The European Research Area
– A new vision for Europe's future -

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Abstract

In spring 2000, Commissioner Busquin of the European Commission with responsibility for Research launched the new initiative *Towards a European Research Area*. Following this, research and innovation have been acknowledged by the European Council to be the key factors for the European competitiveness. The importance of the European Research Area (ERA) initiative can not be underestimated. What are the objectives? First, its clear aim is to foster a debate on what Europe needs in and for its future. Second, two aspects of how to reach this goal are specified: raising the attractiveness of being a scientist and a better co-ordination of research efforts by EU-member states. Two related initiatives are benchmarking and the mapping of excellence. Both initiatives vary from the present RTD policies considerably as they want to show in a highly visible way what are best practices in member states and where is research excellence to be found.

Even if various individuals and organizations welcome this clearly new approach and activity of the EU, there are quite a few obstacles, which can be linked to institutional inflexibility. Now, a lot of discussion - reactive as well as progressive has taken place in Europe. In this respect, Commissioner Busquin is already successful in having created a lively discussion about a reorganization of the European research landscape. But what will be concrete outcomes of the debate, will there be useful change?

The whole process can be analyzed within the framework of institutional change: There are various players of the national and community level, habits like funding through the framework program as well as national schemes, and a research community used to this institutional setting. However internationalization, new forms of competition ("the new economy"), a society and growth potentials based on a broad knowledge-base, all these trends lead to pressure for change. This change is gradually induced in member states with competitive funding schemes, creation of competence centers etc., and always includes competition aspects in one way or the other. Even if on the national level this has lead to criticism, the trend of competition is rising. But how can this be achieved on the EU-level without too much friction and be successful? The first steps are promising: on the one hand, activities to measure national innovation policies and the innovation framework are progressing. On the other hand it is made clear that the Commission is willing to learn and adapt from the

experiences within the member states. Therefore a proactive but not hasty approach has been established.

1. Introduction

The 1990s can be thought of as the century of the United States (U.S.). The U.S. showed an impressive recovery and boom with long term real growth rates of 4.1 % (1995-1999) and an unemployment rate of 4.2 % in 1999. The Europe of 15 (EU-15) on the other hand showed 2.3 % and 9.2 % respectively. Another alarming figure was, and still is, the private and public expenditure on R&D. The average annual growth rates of GERD were 2.9 % for the U.S. and 1.3 % for the EU-15, and for BERD 3.2 % and 1.4 % respectively (Commission 2000a). Some member states and regions invest far larger proportions of GDP in research then others, which has led to considerable discrepancies between the member states.

This relatively bleak economic background underlined a perceived need for a change, which Mr. Busquin, the commissioner of DG-RTD submitted through the proposal "*Towards a European Research Area*" (ERA) in January 2000 (Commission 2000).

In the light of the current economic situation, the proposal draws the attention immediately to research in Europe – another rather worrying situation which needs to be improved in order to stop the widening of the competitiveness gap. The link between growth, employment and research is of course well known and rendered in the communication: if technological progress is creating the jobs of today, research is creating the jobs of tomorrow. Even more importantly, the future growth and well-being of societies will depend increasingly on the utilization of information and its transformation into knowledge. However, interpreting the available financial data, the EU-15 are currently not investing appropriate means into their future. Not only is the real expenditure on R&D disappointingly low, but also there are lower levels of employed researchers and is a perceived one-way flow of doctoral students and post-docs to the U.S. all of which are regarded as negative developments. In order to contest this trend, the ERA communication proposes ideas which go beyond the demand for an increase in R&D expenditure (of course, this is stated as well), laying out the objectives to create a true European research area.

One of the main objectives outlined concerns the organization of research in Europe. This is primarily a national activity; the EU's own means being accumulated in the Framework Program (FP) and accounting for only 5.4 % of the total public effort. As most research is funded by the member states and performed in member states' research institutions and firms, the overall picture of European research is that of a "fragmentation, isolation and compartmentalization of national research efforts and systems (…)" (Commission 2000, 7). The Commissioner states rather bluntly that until now there is no European policy on research. The EU-15 national research policies and the Commission's one (known as the '15+1 model') do overlap to a certain degree. However, in their objective and goals, they vary considerably. While the national policies aim at fostering national growth and employment, the Community's research efforts, mainly concentrated in the FP, follows a dual rationale. First, it has specific objectives to strengthen the European competitiveness of European industry as well as providing scientific and technological bases for Community policies. In doing so, its second rationale is to have a structuring effect on the European research scene by encouraging national research agents to operate in a European manner rather than strictly following national interests.

The coexistence of various national research policies and the Commission's one, has some pro and cons: The member states might have different approaches to research which can be associated with variety, creativity, innovativeness, and growth. On the other hand, there are several hampering factors: very often the research teams lack a critical mass and therefore do not obtain research results quickly. Research teams are also reluctant to disseminate outcome quickly. Parallel research efforts might be useful in application oriented research, in basic research, however, consorted actions lead to more important results, as the European initiatives of CERN or EMBL show. Also in the light of a further enlargement of the EU, a new and more efficient coordination of the research in Europe, needs to be established. So far, the FP have followed a somewhat different logic: the FP such as the present 5th one, contribute substantially to the effort of bridging the gaps in technological capabilities. A more problem-solving touch of the present program cannot be denied. With diminishing public R&D spending on a national level, the FP serves increasingly as a substitute for national shortcomings rather than complementing national efforts.

The FP, being the main policy instrument of the Community's research policy, receives mixed opinions. A recent evaluation of the FP 4 and of the first year of FP5 gives the impression that the problem solving approach of the FP has a positive impact on the re-orientation of some research efforts and has created better interdisciplinary connections. The European Parliament states that "the framework program [...] has not succeeded in promoting genuine European research because of the inadequacy of the resources available and the cumbersome nature of the administrative procedures involved" (European Parliament 2000). One can draw the conclusion that a more focused choice of priorities, and the funding of more risky, long-term research is something, the Parliament would like to see. While the FP is the core policy instrument so far, according to the Commissioner's communication, it should play a different role in the near future. And this can be regarded as one of the striking aspects of the whole process: in the ERA initiative, structural objectives have been given the utmost priorities rather than putting specific objectives on the forefront.

Similarly striking and very welcomed by the various research communities were other insights of the European Council: the European leaders set the strategic objective for the Union in its next decade: to become the most competitive and dynamic knowledge economy in the world. The Council states, e.g., "whereas a prosperous Europe requires, and will be marked by, a large and active research community with a substantial output of successful research" (European Council 2000). The well-being of Europe has rarely been attributed to research that clearly, being the main driving force for innovation, and leading to growth, employment and cohesion. Before concentrating on the contents of ERA and individual issues, let us briefly reflect upon the time line since its inception.

2. The different steps taken so far

On January 18, 2000, Commissioner Busquin introduced a Communication from the Commission to the Council, the European Parliament, The Economic and Social

Committee and the Committee of the Regions entitled: *Towards a European research area* (ERA)
At the informal meeting of the EU research ministers in Lisbon, ERA was further discussed on March 6th and 7th, 2000. Beside the main targets already outlined in ERA, benchmarking of the national research policies is introduced.
The general public was invited to add to the discussion and did so actually using the Commissioner's homepage.
On March 23rd and 24th, 2000, ERA was formally endorsed by the European Council on its meeting in Lisbon.
May 3rd, 2000, an informal seminar in Brussels, brought together a large number of prominent players from research and industry, and was the opportunity from exchange of views on the main issues of ERA.
May/ June 2000, the "*First steps towards a European research area*" are outlined, reflecting the contributions from the public and the views expressed by various parties. This paper concentrated on the priorities mentioned by the European Council and proposed tentative schedules.
On June 16, 2000, the Council of research ministers met in Luxembourg. The priorities and schedules mentioned in the paper "First steps towards a European research area" were formally endorsed.

2.1 Contents of the ERA communication

In the Commissioner's paper, a vision of a new research policy is outlined which asks for a better link between the national policies of the member states and foresees also a new meaning for the FP. The very tentative nature of the paper was clearly intentional, no concrete actions were envisaged but moot points were raised. How can a better organization of the European research landscape be achieved? The suggestions were manifold and were addressed to in seven chapters. They included the following issues:

1. Material resources and facilities:
   - Networking of existing centers of excellence and the creation of virtual ones.
   - Defining a common approach to research infrastructures.
   - Better use of the potential offered by electronic networks.

2. Coherent use of public instruments and resources:
   - More coordinated implementation of national and European research programs.
   - Closer relations between European organizations for scientific and technological cooperation.

3. Dynamic private investment:
   - Better use of instruments or indirect support to research.
   - Development of effective tools to protect intellectual property.
   - Encouragement of the creation of companies and risk capital investment.

4. Common system of S&T reference for policy implementation:
   - Developing the research needed for political decisions.
   - Establishment of a common system of scientific and technical reference.

5. Abundance and mobility of human resources:
   - Greater mobility of researchers in Europe.
   - Introduction of a European dimension into scientific careers.
   - Greater place and role of women in research.
   - Giving the young a taste for research and careers in science.

6. Dynamic European landscape, open and attractiveness to researchers and investment.
   - Reinforced role for the regions.
   - Integration of the scientific communities of western and eastern Europe.
   - European attractiveness to foreign researchers.

7. Area of shared values:
   - Tackling the question of science and society in their European dimension.
   - Development of a shared vision of the ethical issues of S&T.

In its first chapter, a mapping of excellent research and assessment of research infrastructures is proposed and the need for a highly effective electronic network for the European researchers is stressed; a need which was already a topic at the Helsinki Summit in 1999. Chapter Two introduces a demand for a reciprocal opening of national research programs and - in the light of the Community's enlargement - asks for a better coordination between intergovernmental research centers. Indirect support, especially through fiscal measures, technology transfer and venture capital instruments to stimulate growth and private R&D investment, are raised in Chapter Three as well as the demand for a common European patent. Chapter Four catches a lot of interest from the Council as it focuses on "[the] excellent opportunity to develop the vital synergy between research and Community policies..." (European Council 2000). In this chapter, the need for performance indicators is implied. Mobility, the attractiveness of the European research landscape and the role of regions are the main topics in chapters five and six, respectively. The final chapter draws the attention to the embeddedness of science and technology in society.

2.2 Theoretical considerations: A political will and way and institutional processes

For a lot of old hands, the vision of creating a European research policy, is nothing in particular new. However, the openly expressed political will the Commissioner persuasively lays out, is coming as a surprise to quite a few people. From a theoretical point of view, not only the will is something to care about, but also the way is a crucial process which leads to a not yet determined output.

One might ask whether this process will have a strong impact on the current system, i.e., whether or not a significant change can be envisaged. For explanations of institutional processes and institutionalization, one can refer to a broad range of literature (BOYER and HOLLINGSWORTH 1997, POWELL and DIMAGGIO 1991, REUTER 1994, SCOTT 1995, PEREZ 1983). Extracting and simplifying the arguments laid out in this strain of research will provide not only of a characterization of institutions but also an explanation of institutionalization processes. Institutions can be defined

broadly as "habits of thought common to the generality of men" (VEBLEN 1909/1990, 239), or put into more modern terms: institutions contain structures and actions which provide for the human behaviour sense and stability (SCOTT 1995, 33), and which are forming culturally bounded institutional systems. Institutions have some positive as well as negative inherent characteristics. Positive ones are their impact on stability and adding sense to decision-making processes. If a new problem arrives which needs to be solved in new ways, these new ways may soon become institutionalized, i.e., whenever this particular problem evolves, the particular institution will be habitually put in use. That is one way of making life and ways to deal with various situations rather easy. Successful ways tend to be imitated. We can observe imitation in successful technologies and applications, management and production systems, political and social trends. However, a sometimes negative characteristic of institutions comes with the passing of time, which is persistency; and they persist even if they are counter-productive. This makes change quite difficult to achieve. In a geographically specified system like a single member state, one can distinguish an institutional setting made out of horizontally laid out sub-systems, such as the financial markets, employment systems, trade systems, innovation systems etc. Altogether they form the institutional frameworks of the single EU-member state. Now, the European level can be taken as a vertical governance structure, equally forming and following institutional structures. On a one on one basis, i.e., one member state dealing with the EU, can be conflicting or cooperating. However, the reality is more complex and negotiations are necessary to reach agreements and changes.

In case of the sub-system 'research', each member state has developed its own special habits, mostly according to upcoming demand. Some of the roots of the present research systems in the member states can be traced back to the turn of the century (LANDES 1969), some are more recent, and of course, all systems have seen adaptations. In their complexity and heterogeneity they are very difficult to study and to evaluate in their efficiency. However, attempts have been made to classify and structure the various systems (NELSON 1993, BOYER *at al* 1997). Whether or not a single system is efficient, remains largely a domestic question and therefore adaptations or attempts for changes are decided and performed at country level. In some countries, basic research is traditionally done in universities as in the U.K., in others, larger research institutes share this task like in Germany. Most characteristics are highly institutionalized. This includes tenured professorships, fixed salaries for researchers, public funding of universities and public research bodies, etc. When it comes to funding, some characteristics are relatively common to all. Especially when it comes to basic research, the research systems seemed to be reluctant in applying competitive mechanisms widely. However, more recently, the research systems have come under pressure in several countries, and demands for "real reforms" are heard frequently. What do these "real reforms" imply, and where does this perceived need arise from?

To begin with the latter, demand for reforms rose largely by having a look at the U.S-system, where university-industry linkages seem to be much better established, and there are competitive mechanisms creating innovations and growth. The impressive numbers of spin-offs from universities and federally funded labs, the success stories of ICT and biotech startups, and the figures for employment created out of new

technology-based firms, put extreme pressure on the existing European research systems. The U.S.-system seemed to evolve as the winning model – and successful models basically are imitated. The demand for a "real reform" is basically one, which is an isomorphism of the U.S. one. Needless to say, there is firm resistance, very often expressed by those who are directly in the focus for a change and potentially losing income or status, on an individual level (researchers, scientists) as well as institutional level (research institute, university…). But of course, even within the research system one will find a lot of people who are unhappy with the system and open to change. Unfortunately, very often, sudden or "real reforms" (implying an imitation of a successful model) are forced upon a system but hardly surprising, not with the same effect as the role model promised. On the other hand, more organic, evolutionary changes which take cultural specificities into account, tend to be quite successful. One of these successful examples can be found in the recent German S&T policy.

3 The German S&T policy paradigm shift: success through competition

The research system in Germany is an example of a highly fragmented system. The universities are under the governance of the federal *länder*. Research is carried out by several other research bodies, such as the institutes of the Max-Planck-Society, those of the Fraunhofer-Society, the large research centers etc. The central government as well as the *länder* have legal obligations and rights in these cases. However, the federal government is pressing for a change within its rather limited jurisdiction.

In the past, the federal government in form of the Ministry of Science and Education (BMBF) funded research according to disciplines and allocated the funding to the various research institutes. A first major change occurred, when horizontal funding of "Leading projects" (Leitprojekte) was introduced. Thus, some money was allocated to projects like "multimedia", "intelligent navigation systems", etc, more or less technological applications which are based on more than one scientific discipline.

The major paradigm shift however occurred, when competitive mechanisms were introduced. The BMBF set up calls in the form of competitions. One of the first competitions was the call for centers of excellence in clinical research. The reasons for setting up this competition were manifold. It was felt that there were too many medical schools tackling too many and sometimes almost the same research, often lacking critical mass and not offering attractive positions to promising young researchers. The structural problem of an extremely hierarchical system which hampers innovation were at the core focus and here, the state initiated a competition in a field where it had almost no legal rights.

3.1 The BioRegio contest

The same competitive mechanisms apply to the so far most successful competition, the "BioRegio competition", which was launched by the BMBF in 1995. Its reason: the weak performance in biotechnology and its competitiveness in Germany. Despite the fact that some excellent basic research in biotechnology-relevant disciplines has been financed for almost 30 years and again, despite the fact that there are large German pharmaceutical and chemical companies, biotechnology did not develop correspondingly. Again, a look at the U.S. showed a very successful model. However,

in this successful U.S.-model, one major part of the equation was made by the venture capitalists, a concept rather unknown in Germany. During the 1980s and early 1990s, especially German pharmaceutical companies queued for research contracts with public and private U.S. – institutions and listed an unfavorable climate towards biotechnology and extreme regulation in Germany and the access to top research in the U.S. as main reasons for their exit strategies. This outflow pressed for political action in order to prevent not only brain drain, but also loss of employment.

The BioRegio contest started where the various competencies in biotechnological R&D are located, namely in the regions. There are quite some regions which claim to home to successful medical or biology departments of universities or Max-Planck-institutes, and they are equally home to major pharmaceutical or chemical companies.

The contest aimed at those regions, to present business models of how they could integrate their competencies in biotechnology. A critical mass of research, firms, venture capitalists or other equity providers, local chambers of commerce etc. had to be put together and to prepare plans. This planning was financially supported, but the real prize would come later to three winning regions, each of them would gain about DM 20 million (€10 million) in project money. In this call, more than 17 regions eagerly participated. Beside the three winning regions, the BioRegio Munich, Upper-Rhine (Cologne), and Rhein-Neckar (Heidelberg and Mannheim), a special prize went to the eastern region of Jena. In fact one can say there were more than just three or four winners, because all the other regions which made an effort and prepared a business plan are unlikely to abandon this plan. They tried, and still do so, to attract biotech firms. At the same time, a venture capital market was beginning to evolve, the Neue Markt, a segment of the stock exchange aiming at new technology based firms was created and therefore, some efficient ingredients of the U.S.-innovation system were introduced.[1] The time invested in planning and checking the local competencies was not at all to no avail. In fact the overwhelmingly positive results and the perceived entrepreneurial spirit this competition was able to bring out, has tried to be captured in other actions.

3.2 Successful imitation

One of the follow-up calls was on establishing competence networks in nanotechnology. Now there are a small number of universities which can show off with the label of hosting a competence network and they can be sure they will be mentioned in the press quite frequently. Similar networks can be found in laser techniques, bio-materials, telematics, etc.[2] All of these actions have a time horizon and the preferred funding is for a fixed period only. This new S&T policy based on competition is so far very successful and, surprisingly, it is not always the well-known "star performers" who are the winners. These competitions in new fields are a chance for research units which are less well known and/or with less of a reputation to be brought to a wider attention.

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1 However, the German venture capitalist system differs significantly from the U.S.-system. The differences being related to differing banking systems and differing concepts of risk sharing.

2 For an overview see http://www.bioregio.com, http://www.kompetenznetze.de

Germany is certainly not the only country which by way of creating centers of excellence tries to create a critical mass in technology fields perceived to be vital for its economic and social future. Austria and the Nordic countries, for example, use a similar approach.[3]

4 The European dimension

As laid out earlier, the European dimension differs considerably from the national policies and aims at different structural goals. On the "+1" level, globalization and the threat of falling behind is nonetheless evident, however, a structural change of the research policy is even more difficult to achieve than at the individual EU-member state level. In case of the European Research Area, this political setting has to be taken as the institutional framework and so far, not only the political level of the member states has been involved, but by asking for an open debate, the views and positions of industry, research bodies etc. a real debate has been initiated. One way of assuring an open debate being tried is to separate it from the almost obvious link to the FP. As Commissioner Busquin already pointed out ERA should be more than just representing the FP and it is easy to understand that various parties try to link the ongoing debate to the future design of the 6th FP. However, by separating those two issues, it allows a more open and richer debate which might lead to a new outline of the FP. As the debate is still going on, it is however much too early to speculate about the next FP.

4.1 Mapping excellence

How can the objectives of ERA be achieved? One of the outlined steps is "Mapping Centers of Excellence" (CoE). The idea to map excellence is mentioned prominently in chapter one of the ERA communication and it has been endorsed by the Council and the European Parliament.

Why mapping? Do we not already know who is best? Are not always the same universities and research institutes mentioned in the papers? Do not excellent professors imply overall excellence? The answer is yes and no. All EU-member states have excellent units, where research is supposed to be superior to that undertaken in other places. They have accumulated a critical mass of very good researchers. Most of these places have an established reputation and they work hard to maintain it. And yes, at the member state level, one is familiar with a lot of them but outside the country, this knowledge is much more limited. And, do we really *know*? Very often, research institutes, university or industry departments, or single working groups within larger institutions are unaware of their scientific reputation or impact in the scientific communities – just a few are home to a noble prize winner and research evaluation is in most places in a rather early stage of development. Some try to estimate importance or influence on a national scale, but frequently, international comparisons are not available. But there is more to performance indicators. Output indicators such as publications and patents can be rendered relative by input indicators like funding and the number of scientists in a unit or department. This allows for adjusting size to output. Excellence, measured by relative indicators comes very often

[3] See for example http://www.inf.vtt.fi/nordinfo-unesco/index.htm, http://www.bmwf.gv.at/4fte/k-plus/index.htm

as a surprise to the scientist or research unit and opens up to less famous groups or departments which have to be dominating because of their sheer size.

Another reason for mapping is a widely faced geographically constrained knowledge, and academia-industry linkages limited by proximity. Industry, especially small and medium sized firms, has a restricted knowledge about where to source scientific knowledge. Their know-how is often only including geographically close institutions. Large companies might have a better overview of international trends due to their international activities and they also might have the resources to observe more closely where 'hot' research is going on. However, a large theoretical and empirical body of research publications from economic geography, social network analysis, and innovation research reveal that first, cooperation is a function of communication and communication is facilitated by proximity and second that also technology diffusion is a function of proximity (Keller 2000). However, the longer linkages between parties exist, the less proximity tends to matter. Information barriers are also presented by different languages. Even if in some disciplines English tends to be the lingua franca, it is less so in others, and therefore, scientific and technological knowledge tends to stick within the different language groups.

But excellent research performance in form of publications or patents is just one aspect. It is no longer sufficient to be excellent in research without trying to disseminate the research results appropriately. Therefore, research institutions are facing the challenge to establish or improve existing knowledge or technology transfer mechanisms in a thorough way. It is obvious that the very diverse European research scene is following different objectives. In some countries, universities and/or public research institutes are pushed to direct knowledge transfer, to increase contracts with industrial clients, and to patent, in other countries this push is still rather mild. Objectives as well as performance measurements differ also between disciplines. The humanities and social sciences can hardly be mapped (and evaluated respectively) using the same criteria as engineering or medicine.

An important challenge is the new strategic and interdisciplinary technologies like nanotechnology, biotechnology, or new materials. They include in general a variety of different disciplines. While individual disciplines can be traced rather easily to single research units, interdisciplinary units do often exist just virtually, or they are recently established entities, geographically and physically to be distinguished from established units. In these strategic and probably most important fields for the European competitiveness, the knowledge is even more limited on what is done where.

One final trend, which needs to be pointed out, is the internationalization of research - which is still in its infancy today – but which will have a tremendous impact on established research structures as well as on industry. Not only will research outcome from different countries be spread faster and more evenly through fast information networks (another aim of ERA), but this opens up wide opportunities for industry to participate and access nodes in this international research network as well.

Therefore, the main raison for mapping excellence, whether it is in public research institutions or private organizations, is first to increase the visibility of excellent

research. Second, with the help of a common technological infrastructure, virtual links can be established on a European level to create European wide centers of excellence.

Since the outline of the ERA communication in January 2000, considerable discussion about a definition, what and which kind of excellent entities should or will be covered is raised. Again, as the European landscape is very heterogeneous, one has to be very careful about the methodological approach.

5 The road ahead

In June, the Council of Research Ministers endorsed in its resolution that the mapping has to be based on indicators. Furthermore, a draft methodology has to be presented at the end of the year and the final maps have to be developed by the end of 2001. Therefore, the Commission is proposing to work with external experts of S&T indicators experts on bibliometrics, patents, and on survey methods and evaluation. A crucial question remains the choice of fields and disciplines to be mapped. In order to obtain a value added from the mapping project, one could be keen to obtain information about the excellence in strategic areas such as artificial intelligence or nanotechnologies, but also in socio-economically strategic questions about mobility of the labor force, the aging process etc. These technologies or strategic areas, however, cannot be obtained by referring to lists but will have to be identified by different means. One immediately available means would be to use the various national foresight studies that have been carried out in the recent past and which identify strategic technologies and key applications.

However, one should not forget the political dimension of ERA: especially mapping excellence will not only lead to a higher visibility, but also to higher transparency. While the demand for transparency is meanwhile frequently heard and followed in the individual member states, it still makes a difference if one has transparency on the European level – given the fact that EU-member states compete and that they are keen in winning any "beauty contest". Therefore it seems to be essential to communicate that mapping is not a beauty contest and by giving a higher visibility to some, competitive mechanisms will drive at least those institutions which are very good or excellent but not as shiny as "the ones we all know" into the forefront of the attention. It must be clear that it will create a win-win situation. It will be crucial to assure the member states that this exercise is for the benefit of all Europe. In this respect, the political way of using external expertise for the methodology, leaving room for an open debate with various actors like academic bodies, industry as well as politicians, making use of the experiences with the formation of centers of excellence and competence centers in the member states, and integrating them in various stages in the decision making process should be successful. Thus, by creating ERA, a common research policy that will be successfully complementing innovation policy and underpin cohesion and growth could be achieved.

Disclaimer: Whereas this paper is based on official material, the views expressed are strictly these of the author and do not necessarily represent the official position of the European Commission.

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