Science, Higher Education and Policy for Europe (shep4EU)

A proposal for a EU Research Network

To be presented and discussed in a seminar at the University of Bergamo, 21st June 2013

(May 2013)

Vision

Shep4EU is aimed to foster the systematic observation and in-depth research of issues in science and technology, higher education and public policy in Europe. The ultimate goal is to create and promote a totally independent and credible international observatory of science, technology and higher education policies and budgets across Europe in a way to report, publicly and periodically, relevant information and early warnings on the state of policies and budgets in each country and at EU level. It should foster an international perspective and convey new research and understanding of the impact of the current economic situation in Europe on the “states of knowledge”, including science, technology and higher education capacity. It would, therefore, help to increase the public awareness of the strategic importance of science and higher education policy decisions, as well as to strengthen the motivation of scientists and the academy to engage themselves in policy action as informed and responsible citizens.

This is important because the conditions for the social construction of technological systems in both central and peripheral EU regions and societies will be addressed in terms of their impact on the emergence of new social realities in those societies, as well as their potential as factors of economic and social development on a global scale. To achieve these goals, science and technological development case studies will be developed across EU member states.

The program is centered on the interaction of science and technology and higher education, regarding the learning capacity of people, institutions and their regions to evolve. The emphasis is on issues in which the interaction of technology, humans and institutions are of central importance.

Rational

It has become a common place to argue that science and technology permeates everyday life. It is increasingly central to the socio-economic development of regions, countries, and institutions. The growing investment in formal knowledge activities, by countries and firms, underlines the search for competitive advantages and the establishment of sustainable bases for further development. This trend often combining mixed patterns of competition and collaboration is growingly intertwined to face a fast paced, globalized and uncertain world.
In the case of Europe, the European Union as it stands provides an exceptionally challenging environment for the future of Science and higher education. Indeed, national budgets, rooted upon national political perceptions of national priorities, are key to the understanding of the development of public policies related to science and higher education.

Taken together, gross (public and private) R&D expenditure (GERD) in the EU-27 now account for about 1.84% of EU GDP (for comparison, GERD in the US is about 2.77% GDP). The point to be made is that the quasi stagnation of R&D public investment in Europe during the last decade hides a major trend of internal divergence inside Europe itself. In the year 2000, Germany and France presented similar national R&D budgets; one decade later, Germany outpaces France by 50%. Italy budgets have declined since 2007, and in real terms are 15% lower than in 2000.

In a decade hit by recession and economic and budget problems, the EC has recently estimated that a large number of EU countries have been unable to achieve GBOARD over GDP growth in the period 2008-2011 (Figure 1), with the notable exception of Germany and a few other countries with high-intensity R&D, as well as some other fast growing R&D member states, like Luxemburg, Portugal and several recent EU members (Poland, Estonia, Czech Republic, Slovenia, Hungary, etc.). In absolute numbers, the economic crisis seems to have induced, at least since 2008, a larger R&D divide in the EU, with a growth of resources in Germany and some Nordic countries, against a relative global reduction of resources in other large countries like Spain, Italy, France and the UK (Figure 2). Undoubtedly there was progress in Science, Technology and Higher Education. But Europe, as a whole, has met neither its goals nor its promises in this area.

The challenges are immense for Europe, notwithstanding if they are global, national or local in nature, as most are to all effects transversal (e.g., global warming). In this setup, policies not only mediate the interface between science, higher education and society, but also shape systems, strategies and development patterns. In this context, which public policies for science and higher education for the coming decades in member states and at a EU level?

It is well known that emulation of successful policies elsewhere or of simple policy guidelines without understanding their timing and context is insufficient – even misleading - to drive for these objectives. The complex attributes of the global world demands a complex and synergetic complementarity of policies and actions, also across Europe.

This entails that science, technology and higher education across Europe, including related national policies, has to be understood in a systemic and evolutionary way, framed internationally while accounting for regional characteristics. In other words, a “glonacal” evolutionary perspective, based on learned lessons, is of the utmost importance to tackle the challenges of the present and future.
Both science and higher education rely on similar critical features: learning, through developed activities, funding, and other incentives, to support learning activities, and people, that by learning, being mobile, and a creative force, contribute to the emergence of new knowledge, better institutions, and ultimately, society.
In this framework, Europe have had a long history of development, but the world has changed. While it is true that Europe has a long established accumulated knowledge capacity, its relevance in the world has waned. Emerging regions in Asia and South America are currently striving to improve their knowledge systems and have a much greater role in networked global markets, geopolitics, and societies. The process of
globalization itself points out towards a world of networks, of collaboration and competition, demanding adaptation and revision of the public policies of the past.

Public policies are demanded to account for the global scope to foster national, regional and local knowledge dynamics. Science is more international than ever (look at the growing numbers of publications in international journals in Figure 3 or of international patents) and so is higher education (branch campuses, international educational hubs). How to inform new public policies to meet the challenges of coming decades, particularly for cooperation between EU and emerging regions? How to inform public policies to foment knowledge capacity, creation and dissemination in the global world? How to foster institutional integrity in dealing with complex and uncertain conditions?

![Figure 3. Growth in international scientific publications](source)

**Research themes**

The Research Network on *Science, Higher Education and Policy for Europe* (Shep4EU) aims to contribute for the definition and information of public policies in science and higher education across Europe. This will be pursued in an integrative and multidisciplinary approach as follows:

- **Funding allocation**: annual budget allocations across EU member states should be addressed, together with public and private expenditure in R&D and in higher education. The diverging funding policies in European countries might decrease the European relevance in the emerging globalized knowledge economy, as well as cross-border academic and scientific collaborations. Reduced investments weaken countries’ research capacities and knowledge base, and impact negatively on the development of their knowledge economy. In this respect, the need to find the policy
instruments is a priority to avoid the collapse of national science bases, as well as the European Higher Education Area and Science. Indeed, in countries facing significant budget cuts in higher education and research systems, retaining researchers and students has become increasingly difficult. If this developing “brain-drain phenomenon” should intensify, it could result in the exclusion of many universities from the European higher education and research cooperation for a long time.

**Figure 4** Trends in Public Funding to Higher Education Europe over the period 2008-2012
(Analysis of government transfer to public Higher Education Institutions; it does not include competitive research funding and social support to students)

**Source** EUA’s Public Funding Observatory (June 2012)

- **Governance**: In the last decades, many European countries reformed the governance of their higher education and research system. The policy reform tried to increase the responsiveness of systems and institutions to social and economic needs. The economic crisis could faster the pace of reforms. Different policy choices and systemic and institutional decision-making processes could provoke varied outcomes and impact differently on mobility, productivity of research, international collaborations, brain-circulation, and regional knowledge building. A comparative analysis of the decision-making process, of reform policies and of the policy changes in science, technology and higher education can improve the knowledge about common and diverging trends. Besides we can analyse if institutional changes are
influenced by any common international dynamic and, indeed if national policies are following the same development path or they are going in diverging directions.

- **The career trajectories of the highly qualified:** The analysis of the career trajectories of highly qualified people is important to understand how policies, institutional and career incentives, and other factors impact on individual career choices, networking, and productivity. In this framework, features such as understanding the impact of mobility, internationalization, interdisciplinarity, educational backgrounds and family issues along the career, are important to illuminate the knowledge on how these individuals decision-making and contribution to institutional and regional knowledge building occurs. This will be performed for those developing activities in the higher education sector but also in the business enterprise sector.

- **The role of international science base partnerships:** It is important to understand how international science base partnerships (and other science policy policies as well) contribute to reform higher education systems. This will be pursued equally regarding institutional change at universities in terms of structural change, and research and teaching activities and practices. Through an international comparative analysis of several educational hubs, it aims to understand the impact that international science partnerships with lesser or broader scopes of action can have in promoting a more active role of universities in society, including in supporting of the knowledge base of communities and engagement in industry-university relations.

- **Employment policies for the highly qualified:** The aim is to understand on a historical perspective supply and demand policies concerning highly qualified people in emerging regions. This is to be contextualized and combined with the scientific and economic structure of the countries/regions under study, and focused on specific sectors of economic activity. The objective is to assess to what extent public policies focused on demand can be pursued in contexts that do not have developed the capacity to absorb highly qualified human resources. This has a clear linkage to public policies focused on the supply side and on the thematic of brain-gain, brain-drain and brain-circulation. Therefore, a complementary analysis is one of the fluxes of highly qualified people and Diasporas.

- **Geographies of knowledge and scientific structures:** As knowledge increasingly flows globally, it is essential to understand its geographical poles, its concentration, integration, and engagement drivers. A better understanding of the evolution of collaborations among regions, countries, and institutions, including universities and firms is of particular importance. Through analyzing evolutionary mappings of knowledge production and collaboration one can realize the patterns of change at global level, and how knowledge global flows of are interacting and being constructed by national and regional knowledge bases. In this regard, the analysis needs to take into perspective the engagement of different scientific structures; by looking at how broader or narrower they are set in terms of disciplinary fields.
Implementation Strategy

This international research framework enables an enriched environment for collaborative policy analysis and policy formulation, based on previously defined research question with an international dimension. An example of such an activity is the development of multi-site Studios for policy analysis, making use of internet-based technologies and groupware methodologies. Other planned activities consider:

• A Research Fellowships Program (6 to 9 months) for new research and fieldwork in EU countries and oriented towards new research on science and HE development, by involving post-doctoral and senior researchers in research residences in EU universities.

• Policy Fellowships (3 months): It considers a program of fellowships for fieldwork in EU member states, oriented towards the preparation of policy briefs about selected and specialized themes on science, technology and higher education development. The ultimate goal is to involve students in short and medium term research periods (2 to 9 months) in EU regions.

• Doctoral Consortium: We aim at fostering an international Doctoral Consortium in order to bring together a few selected Doctoral programs focused on SHEP policy into a network of cooperation and exchange of students and academic staff. An annual meeting of the Doctoral Consortium, involving Universities should help addressing common issues, providing a wider international educational environment for students.

• High level Conferences: It considers the organization of a few high-level conferences over the next years aiming at engaging stakeholders, including policy leaders and corporate managers, along with Universities, research students and policy analysts, to jointly discuss emerging issues in science and technology development policies.

• Specialized publications, including a Book Series, promoting new material to assess and steer science and HE development policies in EU countries and regions.

Organization: Scientific Committee, Executive Committee and Secretariat

The initiative aims at creating a senior International Scientific Committee, involving senior representatives of the participating institutions, for the overall governance of the proposed actions. It will advise and oversee the operation of an International Executive Committee that will conduct and manage the various activities proposed.

The Scientific Committee will identify its own Chairperson that may rotate among the various members. In addition, the Scientific Committee will define the chairperson of the Executive Committee, who will be the “Executive Director” and will work together with a professional secretariat.
In addition, a Local Organizing Committee of each program and/or event will be fully responsible for the activities of each school of advanced studies, deciding upon and managing the set of activities deemed as relevant for that particular school of advanced studies.

**Funding, governance and timetable**

A first meeting of the Scientific and Executive Committees should take place by mid or late 2013. The Board would then define and approve the creation of the consortium and its proposed multiannual outline, and set external evaluation procedures.

Funding for the various initiatives proposed is expected to be raised from EC (namely through H2020), as well as from local and national agencies in EU countries, in a case-to-case approach. The partner institutions should agree in addressing the EU Commission, through the new calls foreseen under H2020.

**Initial Promoters:**

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- **Giorgio Sirilli**, Institute for the Study of Regionalism and Self Government (ISSiRFA) of the National Research Council (CNR)