) and to help designing the next EU Framework Program for Research and Innovation (i.e., FP9; 2020-2027), as follows:

1. **Scope - Collaborative, bottom-up and pre-competitive research and institutions towards European added value:**
   - Adequately strengthening pre-competitive research and knowledge-based cohesion platforms across Europe, together with European added value;
   - Complement national strategies and funding schemes, instead of replacing them, by strengthening collaborative, cross-border bottom-up research and innovation across Europe;
   - Avoid a hierarchical division and potential dichotomy between fundamental academic research and market-driven applied research driven by large companies. Instead, foster the continuum of knowledge production and diffusion processes, encompassing all stages from curiosity-driven to market-oriented research, involving small, medium and large firms together with research institutions and intermediaries in transdisciplinary cooperation all over Europe;
   - Actively act to decrease the internal divergence of research intensity across Europe, by promoting inclusive approaches all over Europe. This requires clear incentives to increase funding levels for research in European peripheries and effectively built a fully inclusive *European Research Area (ERA)* and *Innovation Union*;

- Stimulate joint European collaborative research laboratories, as fully European research organizations involving public and private stakeholders all over Europe;
- The integration of Social Sciences and Humanities into Societal Challenges must be further improved;
- Enlarge and promote the COST program for cooperation networks (which involves only about 4000 researchers across Europe) and use its experience to launch and promote the *European Innovation Council* (EIC) to foster pre-competitive research among all SMEs and small businesses across Europe.

2. **Re-Focus - The skilled human resources dimension**:
   - Act against the unidirectional migratory flows of skilled people from the peripheries to the center of Europe, promoting brain circulation;
   - Promote scientific employment all over Europe, together with young research careers and double appointments across European institutions, in a way to better promote knowledge-based European added value;
   - Engage institutions and promote linkages between firms, research institutions and higher education institutions, fostering the advanced education and employment of skilled human resources all over Europe;
   - Further strengthening the participation of young researchers in grants to funded though the *European Research Council* (ERC), in that it has generated significant European value added;
   - Promote new research skills in "data science", towards an effective engagement of researchers in "Open Science" all over Europe, including the manipulation of large data sources ("i.e., "big data") and the promotion of "open access".
3. **Funding**:
   - Avoid further drawing of funds from the H2020 budget to finance other European Programs and actions and guarantee enlarging the next EU Framework Program.
   - This requires a mobilizing action throughout Europe oriented to guarantee that the next Multiannual Financial Framework (MFF), to be adopted by December 2017, strengthens the role of research and innovation for the future of Europe. MFF will pave the way for designing the FP9 and it is of critical importance that pre-competitive research for European added value is fully considered and with an adequate ambition;
   - Any trends to turn the EU Framework Program for Research and Innovation in a system to sponsor large European firms should be avoided and, on the other hand, it should guarantee opportunities for bottom-up collaborative and pre-competitive research, based on clear criteria of research excellence, research openness and impact (in scientific and social terms);
   - In addition, guarantee that research grants are not replaced by loans, which should be promoted for market-oriented research, but in a way to complement grants. The use of alternative funding mechanisms, including reimbursable funding instruments, should be carefully assessed and should not affect grant-based research funding;
   - Access to equity capital and loan-based financing should be made accessible all over Europe, but adequately established for low-risk, market driven research and innovation; On the other hand, high-risk research and technological development requires a firm commitment of public funding throughout Europe and the EU Framework Program;
   - Guarantee a revised collaborative framework among the various EU funding mechanism, namely among the EU Framework Program for Research and Innovation (I.e., H2020 and FP9) and European Structural and Investment Funds (ESIF).
   - Enlarge funding for cooperation in S&T, namely through COST.
4. **Governance**:
   - An effective coordination between the European Commission and national research agencies and councils should be guaranteed, in a way to avoid the current situation of rather competing and conflicting schemes. This requires revisiting the scope and quality of data provided, as well as coordination procedures and mechanisms;
   - Co-funding mechanisms (including, ERA NETs, Joint Programing and Teaming) should be fully revisited and guarantee an inclusive and collaborative approach among the European Commission and national research agencies and councils. Streamlining and rationalising current co-funding instruments should also be considered;
   - Strengthening the performance and scope of European research infrastructures requires clarification and a revised collaborative governance of the European Strategy Forum of Research Infrastructures (ESFRI) with the possibility of access to funding from the European Structural Funds, in close cooperation with national research agencies and councils;
   - Establishing an *European Innovation Council* (EIC) should encompass a new orientation for the SME Instrument in a way to broaden the scope of innovation and support activities beyond disruptive innovation,

promoting a context favorable to "Open innovation" across all Europe. EIC should guarantee fully bottom-up and pre-competitive schemes, accessible to all SMEs across Europe in a way to guarantee funding opportunities for pre-competitive research for all SMEs and small businesses across Europe. In addition, EIC should also consider:

- Better integrating and broadening the scope of the *European Institute of Technology* (EIT) and related "Knowledge Integrated Communities" (KICs), which should be extended to provide new opportunities for research and innovation to European SMEs across entire Europe.
- Promoting fully-european intermediaries in the form of *European Collaborative Laboratories* to be established across member states, regarding risk-sharing partnerships among government, industry and academia with a fully European nature and status.

5. **Attractiveness and administration**:
   - The rate of success of EU funding has been deteriorated due to oversubscription (around 1:8 in H2020, against 1.5 in FP7) and must be considerably improved. The evidence is that such low success rates are increasingly associated with a high degree of random decisions. The use of "two-step" application processes should be fully implemented, making use of "fast track" mechanisms oriented towards decreasing "time-to-grant".
   - The current "funding model" should be stabilized, but further simplification of application processes, together with managing contracts should be guaranteed, also in a way to promote the direct participation of researchers and reduce the requirements for third parties and intermediaries;
   - Application procedures should be further simplified, together with methods of internal cost allocation, staff costs and depreciation of equipment.
6. **Internationalization**:
   - Foster a effective internationalization strategy towards and Europe "Open to the world";
   - Promote strategic linkages outside Europe, in a way to effectively foster European added value in key geographical areas, including:
     - The Mediterranean, particularly through the guarantee of the implementation of PRIMA;
     - South and north Atlantic, including extending the Galway Declaration to southern Atlantic countries and the promotion of a research and innovation agenda addressing critical societal challenges such as those concerning climate change by intertwining space, ocean and energy systems. This should consider promoting new funding opportunities for a innovative agenda on "Atlantic Interactions" and by establishing an "Atlantic International Research Center, AIR Center", in the form of an intergovernmental organization, as presented to the European Commission over the last few months;
     - Sub-Saharan Africa, by promoting the advancement of local scientific and innovation capacity;
     - India, by promoting advanced research networks with leading institutions in a way to guarantee establishing "Knowledge Integrated Communities" between Europe and India with impact in the two zones;
     - China, by promoting advanced research networks with leading institutions promoting the mobility of young researchers and guarantee establishing long-term collaborations and joint institutions with impact in the two zones.

1. The context

The current level of European economic and technological development requires a major and sustained effort of public funding of R&D across all over Europe and this must be achieved in close interaction with the evolution of the EU Framework Program for Research and Innovation (i.e., Horizon 2020 until 2020 and FP9 beyond 2020). This should contribute to foster scientific employment, but also, directly and indirectly, to foster demand. This has been the way regions and countries with high levels of R&D and a large percentage of business R&D have followed. The faster Europe at large addresses this challenge, the quicker it will be kept up with.

Above all, the evolution of the EU Framework Program for Research and Innovation for the coming decades should be enlarged to consider active public policies to attract and retain qualified human resources all over Europe, as well as considering public actions towards promoting new markets. The way in which the economic fabric may gain competitiveness and access to external markets may require enhancing the degree of internationalization of the scientific community and encouraging international knowledge and innovation networks.

Analysis shows levels of accumulated investment per researcher in Europe about 50% lower than in the USA and that the average investment in R&D per citizen in Europe has decreased comparatively to that in USA. Only those European nations that have increased the investment in S&T and managed, at the same time, to diversify their economic structure have fully guaranteed the necessary absorptive capacity to foster the impact of S&T in economic development. The implications for Europe are notorious and call for the need to increase the budget allocated to R&D and the qualification of human resources all over Europe, together with measures oriented towards technological diversification and intensification of the industrial base across different sectors.

International competition for qualified human resources for S&T is a critical strategic issue requiring the adoption of consistent and comprehensive national and EU actions for the increase of the attractiveness of S&T for the new generations, as well as on the capacity of Europe's R&D public and private institutions to make Europe attractive to youngsters, knowledge workers and related investments. The globalization of the economy and the rapid increasing numbers of highly skilled people moving across the globe have completely changed the profile of migration: the ratio between the migration of people with lower skills and the migration of high skilled people, which is no longer an elite and relatively restrained type of migration, is much more equilibrated than in the past.

Overall, analysis suggest that further drawing of funds from the H2020 budget to finance other European Programs and actions should be avoided and Europe must enlarge the next EU Framework Program. This requires a mobilizing action throughout Europe oriented to guarantee that the next Multiannual Financial Framework (MFF), to be adopted by December 2017, strengthens the role of research and innovation for the future of Europe. MFF will pave the way for designing the FP9 and it is of critical importance that pre-competitive research for European added value is fully considered and with an adequate ambition.

2. The Human Resources dimension

The need to increase human resources for science and technology in Europe should be continuously stressed and the attractiveness of Europe for highly qualified scientists from other regions of the world boosted. This is the time to call for a common approach to science, innovation and migration and call on all stakeholders to work together in the development of a comprehensive set of actions to attract human resources for knowledge and foster brain circulation for all.

Why is it not trivial to understand that investing in S&T creates jobs and exports and is indispensable for long run growth in modern economies and societies? This question is increasingly relevant because, in recent years, it has been very important to place many European countries and regions on track with EU

average investment levels in R&D, but this remains insufficient. In addition, the accumulation of that investment in many European regions and countries is still very low, if compared to any industrially developed region, particularly in the USA.

Recent data also shows that only those European nations that have increased the investment in S&T and managed, at the same time, to diversify their economic structure have fully guarantee the necessary absorptive capacity to foster the impact of S&T in economic development. The implications for Europe is notorious and call for the need to increase the budget allocated to R&D all over Europe with measures oriented towards technological diversification and intensification of the industrial base across different sectors.

In short, the increase in R&D expenditure carried out in universities and firm is not inevitable, but a choice. European citizens at large and their governments must make this choice, and it is important that they are aware that if we do not continue to grow in those areas, it will be difficult to encourage technological innovation and economic competitiveness. In order to achieve these objectives, it is paramount to mobilize and employ more PhD graduates throughout entire Europe, foster research in universities, strengthen the relationship between universities and the business sector, and guarantee scientific and technological relationships with the leading institutions worldwide. And this can be only achieved if we simultaneously stimulate demand and supply of the ability of carrying out R&D.

2.1 Balancing brain circulation and intra-European migratory flows of skilled people

Research mobility is an important element for social and territorial cohesion at a European scale. Hence, a healthy distribution of the R&D personnel may play an important role to decrease the gap between the EU28 and other advanced regions. The recent crisis had a number of far-reaching implications for the European Union, and one of these has been the way it has impacted intra-EU mobility of researchers and skilled workers. Although precise numbers have not been registered yet, there are clear indications that crisis-hit European countries have been experiencing significant emigration flows.

The outflow of high-skilled individuals faced particularly by Southern and Eastern European countries in the last years, may have significant negative long-term implications for Europe at large. Actual migration trends –with remittances tending to fall and mobility of the highly skilled rising– enhance distances between core and peripheral European regions, due to the net and systematic losses of highly skilled and especially young people for the latter. This means working together in policies to invigorate the attractiveness of investments in education, research and innovation institutions in the periphery, which are systematically facing the centrifugal forces affecting their actual and potential human resources. These policies should be a concern at the EU level, since the 'brain drain' process among Member States – which systematically transfers resources from economically less developed to more developed regions – is not a process that individual countries with persistent losses can or should face on their own.

Beyond the systematic provision of official data on migratory flows of highly skilled human resources among EU Member states as well as between Member states and third countries, the evolution of the EU Framework Program for Research and Innovation should consider mechanisms to foster brain circulation amongst Member States, balancing internal EU migrations, as well as for boosting the attraction to Europe of highly qualified scientists, making use of European Structural Funds.

2.2 Science in Europe and the refugees: Research and Higher Education in Emergencies

Part of brain circulation worldwide occurs as an unintended consequence of events (like wars and natural disasters) that displace highly-skilled people, often turning them into refugees. In recent years, a massive inflow of refugees from conflict regions was directed into Europe. Refugees have mainly been channeled towards the Southern countries as their entry point, and their number largely increased, leading almost to two million asylum claims by mid-2016.

Apart of the difficulties to handle the recent migrant wave, it should be acknowledged that there are particular opportunities for win-win policies and results related to the human resources it contains. These opportunities are easier to produce in Europe due to its culture of tolerance, which enables to embrace and work with diversity. Many of these refugees are young women and men, who were forced to interrupt their studies and/or research in the origin countries and are willing to pursue their advanced formation and foster their starting careers. International mobility cooperation and exchanges are integral to the academic system. European Research and Higher Education Institutions are used to host foreign students and scholars and they are able to develop emergency academic responses. Channeling highly skilled refugees to education and research institutions will contribute to assist refugee integration.

On the other hand, the European experience in setting-up SESAME in Jordan is calling further actions to promote the unique role European scientists and their institutions, together with science diplomacy, can play to foster research capacity and science for peace in conflict regions in the Middle East.

The Commission, member states and the European academic and research communities are encouraged to work together in the development of a contingency plan to help continue research and education through the establishment of a solidarity instrument which will facilitate a dynamic and swift relocation process, ensuring that the refugees will have reception and integration support in line with international and European standards, as well as to start planning long term strategies to help building research capacity in conflict regions.

The evolution of the EU Framework Program for Research and Innovation should consider a *Rapid Response Mechanism for Research and Higher Education in Emergencies*, in order to create and fund a fast track entry point for the specific target group of refugees, students and scholars who belong to communities and/or countries at risk in need of humanitarian assistance. In addition, a long-term plan to help building research capacity in conflict regions in the Middle East should also be considered.

3. Research and innovation towards European added value: a European dimension, balancing action diversification with policy integration

Enlarging the funding level of next EU Framework Program for Research and Innovation and guaranteeing its orientation towards pre-competitive research with European added value requires a major mobilizing action across Europe and European Institutions. This should clearly be assessed on the basis of research excellence, research openness and impact (namely in scientific and social terms).

It should be noted that innovation is a shared goal of countries within the European Union and even beyond. This unified goal requires policies that are designed in an integrated and systemic way, but that are implemented with diversified actions. “Policy integration” should occur across a “portfolio dimension”, since innovation policies require coordination across several areas: science and education policies; social and health policies; environmental and industrial policies; employment and market regulation policies. However, the implementation of policies designed in an integrated way need, in a multi-country and multi-cultural context, to consider differences across countries, regions and cultures, thus requiring action diversification. In fact, balancing action diversification with policy integration involves significant problems that extend into the very systemic nature of the relationships between country governments and the role and mission of multi-national political institutions, apart from specific regional and local contexts.

Many academic contributions in recent years have confirmed the perception that the success of developing systems of innovation, either at national or regional levels, depend on the creation, dissemination and accumulation of knowledge, which per si are fundamental factors for the promotion

of economic growth. The concept of "learning economy" describes adequately the way in which knowledge contributes to economic development, promoting innovation. It considers a dynamic perspective. This dynamics is very close to Schumpeter's concept of "creative destruction", which is a standard description of the innovation process. Innovation is associated with creativity, with the generation and use of new ideas, but also with initiative and risk-taking. Innovation entails bringing new ideas to fruition in the marketplace, satisfying demands or creating new needs, in a process that improves overall welfare. Overall, it is always associated with the creation of new markets. And the ultimate goal for an "Innovation Union" should consider the founding idea that knowledge creates markets[1].

- Innovation and competence building for Europe. The need to look at competence, as the foundation from which innovation emerges, and which allows many innovations to be enjoyed. In other words, competence contributes both to the "generation" of innovations (on the supply side of the knowledge economy) and to the "utilization" of innovations (on the "user" side of the knowledge economy). Competence is also fuelled by innovation itself. Competence is associated with skills and capacities, both individual and collective ones. When we consider competence, we focus on "higher order of skills". These generic skills include higher levels of formal and informal education, but also capacities that are more generic, such as creativity, risk-taking, and initiative. Overall, it requires research practices to be generalized to the education system, in a way that guarantees systems of innovation and competence building.

- Innovation and economic diversification. Analysis suggests that only those European nations that have increased the investment in S&T and managed, at the same time, to diversify their economic structure have fully guarantee the necessary absorptive capacity to foster the impact of S&T in economic development. The implications for southern and eastern European countries are notorious and call for the need to combine an increase in the budget allocated to investment in R&D with measures oriented towards technological diversification and intensity of the industrial base.

3.1 From a conceptual framework to the practical implementation in Europe

The evolution of the EU Framework Program for Research and Innovation should consider innovation "with" more research, not "against" research. The technical literature is full of examples that clearly suggest the absolute need to consider the co-evolution and shared values of innovation and research.

In other words, Europe must guarantee the success of developing innovation together with the sustainable creation, dissemination and accumulation of knowledge across Europe. In this regard, two main observations are necessary, as follows:

- First, the accumulated investment per researcher in Europe over the last three decades is 50% lower than in the USA. In addition, the average investment in R&D per citizen in Europe has decreased comparatively to that in USA.
- Second, the quasi stagnation R&D public investment in Europe over the last decade, which now accounts for about 2.0% of EU's GDP (for comparison, GERD in the US is about 2.8% GDP), hides a major trend of internal divergence inside Europe itself. For example, in the year 2000, Germany and France presented similar national R&D budgets; today, Germany outpaces France by 50%. Italy budgets have declined since 2007, and in real terms are 15% lower than in 2000. And, most of small countries have slowed down, or cancelled, previous increases in R&D budgets. This trend has emerged as a result of the deep international crisis that has been affecting Europe and to which many analysts, scientists and scientific organizations have turned their attention, in several European regions, with special emphasis on southern European countries.

[1] See, for example, Luc Soete (2015), "From the old ERA to a new era of "Open Knowledge Creation in Europe", European Commission, RISE Policy Brief, June.

The implementation of new policy actions in Europe need to fully consider critical needs, including necessarily:

i) Employment growth, by promoting and addressing new markets;
ii) New players, with capacity to foster innovation dynamics and re-structuring European economies;
iii) Engage youth, facilitating processes of generational change and promoting new believes in the future; and
iv) Strengthen social cohesion in Europe.

Above all, each generation should be able to explore new things and have the opportunities to do so. This will require considering a diversified, flexible and inclusive approach to start-ups and fast growing SMEs, together with a range of "intermediary institutions" in the form of public-private partnerships and risk-sharing schemes. The ultimate goal should consider the need to increase the density of new innovation players throughout European regions.

3.2 Making it operational: a new experimental approach addressing new capital markets to enlarge funding levels for innovation in Europe.

The evolution of the EU Framework Program for Research and Innovation and the potential creation of the European Innovation Council (EIC) should be considered by identifying three levels of distinct issues:

i) What has already been done that should be improved, namely under the existing H2020;
ii) What has not been done in Europe; and
iii) What is reasonable to be done through EIC. Evaluating and assessing these three issues will clearly allow to define a clear successful mission for EIC and to better differentiate its potential scope from the mid-term review of H2020. Examples include the existing "SME Instrument" and other innovation-related programs considered under the current scope of H2020, which do require to be improved (e.g., the evidence of a reduced budget, a long and bureaucratic process that prevails new innovation players to access to EU funding should be corrected). Overall, EIC should focus on distinct issues and open new opportunities for innovation in Europe.

The potential creation of EIC should allow complementing and extending the overall level of current funding for research and innovation in Europe, namely to provide new opportunities to fund and stimulate pre-competitive research across European SMEs. In other words, EIC should facilitate access to new and alternative funding sources for European SMEs to better perform and engage in pre-competitive research and should not compromise the current levels of funding for collaborative research through H2020. This will definitely include, among other:

- Emerging forms of accessing capital markets, namely through EFSI and involving the EIB and EIF. The experience of the last few years on experimenting alternative forms of financing innovation in Europe should be effectively monitored and assessed in a way to better guarantee the use of EFSI related funds for innovation in coming years. This should consider the main target to fund EIC. It clearly must contrast with the experience of using public funds for research under ERC and other research-oriented agencies.
- Improved coordination of structural funds across Europe, which are providing large funds under local and regional coordination, that may gain from coordinated actions at an European level.
- Implementing new integrative schemes in Europe: problem-based, bottom-up, one-stop shop. The potential creation of EIC should consider a new identity and the introduction of new and alternative funding schemes in Europe oriented towards promoting pre-competitive research in SMEs. The combination of "problem-based" (i.e., the experience of "DARPA-e" program in USA) with "Bottom-up" (i.e., with no predefined topics) should be considered, together with a simple and "one-stop shop". A stepwise approach should be considered for implementing EIC and it may consider a starting phase with well-defined topics ("e.g., "green technologies"), but evolving to a broader scope with multiple funding schemes. This will require identifying a highly skilled agency, with

technically skilled project officers, following best international practices (including that of DARPA in USA).

The potential creation of EIC should consider lessons learned from the implementation of ERC in terms of a stepwise approach and the need to effectively consider a highly-prestige organization. But in contrast with ERC, pre-competitive research and innovation in SMEs do require the continuous identification of local innovators throughout Europe and this may be accomplished by affiliating selected partners with specific local knowledge and competences across Europe. A selection process will need to be established to select those institutions, which should include existing national and regional innovation agencies across Europe.

In addition, the role of EIC to further open science and innovation policies to multiple public and private agents, namely SMEs, could be further promoted through two additional actions, as follows:

- Better integrating and broadening the scope of the European Institute of Technology (EIT) and related "Knowledge Integrated Communities" (KICs), which should be extended to provide new opportunities for research and innovation to European SMEs across entire Europe;
- Stimulating intermediaries in the form of *European Collaborative Laboratories*, regarding risk-sharing partnerships among government, industry and academia, as well as global research and innovation networks towards socio-economic resilience. The issue is that many forms of such intermediaries only consider a strong national or regional nature, namely those established over the years in Germany (including the *Fraunhofer Institutes*), France (including the *Carnot Institutes*), UK (including the emergence of *Catapult Institutes* in the last decade), The Netherlands (including TNO), or Spain (including the IMDEA in the zone of Madrid), among other across Europe. The goal of EIC should include the support through competitive funding sources for "fully European" Collaborative Laboratories to be established across member states. In other others, a major objective of a future EIC should be concentrated on promoting an effective EU nature of *Collaborative Laboratories* and, through them, to effectively promoting a European innovation ecosystem, with more research.

4. Raising the international attractiveness of Europe

The next Framework Program should not lose its visibility outside Europe and it should foster an effective internationalization strategy towards a Europe 'Open to the World'. Current actions and measures promoted under H2020 have become significantly less attractive for researchers from outside European borders and it is vital to change this perception and ensure that bureaucratic barriers do not prevent European researchers and institutions to foster global consortia.

The focus should be placed in opening up and promoting strategic links, fostering real European added value tough pre-competitive research with a global nature in key geographical areas, including:

- The Mediterranean, particularly through the guarantee of the implementation of PRIMA, and in a way to guarantee establishing "Knowledge Integrated Communities" between Europe and north African and middle East countries, as well as to promote pre-competitive research networks with local impact in those regions;
- South and north Atlantic, including extending the Galway Declaration to southern Atlantic countries and the promotion of a research and innovation agenda addressing critical societal challenges such as those concerning climate change by intertwining space, ocean and energy systems. This should consider promoting new funding opportunities for a innovative agenda on "Atlantic Interactions" and by establishing an "Atlantic International Research Center, AIR Center", in the form of an intergovernmental organization, as presented to the European Commission over the last few months;
- Sub-Saharan Africa, by promoting the advancement of local scientific and innovation capacity and building up effective EU-Africa research and innovation networks, with local impact;

- India, by promoting advanced research networks with leading institutions (Including the Tata Institutes of Fundamental Research and the Indian Institutes of Technology, among others) in a way to guarantee establishing “Knowledge Integrated Communities” between Europe and India with impact in the two zones;
- China, by promoting advanced research networks with leading institutions in a way to promote the mobility of young researchers and guarantee establishing long-term collaborations and joint institutions with impact in the two zones.