

# **Governance and coordination of S&T policies in the European Research Area**

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## **1. Introduction**

The need to coordinate European Science and Technology (S&T) policies has been recognized for more than three decades<sup>1</sup> and predates the Single European Act of 1986 that transferred competencies for a common European research and technology policy to the European Commission, resulting in the implementation of the Framework Programmes (FPs). In spite of the multiple initiatives, and continuous discussions, to achieve a better coordination of national and community S&T policies, progress has been very limited. Similarly, the idea of creating a European Research Area (ERA) – a common playing field for these policies -- has a long history<sup>2</sup> and, although nowadays the ERA extends beyond the EU27, in many aspects still remains ‘an idea.’ Nevertheless, the term "European Research Area" has made its official debut in the Lisbon Treaty which states that "The Union shall have the objective of strengthening its scientific and technological bases by achieving a European research area in which researchers, scientific knowledge and technology circulate freely, and encouraging it to become more competitive, including in its industry, while promoting all the research activities deemed necessary by virtue of other Chapters of the Treaties". Such a role for the ERA has now received a clear positioning in Community priorities as in the March 2008 European Council's conclusions the ERA is placed at the core of the *"fifth freedom"*, namely the free movement of knowledge, ideas and researchers in Europe.

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<sup>1</sup> for example, such recognition resulted in the creation of the Scientific and Technical Research Committee of the EU (CREST) in January 1974

<sup>2</sup> Antonio Ruberti's (Commissioner for Research and Education 1993-95) already called for a 'European scientific and technological space' and, in the recent years, the ERA idea has been revitalized by Commissioners Philippe Busquin and Janez Potočnik and has been instrumental in the design of FP6 and, specially, FP7

The "*fifth freedom*" is often kept in captivity by too many barriers and regulations that are keeping the European research landscape fragmented and characterized by weak competition. Yet, to guarantee an Open, Integrated, and Competitive European Research Area important policy and institutional reforms are still needed. Some of these reforms affect EU policies; others affect national or regional policies and institutions. Many of them have already been mentioned in the context of 'the ERA Green Paper' and its subsequent discussions. We just want to emphasize, at the EU level, the importance of having a proper legal framework for setting up competitive European transnational R&D institutions, working with financial rules based on trust and proper S&T evaluation, and, at the national and regional level, the need for reforms of public Universities and other Research Performing Organizations<sup>3</sup>.

These reforms are necessary conditions, but in order to achieve the Lisbon objectives, two additional weaknesses need to be addressed. First, most R&D public funds are in the hands of national and regional governments, and while this shows the commitment of national and regional governments to 'build local R&D capacities', this goal is often not pursued with an Open and Competitive ERA perspective, which results in fragmentation, weak competition and, possibly, 'distorted specialisation'. Second, the 'complexity' of EU funding (EU financial rules, existing instruments for policy coordination and cooperation, etc.) often acts as a deterrent for scientists and innovative firms, and limits both the leverage capacity of the EU R&D policies, and the ability of the EC to lead intergovernmental initiatives. As we argue below, although important steps have been taken to readdress this situation – mainly, the creation of the ERC – further decisive steps must be taken in order for the Scientific and Technological potential of the ERA to flourish.

In summary, the central argument of this document is that to implement the "fifth freedom" there is a need to develop an *Open, Integrated, and Competitive European Research Area*, and that such task requires policy and institutional reforms at the EU and national (regional) levels, as well as "**better governance and coordination of S&T policies**". More specifically, in line with the **Ljubljana 2008 process**, we recommend an in-depth review of the current governance of the ERA to implement R&D policies, following basic principles of 'trust and

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<sup>3</sup> See, for example, "Report of the ERA Expert Group on: 'Strengthening research institutions with a focus on university based research'", January 2008.

efficiency,’ making openly competitive national and regional policies, increasing the leverage effect of EU policies, and developing autonomous S&T agencies, with an European mandate, to implement coordinated intergovernmental policies.

In the next two sections we discuss what we think is the main ‘rationale for the ERA’ and some basic principles for R&D ‘policy delegation and governance’. In Section 4 we review some current trends in the ERA governance. Section 5 and the concluding section 7 contain our main policy recommendations, while Section 6 reviews the legal basis for our proposal of setting S&T agencies with an European mandate.

## **2. The rational for an *Open Integrated and Competitive European Research Area***

The standard rationale for public R&D policies is the need to readdress market failures in the production and diffusion of knowledge and innovations due to the wedge between private and public returns on R&D investment. For the EU, the subsequent question is whether, following the ‘subsidiarity principle’, such public policies should be left to the member states, or should alternatively be centralized or integrated through policy-coordination. The standard rationale for not delegating R&D policies to the national or regional level is the existence of ‘economies of scale, or other policy externalities’. But even when there is a need for setting R&D policies at a supranational level, the question remains as to whether it is more efficient to implement them through central EU institutions or through multilateral cooperation; while centralization can more easily guarantee the internalization of economies of scale, intergovernmental policy coordination may allow for a better ‘adjustment of R&D and innovation policies to local circumstances and preferences’ (van der Horst et al., 2006).

It is worth considering these arguments in more detail to see the role they should play in shaping EU-wide R&D policies. Economies of scale resulting from *the presence of large fixed costs* are certainly present in large research infrastructures. In fact, most historical intergovernmental initiatives on Big Science have addressed this problem. However, political reasons apart (such as those for the Galileo programme), the optimal size is unlikely to be EU27. The issue is rather how to guarantee that the necessary infrastructures are built while avoiding unnecessary duplications.

Similarly, as with private firms, internalizing the fixed costs of universities, research and technology centres requires different optimal sizes. These are dictated by the extent that they can benefit from economies of scale and scope. There are *economies of scale associated with specialization*; that is, in the production of R&D from previous specialized knowledge and in a specialized environment. But there are also important *economies of scope* associated either with the ability to share fixed costs across different areas of specialization (e.g. computing, library and other services), or with *internal knowledge spillovers* across different research activities (e.g. applying similar techniques in different projects)<sup>4</sup>.

However, as has been understood since Adam Smith, ‘the gains from economies of scale and scope’ are not only dictated by technological considerations, but crucially ‘depend on the extent of the market.’ In particular, the ‘efficient critical mass’ of, for example, a research centre crucially depends on whether the centre focuses its activity on servicing a local market (e.g. in the adoption of existing technologies), or on competing in the global knowledge economy. In the latter case, efficiency often dictates that the ‘subsidiarity principle’ – of only depending on public local funding – may not be adequate. It is not just that local funds may be too limited, but – more importantly – that there may be knowledge spillovers beyond local boundaries.

On the other hand, there are strong arguments in favour of decentralizing certain policies where ‘market failures’, if they exist, may be more properly addressed at the local level. Similarly, one cannot assume that a large scale operation is needed to compete internationally; take for example the technological and innovative SMEs, which often benefit more from supportive local policies than from large and more complex EU programmes. In favour of decentralization there is also the argument that local policies may enhance diversity, resulting in knowledge creation and learning from different policy experiences (van der Horst et al., 2006).

While traditional arguments – accounting for economies of scale and scope, and spillovers – provide a useful framework of reference, one must recognize three major shortcomings in the

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<sup>4</sup> See, for example, Henderson and Cockburn (1996), who analyze these different forms of economies of scale and scope in the context of the pharmaceutical industry. Their analysis shows the increasing importance of *economies of scope*.

above discussion. First, it starts – as is usual in the public finance literature – by assuming that the EU market for the production and diffusion of knowledge and innovation is at work, and only needs to be corrected for its ‘market failures’. Second, it does not recognize that correcting some ‘market failures’, such as fully exploiting increasing returns to scale and scope, may result in other ‘market failures’, such as *diminished competition due to excess concentration* (which, as we discuss below, is a problem with some of the current FP7 initiatives). Third, it has the standard ‘subsidiarity flaw’ of not recognizing that whether a policy should be undertaken at a given governmental level (EU, national or regional) or in a specific institutional form (centralization vs. coordination) depends on the efficiency – and political economy – of the institution which should implement the policy<sup>5</sup>. As we will see afterwards when discussing ERA-Nets, the fact that a particular policy could be better implemented through the bottom up coordination of national agencies needs to be matched with the institutional capacity of these to set up and perform such a complex process. These shortcomings are especially important regarding an ERA of (at least) 27 countries, since they bring to the fore the role and complexity of the ERA, as well as the question of how governance issues should be addressed within it.

While at the EU27 dimension there are almost no ‘*technological* economies of scale and scope’, the ‘extent of the European market of ideas, researchers and innovations’ plays a determining role in generating social returns to R&D and shaping the specialization and optimal size of R&D actors. ‘Smart specialisation’ in the Global Knowledge Society is not achieved through a clever foresight-political process, but by letting Ideas, Innovations, and Researchers *compete without barriers, in a large, open and fair field*, as the ERA can be.. However, while the development, integration and regulation of an EU market remains a central element of the ‘EU identity’, the Higher Education, R&D and Innovation market remains fragmented with ‘national and regional boundaries’ often defining the scope of competition.

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<sup>5</sup> Here the term ‘institutions’ is used in a broad sense to include ‘policies’, ‘cooperative agreements’, etc.

## Specialization, competition and decentralization

An open and competitive ERA “suggests that from an overall efficiency standpoint, R&D should be concentrated where the aggregate return on each euro spent is the highest, which may involve spending less in some countries and more in others” (Pissany-Ferry and Sapir, 2006). The ERA is still far from fulfilling such a recommendation and there is ample room for improvement in this direction. Yet, taken to its logical consequence, such a policy for the ERA may not only be ‘politically unfeasible,’ but even inefficient.

To see why it may be inefficient, it is sufficient to consider the case where ‘R&D economies of scale and scope’ call for the concentration of resources in few EU locations (and institutions) with the consequent competitive research funding being concentrated in these locations, resulting in other regions of Europe falling increasingly behind in such EU-wide competition. R&D policy is not a redistributive policy and therefore should not try to revert this trend towards concentration on fairness grounds. However, leaving aside the fact that diminishing returns-to-scale and the proper use of network-information technologies may limit the extent of such trend towards R&D concentration, the above argument neglects the important economies of scope that can be present at the local level. In particular, the level and composition of the human capital of a region is a determinant factor in its growth, being also a factor in integrating a less technologically advanced region with more advanced ones and in developing locally-based innovations. For example, the complementarities between research and teaching activities implies that research-depleted universities are seldom institutions that excel in knowledge dissemination; as a result, a weak university system may preclude a region from ‘building competences’ that should allow to compete and specialize in the global knowledge economy. *A farsighted region must specialize, but specialization cannot be in having a higher education system without a competitive R&D component.*

A reluctance of the national and regional governments of less technologically advanced regions to transfers towards more productive regions usually reflects a lack of understanding of the potential gains from competition, or the selfish interests of the direct beneficiaries of local (uncompetitive) R&D policies, but it may also reflect a commitment to R&D and human capital development in the corresponding state or region. It may also reflect the fact that many EU citizens have a strong preference for living within their region or nation, which helps to

preserve European cultural diversity. Not surprisingly, relatively large and technologically advanced countries, being more self-sufficient, are less willing to cooperate in EU R&D initiatives than countries that, being farther away from the frontier, have more to gain from such cooperation. In fact, in spite of all its drawbacks, the ‘transnational cooperation’ of the Framework Programmes (together with an intelligent use of Structural Funds) has helped to develop an R&D base in European regions away from the frontier.

### **3. Governance and institutional design**

As it has been argued above (in relation to the ‘subsidiarity flaw’) that, in assigning competences to different governmental levels or agencies, one must take into account the relative efficiency of these organizations in implementing these competences. For example, even if there may be gains from having a centralized EU implementation of R&D funding, cumbersome procedures at the European Commission level may completely erode such an advantage. However, such cumbersome procedures may only be the result of ‘operating under mistrust’, of delegating policies from member states to the EU institutions but not allowing them the proper legal and financial framework to operate these policies. Alternatively, the predominance of ‘local interest groups’ (e.g. of local incumbent firms or research centres deterring entry), with a lack of proper competition at the local level, may distort the implementation of national and regional R&D policies so as to justify their centralization at a higher level, even when the objective is to satisfy local R&D needs.

Institutional design should not only take into account potential inefficiencies that may arise at different levels due to organizational or political-economy considerations, but also dynamic inefficiencies due to time inconsistencies, which are pervasive in R&D policy. For example, while the potential long-term social returns on public investments in R&D may be understood, often other more pressing needs stand in the way, and the corresponding investments either do not take place or are not properly implemented. A good ‘governance design’ should avoid such time-inconsistencies. This throws a new light on stable cooperative agreements. Cooperation between different governments (or governmental levels) may be a way to build up *commitment*, since pre-committed budgets for intergovernmental projects tend to be more isolated from ‘other budgetary needs’. In fact, research centres tend to have more autonomy when they do not depend upon a single authority. On the down side, however,

intergovernmental governance of R&D centres may also result in political blockage, with centres not operating properly unless there is intergovernmental consensus.

### **Strategic delegation to ‘autonomous’ funding agencies**

Central Bank independence has proved to be an efficient institutional response to time-inconsistencies, which are pervasive in monetary policy. Through Central Bank independence, monetary policy is ‘strategically delegated’ to agents who – being independent of the everyday political process – are less prone to time-inconsistencies. Yet, Central Bank independence, as much as the creation of other types of independent authorities, has been a means through which sensitive reforms have been implemented, especially in areas where strong local interests have impeded the concrete definition and implementation of a reform agenda. The case of the role of the European Central Bank in reforming public finances, especially in less virtuous Member States, is exemplary in this respect. The current trend towards higher university autonomy also reflects an understanding that universities cannot properly compete if they cannot reform to develop – and be accountable for – their own strategies<sup>6</sup>. The same principles apply to other research institutions. As we have shown before, similar trends towards greater autonomy are evident in recent and important policy initiatives such as the ERC whereby the prioritization and management of an increasing share of ERA resources is delegated to autonomous bodies in which stakeholders play a crucial role in their governance. The question is: what should be the appropriate level of autonomy or independence for research funding agencies, and to whom should they be accountable?

Across the European Union there is a wide range of different degrees of autonomy/accountability of R&D funding agencies, from the Northern European countries and the UK with a long tradition of independent agencies, to the hardly-autonomous ‘ministerial agencies’ of the Southern European countries (Portugal being an exception to this pattern). However, even agencies with a high degree of autonomy and independence are generally accountable to a ‘national or regional ministry’ which is ultimately responsible for their budget; that is, autonomous funding agencies tend to reproduce the vertical intra-governmental structure of the EU. An exception to this ‘vertical rule’ is the German Research Foundation –

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<sup>6</sup> See, for example, “Report of the ERA Expert Group on: ‘Strengthening research institutions with a focus on university based research’”, January 2008.



its Joint Committee, responsible for research funding, is composed of members of the Senate, representatives of the federal government and of the states (Länder). Most of these public agencies fund all fields of science and the humanities (and evaluate projects through peer-review), while typically, separate ‘innovation agencies’ provide public funding for business R&D (and evaluate projects using ‘in-house experts’).

As with Central Bank independence, ‘agency autonomy’ provides a safeguard against discretionary political pressures. However, this design does not make agencies immune to other forms of manipulation (e.g. by interested and organized customers), while in contrast with Central Banks, funding agencies continue to depend on national or regional governments for their budgets; that is, a high degree of independence may also result in a different form of time-inconsistency: uncommitted governments may *ex-post* not properly fund agencies who are unwilling to follow their governmental policies. The severity of these problems depends on the relative strength of the agencies vis-à-vis their customers (S&T organizations) and governments. Once more, while a local agency may be more knowledgeable about and sensitive to local needs, without a strong tradition of independence and/or a proper institutional design, it may also be a prime candidate for suffering from hold-up problems, and so a weak candidate for setting high competitive standards. However, size *per-se* is not the solution to these problems, since an agency (or ministerial department) in a large state, or even in the EU, can also be captive to its own customers if relative to them it is weak (e.g. they can better influence the political process).

### **Principles of ‘governance and trust’**

R&D funding institutions – as happens with financial institutions – can only operate efficiently if they build up a proper reputation, if they are ‘trusted’ in how they handle public resources and, more specifically, in how they handle the competitive and selection process determining the allocation of these resources. Some organizational principles that help to build up ‘**trust**’ are:

- i) independence between the political authority (who may set social priorities and budgets) and ‘funding managers’ implementing the competitive and evaluation processes;
- ii) independence between ‘funding managers’ and those who may receive the funding;

- iii) a professional, stable and properly accountable organization, otherwise reputation can not be built;
- iv) clear, and well known, rules for competition, evaluation criteria, selection procedures, and follow-up evaluation
- v) simple and timely implementation of contracts

These basic principles of institutional design – in particular, of R&D funding agencies – can be used as benchmarks to assess the current ERA research policy governance. While it is beyond the scope of this document to provide a detailed evaluation of the different institutions, it is worth to reflect on some of the current trends, since they reflect most of the issues that need to be addressed. We review these trends and issues in the next Section.

#### **4. Some current trends and issues in the governance of the ERA**

The basic division of competences within the EU has remained fairly stable for more than twenty years: i) the European Commission being responsible for the implementation of the EU Research Policy, mostly through the Framework Programmes; ii) national and regional governments implementing R&D policies within their constituencies, according to the ‘subsidiarity principle’; iii) a limited number of intergovernmental R&D institutions, most of them predating the Framework Programmes<sup>7</sup>, and iv) few intergovernmental programmes and initiatives<sup>8</sup>. However, even if the basic institutional framework has been stable, the expansion of the EU, the importance and broadening of the Community Research agenda, and the increasing complexity of research funding in the ERA has resulted in many changes that call for a ‘rethinking’ of the ERA governance structure.

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<sup>7</sup> Examples are: the European Organization of Nuclear Research (CERN), the European Space Agency (ESA), the European Southern Observatory (ESO), the European Molecular Biology Organization - Laboratory (EMBO-EMBL), the European University Institute (EUI) and the European Science Foundation (ESF).

<sup>8</sup> The Europe-wide Network of Industrial R&D (EUREKA) and other EC initiatives of intergovernmental cooperation, such as the European Cooperation in the field of Scientific and Technical Research (COST).

## **The creation of the ERC (and the EIT) and the increasing involvement of stakeholders in the governance of the ERA**

The expansion of the Community Research Policy to basic science and the subsequent creation of the European Research Council (ERC) has been one of the most important developments in EU R&D governance in the last years. It has shown how the European scientific community can be mobilized at the EU level, without national or linguistic interference, and with a fair amount of consensus on *how* research funding should be conducted. Furthermore, given the mobilization of scientists, the European Commission has had the vision to give full support to the initiative, making it possible.

Based on the NSF model, the ERC complies with most of the criteria of ‘trust’ mentioned above and, although it is still too early for a proper assessment, there is little doubt that it is having an important positive impact in the European research community. Remains to be seen whether the fact that it is not fully autonomous and must follow the same financial rules of the European Commission will not limit its capacities; for example, its ability to provide a “simple and timely implementation of contracts.”

The creation of the ERC and the European Institute of Technology (EIT) witness a tendency in delegating a significant part of the Community funding process to the same stakeholders that are targeted by the funding programme. Here an important point needs to be underlined: stakeholders involvement is rather different from blurring the boundary between those who decide the allocation of funds and those who benefit from it. In the ERC and the EIT the involvement of exponents of the community of target beneficiaries occurs only at the representational level: members of their respective boards (namely, the ERC scientific council and the EIT Governing Board) are intended to include high level personalities able to represent the views and competences of their respective target communities (the academic communities for the ERC, and also the broader innovation community for the EIT), while board membership has no relation with the selection process of individual beneficiaries. That is, these institutions are designed as to preserve the principle of “independence between ‘funding managers’ and those who may receive the funding.”

Different is the case of the Joint Technological Initiatives (JTIs) in which Framework Programme resources are managed by a separate public-private partnership which establishes a work programme and allocates funds to stakeholders that are themselves represented in the

governance of the JTI (within the so-called industry and research groupings). Here, differently from the EIT and the ERC, board members are representatives of individual organizations and membership provides preferential access to the further allocation of resources (with mechanisms that are different case by case in each JTI). In all these initiatives, the presence of stakeholders in the governance of research funds goes much beyond traditional advisory roles since they are directly and substantially involved in programming and funding decisions (in fact in the case of the ERC, stakeholders are those setting funding priorities, while in JTIs this responsibility is shared with the EC and partly with MS representatives)<sup>9</sup>. What makes the difference is the extent to which such an overlap occurs only in terms of representing the interests of the broader community of beneficiaries (as in the case of the ERC) or if it extends to the interests of individual organizations (as in the case of JTIs). In the latter case, the funding agency and the beneficiary significantly overlap, and the programming/funding process is substantially, if not completely, delegated to the same stakeholders who are expected to execute the programme.

The ‘independence’ problem is aggravated by the fact that given their size, and the aim of involving the ‘main relevant players of a technological initiative,’ limits competition. In other words, in terms of the above principles of ‘trust’ the JTIs seem to walk in murky waters.

### **The changing shape of European knowledge networks**

The involvement of stakeholders in JTIs is the reflection – at the ‘innovation end’ of the S&T spectrum – of a more general tendency to change the shape and overall aims of R&D partnerships from traditional project consortia: they are substantially larger in size, include a strong degree of heterogeneity among partners (interdisciplinarity, involvement of firms, particularly SMEs, etc.), have longer time horizons -- e.g. the Knowledge and Innovation Communities (KICs) of the EIT are supposed to operate for 7-15 years -- are asked to strongly integrate their activities beyond mere collaboration, and have greater autonomy in

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<sup>9</sup> Indeed the trend to involve stakeholders in the governance of public research is a general one aimed at making research efforts more accountable as regards their capacity to address social and economic needs (Governance of Public Research, OECD, 2003). See also, "Universities, the State and the Market: changing patterns of university governance in Sweden and beyond", Lars Engwall, Higher Education Management and Policy, 2007, Vol. 19, n.3.

defining how the funds should be used and allocated<sup>10</sup>. This poses a series of challenges on how these new type of networks can be managed effectively beyond the traditional flat and loosely coupled models that characterized traditional project based networks (such as Networks of Excellence)<sup>11</sup>. New issues arise within these networks to arrange long term pooling of resources, to balance the autonomy of the partners and their coordination through decisional delegation, to effectively manage intellectual property, and to identify new organizational roles and structures.

This tendency raises a basic question: is a reflection of the increasing complexity of managing R&D or is simply a reflection of the current management of EC research policies? If the latter one must question such policies, if the former one should ask which are the appropriate governance models to manage partnerships characterized by such size and complexity (e.g. rise, manage and allocate resources)? Furthermore, in as much as such tendency reflects new R&D needs, one should recognize that the governance of the ERA cannot be treated just in terms of the needed coordination among the traditional levels and players (EC, national, regional funding agencies), but in terms of developing governance structures that can adapt to these needs reinforcing an open, integrated and competitive ERA. The solution should not be to create even more complex superstructures for coordination, but to develop relatively simple and transparent organizational forms that respond to R&D needs.

Integration of R&D activities should be the result of a proper competitive process in which more ambitious S&T programmes are undertaken, but integration can not be a separate objective or pre-requisite, since then it is likely to distort research funding. The experience of different financing instruments in the last FPs, oriented to foster 'integration' is revealing. For example, as it has been note in the case of Networks of Excellence, although durable

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<sup>10</sup> The tendency of structuring ERA networks around a smaller number of projects characterized by a larger scale, more heterogeneity, stronger integration, more durability, has also been noted as regards the evolution of the FP6 in respect to previous FPs (see ERAnets: evaluation of NETworks of collaboration among participants in IST research and their Evolution to collaborations in the European Research Area, RAND Eruope, 2005). Similar trends have been underlined by the Evaluation of the effectiveness of the New instruments of FP6, Report of a High-level panel chaired by Prof. Marimon, June 2004.

<sup>11</sup> Even if "durable integration" was in intended aim of Networks of Excellence, it seems that in practice this have been intended by the funded networks more in terms of mere collaboration and as regards durability, "top management of organizations were reluctant to give such a long term in depth commitment" Independent Rapporteur Report "On the three dedicated workshops on the main FP6 instruments", March 2006, Ilse Vickers, University College London. The same difficulties in establishing a durable integration in NoEs were highlighted by the Evaluation of the effectiveness of the New instruments of FP6, Report of a High-level panel chaired by Prof. Marimon, June 2004.

integration among research organizations was an expected outcome, this goal has been hardly achieved. Furthermore, the issue of integration pertains also the inter sectoral level, whereby business organizations are expected to be actively involved in research networks assuming the role of partners rather than mere counterparts. On the other hand, it has been noted that effective business involvement is one of the weakest achievements in R&D funding, both in terms of participation in research network, and in terms of business contribution to R&D expenditure. Up to now, business involvement has been pursued through the creation of links and connections between research organizations and companies through the funding of knowledge transfer activities or mobility programmes. Yet, it seems that the "perceived value" of these actions is in most cases too low. As a result, organizations hardly engage in setting up effective collaborations. For universities the collaboration with businesses is seen solely as a means to acquire additional resources, while businesses hardly benefit from the potential knowledge generated by universities.

One should not conclude from these experiences that there are no potential benefits from a better communication and/or integration among different S&T actors. The problem usually relies in assuming that the institutional shape of the actors concerned is appropriate to enable such type of collaborations or integrations. For example, the effectiveness of actions aimed at improving mobility (especially with businesses) and attractiveness of research positions depends also on how universities manage careers, statuses of researchers and human resources. Similarly, the effective integration among different research organizations crucially depends on the mutual long-term gains that can achieve from such integration, and often these gains can only materialize with appropriate organizational reforms (e.g. with more autonomy of the units participating in an intra-organizational collaboration).

From the governance perspective there are two lessons to extract from these experiences. First, the value added is not so much in creating new superstructures for 'integration' but in creating the incentives for existing organizations to reform as to make them more competitive as to undertake more ambitious R&D programmes. These programmes are likely to be more complex, large and lasting, than individual research projects. Nevertheless, the above principles of 'trust' also apply; in particular, the independence principles.

The independence between 'funding managers' and 'research performers' does not preclude that 'research performers', properly selected through a competitive – or 'tournament' –

process can not, in turn, allocate funds; for example, through additional competitive bids to fulfil specific aspects of their projects or programmes (e.g. hiring researchers, etc.). ‘Research performers’ whose reputation is at stake should have the right incentive to allocate their funds properly. But -- and this is the second lesson -- ‘research performers’ should not be transformed into ‘funding agencies’. This transformation, not only creates a misallocation of talents, but also distorts incentives. R&D funding agencies should be evaluated according to their funding mission (only indirectly related to results), while R&D activities should be evaluated according to their R&D direct results. This seems to be a pervasive confusion in EU funding, which results in futile and costly attempts to substitute ex-post critical research evaluations by ‘financial audits’.

### **Weak intergovernmental cooperation**

As already mentioned, European trans-national governmental cooperation in R&D has a long tradition, but such trans-national cooperation has not resulted in greater coordination and integration of European S&T policies or in a common European space in Science and Innovation. The lack of intergovernmental initiatives also contrasts with the more spontaneous development of many scientific and technological communities which have developed their own webs of European collaboration; from European scientific, higher education, or technological associations, joint meetings, projects and ventures, to more ambitious collaborations, such as EUROHORC<sup>12</sup> or the European Technology Platforms (ETPs). While the Framework Programmes have helped some of these initiatives supporting, for example, some ETPs in implementing their research agendas through the creation of Joint Technology Initiatives (JTIs), support from national and regional agencies for collaborative initiatives beyond their boundaries (and beyond the need to co-finance EC programmes) has been meagre. As a result, the potential for EU collaboration and coordination remains largely unexploited.

In this direction, schemes such as ERA-Net were set with the goal to facilitate knowledge sharing among funding agencies to seek for synergies and then define common programmes. While in the ERA-Net scheme, the Commission plays only the role of facilitator, Article 169

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<sup>12</sup> The organization that assembles the heads of (37) European Research Performing (RPOs) and Research Funding Agencies (RFAs).

of the EU Treaty allows for the participation of the European Union, as an equal partner, in new research and development programmes undertaken together by several Member States. The main objective here is to go beyond mere coordination of national programmes to achieve an integration of the different national and regional programmes in a single joint one. In this case, the EU will contribute to this integration by funding the joint research programmes. In this context, preparatory activities related to inter-programme coordination such as the ERA-NET scheme<sup>13</sup>, may serve the purpose to create the conditions of an Art. 169 initiative. Notice that it is envisioned a governance process whereby OMC type of activities may trigger ERA-Nets which may, through the eventual use of ERA-Net plus, develop into an Art. 169 initiative. If this process may be clear in theory, issues related to the willingness and capacity of the various actors to embark in such a complex coordination endeavour, as well as structural constraints, render the development of the process almost ineffectual in practice.

The problem seems to lie in a combination of lack of willingness and lack of capacity to coordinate. The former because the agencies involved (with a regional or national mandate) have very weak incentives to collaborate, the latter because they are not designed to organize funding at a larger scale (and satisfy in a coordinated way the last 'trust' principle: "simple and timely implementation of contracts").

If there is a dimension in the development of the ERA in which there is clear 'governance void' is in the implementation of intergovernmental R&D funding. Ad-hoc and punctual initiatives will never mobilize the scientific and technological communities, and the political interest of national or regional authorities; as, for example, the ERC in its domain has already done. This 'governance void' is particularly worrisome since the resources for inter-governmental funding can be very large.

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<sup>13</sup> Furthermore, in order to bridge the possible gap between an ongoing ERA-NET and a planned Article 169 initiative, FP 7 gives Member States the possibility to submit a proposal for an ERA-NET "Plus" action where the Commission provides an incentive to the organisation of joint calls between national or regional research programmes by 'topping-up' joint transnational funding with Community funding. ERA-NET "Plus" will thus allow Member States to experiment with the organisation of their first joint calls for proposals and so pave the way for planned 'Article 169' initiatives at a later stage.



## **Excellence vs Cohesion and the emergence of project makers**

As we have discussed, in an Open, Integrated and Competitive ERA the emergence of strong R&D agglomerations or networks should not be a barrier for the emergence of new competitive S&T initiatives. On the contrary, the ERA as a ‘fair and open field for competition’ should enhance ‘smart specialization’ of all its regions.

There is no doubt that the balance between ‘excellence’ and ‘cohesion’ has been a major concern in the design of EU R&D policies. The FPs have been traditionally focused on promoting excellence in the context of ‘cooperative research,’ with an increasing emphasis on ‘integration’ (at least up to FP6). Other initiatives, in particular those related to the use of structural funds, have been focused on fostering cohesion, on enabling less favourite players to build capacity and, thus, be able to compete to access FP resources<sup>14</sup>. In this sense, it is envisioned a “division of goals” among programmes whereby cohesion policies create the structural conditions for all to compete on excellence and participate in the ‘FP cooperative research’ (in a more equal footing) or in the ‘purely excellence initiatives,’ such as the ERC ‘ideas’ programmes. Although there are many examples of research groups, SMEs, etc., in less R&D intensive regions of Europe that have benefited from the ‘cooperative’ approach of EU research policies, as well as ‘success examples’ in the use of structural funds, the overall experience is far from being successful.

In assessing success, we are not considering whether these policies have resolved historical socio-economic imbalances, which are at the root of R&D imbalances, but whether – and how -- these policies contribute to create a ‘fair open field for competition on excellence’ as to enable ‘smart specialization’ and integration across the European regions.

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<sup>14</sup> The importance of Structural Funds as ‘EU R&D funds’ should not be underestimated. For example, in the PF6 period of 2000 – 2006, while the FP6 funding amounted to 14496 million euros, the corresponding part of Structural Funds amounted to 10690. ‘R&D structural funds’ were larger than FP6 funds in: Estonia, Ireland, Greece, Spain, Latvia, Lithuania, Poland and Portugal. ‘R&D structural funds’ include: i) Research projects based in universities and research institutes; ii) Innovation and technology transfers, establishment of networks and partnerships between business; iii) RTDI infrastructures, and iv) Research technological development and innovation (RTDI). (Source: DG Research).

As we have already discussed, these long-term objectives require policy and institutional reforms at the national and regional levels, and the lack of them in receiving regions is in many cases the main factor why this right balance between ‘excellence’ and ‘cohesion’ is not being achieved. But from a governance perspective there are two additional factors that deserve to be mentioned.

First, while ‘R&D structural funds’ are an important source of EU R&D funding, and in many countries or regions, they are the main source, the ‘governance structure’ through which they are assigned is general fairly weak (in terms of the stated principles of ‘trust and efficiency’), as a result it is not surprising that they have not fulfilled the desired role of ‘building capacities’ in many cases. Furthermore, their potential role in helping the ‘smart specialization’ of less R&D intensive regions can hardly be fulfilled if it is expected that these regions ‘align their priorities’ with those of the Framework Programme, which necessarily will assign them a relegated role<sup>15</sup>. Once more, the emphasis should be on ‘how these regions compete?’ more than in ‘what these regions compete?’. Making emphasis in ‘the how’ immediately reveals that the assignment of ‘R&D structural funds’ should follow evaluation procedures ‘aligned’ with more general evaluation procedures pursuing excellence, otherwise capacities may never build up.

Second, the geography of ERA resources allocation seems go in the direction of an increasing concentration around some “knowledge hubs” while crowding out other players. In particular, research organizations and universities located in less favourite areas and SMEs, seem to play an increasing peripheral role in the ERA; while they are involved in research projects, they seem to become increasingly dependant on “knowledge hubs” to access knowledge and partnership opportunities. Some major knowledge hubs, whether they are large businesses or research organizations, are increasingly playing the role of “gate keepers” that hold the key to access other networks, resources and information. All these trends may signal a situation where "FP6 may have encouraged the formation of an even tighter "inside group" than previous FPs<sup>16</sup>. Another way to see this issue is that concentration is happening not

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<sup>15</sup> A recent document of CREST (2007), while being very thoughtful regarding these problems, advocates this principle of ‘aligning’ priorities with FPs.

<sup>16</sup> These trends in concentration, strung clustering around large hubs, risks of crowding out effects on SMEs, are, for example, reported in "ERAnets: evaluation of NETworks of collaboration among participants in IST research and their Evolution to collaborations in the European Research Area, RAND Eruope, 2005". See

necessarily on the base of competition on excellence but rather on "project capacity". Those players that are more equipped in mobilizing the proper mix of partners to match a balance of "political / excellence" criteria, to cope with the procedural/technical aspects of submitting a proposal and to manage the administration of large consortia<sup>17</sup>, are those that acquire a higher share of resources, drive the research and management agenda of the project, keep the contacts with the funding bodies, and thus improve their capacity to "submit another proposal", acting de facto as gate keepers for "who is in and who is out". In summary, instruments that were originally designed to enhance 'integration' across the ERA, may have resulted in a deteriorating factor of the right balance between 'excellence' and 'cohesion.'

## 5. Achieving an *Open, Integrated, and Competitive European Research Area*

The ERA is now an incredibly vast field, extending beyond EU borders, yet unfortunately national or regional boundaries and regulations often define the extent by which Ideas, Innovations and Researchers compete and, as we have argued, to become **Competitive** all these barriers must be removed. The ERA not only needs to be **Open** with respect to the outside world (becoming an area of attraction for researchers, innovative firms and R&D investments), but must be "Open within" otherwise it cannot be externally competitive.

A 'fair competitive field' means that there are institutions and rules guaranteeing fair R&D competition; in particular, guaranteeing open access to new players, a necessary condition for each region within the ERA to have its own fair chance to compete and to become competitive. In an **Integrated** Research Area this goal can be achieved since the emergence of strong R&D agglomerations can, and must, go together with the development of a decentralized R&D and Higher Education base of excellence across all European regions. Only with such a local base and non-local perspective, is regional 'smart specialization'

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also "Evaluation of progress towards a European Research Area for Information Society Technologies January 2006 CESPRI – Bocconi".

<sup>17</sup> In general, it has been observed that the preparation of a project proposal implies high risk, unreasonably high costs, and excessive bureaucracy. This, combined with the increased size and budget of the average project and a smaller number of projects awarded, may favour those organizations specializing in "proposal management" rather than those that may have lack such capacity while possessing appropriate scientific and technological competences. Similar effects stem not just from the proposal preparation phase, but also from the actual management of the project which requires specialized competences and capacities in managing large size consortia for an increasing time span. On this, see also the Evaluation of the effectiveness of the New instruments of FP6, Report of a High-level panel chaired by Prof. Marimon, June 2004.

possible. Only then do pursuing ‘excellence’ and ‘cohesion’ become complementary objectives.

### **EU and ERA States policy reforms.**

There is a broad range of measures that the EU should adopt, and countries should enforce, in order to develop an ‘Open and Competitive European Research Area’, most of which have already been repeatedly cited:

- a (cost-effective) European Patent system<sup>18</sup>;
- the full development of a financial market for venture capital investments;
- lowering the cost of creation of new (technological) firms and, in particular, the costs of growing from new to competitively established firms;
- low – EU-wide – barriers to the mobility of researchers (including sectorial mobility, and notably with the private sector);
- the provision of better career prospects and working environments to researchers
- *the development of a legal framework allowing for the creation of EU Foundations for the funding or promotion of S&T initiatives*;
- *new community financial rules based on trust and proper S&T evaluation*
- etc.

To implement most of these measures effectively, policy reforms at the EU and national levels are needed. Some of these reforms correspond to deepening the EU single market; in particular for services and the highly-skilled labour market. Other reforms involve changing public institutions, regulations, or practices that, in practice, represent barriers to openness and competition. For example, researcher career mobility is, in principle, acknowledged in all EU countries, but most research and academic institutions across continental Europe remain effectively secluded within their national boundaries with regard to the full development of research or academic careers. In other words, fully developing ‘the extent of the EU market’ also means developing a more open and competitive environment for public institutions, which does not however mean they should lose their public service mission towards their own communities.

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<sup>18</sup> It is beyond the scope of this document to discuss what an optimal IPR policy should be.

We have emphasized the legal-financial reforms at the EU level, since these are now major obstacles for an effective implementation of EU research policies and for setting new institutions that should help to implement these, and cooperative intergovernmental, policies. For example, the existence of Executive Agencies – such as the ERC – is not enough to overcome the bureaucratic-financial complexity that has traditionally characterized FP funding; in particular, the ERC is subject to the same ‘financial regulations’ of the European Commission.

### **Improving Governance in the ERA**

A better governance of the European Research Area is not separable from a multilevel institutional modernization of those actors involved (research organizations, national and regional funding bodies, EC), as much as the achievability of many of the goals of the ERA depends also on the reform of the institutional configuration of the relevant knowledge players. The Era Rationales Report states: "The importance of the institutional level also serves to make the point that improving the efficiency and effectiveness of research institutions (universities and public research organisations) should be a key ERA objective". As observed by the European Universities Association, "challenging times imply challenges to established structures"<sup>19</sup> as the dynamics of development often requires old institutions to change or new ones to emerge<sup>20</sup>.

Regarding institutional modernization, our previous discussion suggests **a basic principle:**

**“Create the external and internal incentives for R&D institutions to effectively contribute to an *Open, Integrated and Competitive European Research Area*.”**

This principle has immediate consequences when applied to different institutions. For example, it is questionable whether a university can establish a deeper partnership with a company if business experience is not recognized as a valuable asset in a researcher's curriculum and career, the university does not have the necessary flexibility and

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<sup>19</sup> A Vision and strategy for Europe's universities and the European University Association. EUA 2006.

<sup>20</sup> Richard Nelson, "What enables rapid progress: what are the needed institutions?" Research Policy, 37 (2008), 1-11.

professionalism to meet business needs and the partnership is only conceived as an external source of funding for the university (i.e. only short-run pecuniary incentives are present). Similarly, to achieve effective integration it may be more suitable to establish a stable partnership by groups of researchers rather than a formal inter-institutional agreement. The first example calls for ‘university autonomy’, since with it universities can find their most adequate partnership model with the business world. The second example calls for flexible forms within organizations, since with them effective integration can evolve without being paralyzed by institutional regulations, while mere institutional agreements often do not mobilize the appropriate groups within the organizations.

At the EU level, the issue of institutional modernization is delicate because reforms in the domain of research and education are mainly, if not exclusively, competence of Member States (subsidiarity). But EU research policy can still play a role in applying the above ‘basic principle’ in different ways. A commonly mentioned one is through ‘peer pressure,’ by endorsing best practices, acting as an active observatory of the ERA institutional modernization,..., and if possible taking actions in support of organizations and networks that take on board institutional reforms and modernization principles such as those set in the modernization agenda for universities<sup>21</sup>. But the EU can also ‘take further actions,’ by creating external incentives to organizations. In fact, many institutions are starting to compete to attract mobile researchers funded through the ‘people’ (e.g. Marie Curie) or the ‘ideas’ (i.e. ERC) programmes of FP7 and in many cases these institutions must adopt reforms reducing barriers to mobility to effectively compete.

In summary, the main political impetus that the European Commission can give to the process of R&D institutional modernisation is to deepen the level of Open Competition emphasizing policy actions that induce the right external incentives. In this regard, it is far from clear that the large cooperative consortia or the JTIs create the right external incentives to the corresponding institutions. It creates an incentive to strengthen their managerial capacity – which may be a positive development – but, as we have argued, it may violate ‘basic principles of independence across actors’ (funders and funded), deter competition and polarize

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<sup>21</sup> “The Commission is not a direct actor in the modernization of universities, but it can play a catalytic role, providing political impetus and targeted funding in support of reform and modernization” Delivering on the modernization agenda for universities: Education, research and innovation. Brussels COM(2006) 208 final.

scientific and technological communities (insiders vs. outsiders). In other words, may not strengthen an Open, Integrated, and Competitive ERA.

Institutional reforms are also needed among national and regional ‘funding institutions.’ The stated ‘principles of governance and trust’ can serve as a guide to assess the extent that these institutions are in need of reform. Nevertheless, no matter at what government level R&D policies are set, or how much the funding institutions are in need of reform, policies must be set with an ERA perspective and funding institutions must operate with this broader perspective. In particular, even if the allocation of R&D funds is constrained to a state or region they should be allocated on the basis of open EU (or global) competition. As we have argued, only within an Open and Competitive ERA, can regions find the appropriate specialization. Regarding the operation of national and regional funding institutions, EU policy may also have a leverage effect.

### **Project evaluation as a service**

The evaluation of R&D projects is a service that does not need to be linked to the design and funding of a specific R&D program. In particular, centralized agencies, such as the ERC on fundamental research and the EIT on innovation, could easily share their knowledge and experience, providing a service to national and regional governments pursuing excellence<sup>22</sup> (in the way that the German Research Foundation provides services to the federal and state governments). But to have a unique evaluation agency in the EU may not be the best way to guarantee the open competition of ideas. In an EU27 there is room for multiple agencies – possibly specialized by broad themes or type of funding – that, in contrast with national or regional agencies, have an ERA perspective. These agencies could then provide a service in evaluating, and helping to design, programmes led by different political institutions (EC, Member States in flexible cooperative agreements, etc.) or stakeholders, while preserving the principles of ‘trust’; in particular those of ‘time’ and ‘scope’.

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<sup>22</sup> For example, it is a social waste that the outcome of the evaluations of the ‘first call’ is not used to guide the funding of young researchers at the national or regional level.

In summary, we propose the creation of new autonomous agencies that have the needed "trust" and legitimacy from the target institutions<sup>23</sup>. On the base of some recent trends and experiences in other domains (such as monetary policy), we think that a key element to ensure trust is the involvement of high-level representatives of the stakeholder's communities in the governance of such agencies. On the other hand, one must by all means avoid the risk of transforming this "representational" type of involvement into less transparent forms of cooptation. In fact, as we have argued, the 'blurring of funding and spending' activities may generate conflicts of interest 'blurring' the necessary 'trust' in the institutions and deterring open competition. Also one must also be careful that there is not 'adverse selection' of shareholders (i.e. the selection of those with more political cloud).

While we have argued for having 'more than one EU funding agency,' given that competitive and professional 'funding agencies' are costly, and that there are economies of scope, there should be few and very well known within the ERA. In particular, while the European Commission is clearly accountable for its actions (which often results in too much red-tape attached!), clear forms of accountability for their management of public funds should be set; having a limited number of them may not only be more economically efficient but also make proper accountability possible.

Finally, in the transition process of establishing these new agencies, one must also take into account that, to a large extent, this is a process of 'human capital formation.' One should take advantage of existing capacities – for instance, within the EC services – and define and implementation plan that will better guarantee that the necessary specialized personnel will take responsibilities in these agencies.

If all these concerns are taken into account, these new forms of institutions may form the seeds for a more competitive structure of the ERA. The question arises, however, if – beyond the current trend of setting 'Executive Agencies' of the EC -- there is a legal base for such proposal. Before we conclude this document, we reply to this question in the next Section.

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<sup>23</sup> Although it is beyond the scope of this document to provide a detailed legal account of which possible typed of 'autonomous agencies,' it should be noticed that, while the recently created 'executive agencies' are a step in this direction, they are still limited by regulations anchoring them to the EC structure.



## **6. Is there a legal basis to promote the needed reforms?**

R&D policy was formulated priority of the EU, in 1986, when the Single European Act was signed. The Single European Act has transferred competencies for a common research and technology policy to the European governance level, and, in particular, it gave the Commission a procedure for implementing multiannual Framework Programmes (FPs). Since then R&D policy has become a multi-level policy area as regards agendas, institutions and budgets. The 1992 ratification of the Maastricht Treaty provided a stronger base for R&D policy of the European Union as it enabled the Commission to take initiatives to ensure coordination between Member States' and respective Community activities in R&D. Nevertheless the largest part of R&D policy is still pursued at the national level and the Member States in turn pay close attention to retaining their individual decision-making powers.

In this context, the setting up of autonomous agencies capable of acting at a European level may challenge the subsidiarity principle which places research at the boundary between Member States Community competence. Such a challenge is more evident if we observe that one of the key players in the ERA, namely universities, root their potential contribution to Lisbon in the hardly separable relationship between research and teaching, being the latter full responsibility of Member States. Exemplary in this is the modernization of universities; undoubtedly, this is a key requirement in creating an ERA; but undoubtedly European action at this level triggers the issue of subsidiarity. The question is: is there a legal basis to set up agencies that, more or less directly, will have an impact on institutional domains which are traditionally under the competence of Member States, such as universities?

But as recent experience shows, such a question is not the right one as Community level actions have been jointly endorsed by Member States in domains where no legal basis was actually available. Yet, the provision of a legal base has been in some cases the outcome, rather than the premise, of important EU level efforts.

The recent case of Energy can be rather telling in this respect. In Hampton Court, heads of state and government reached an agreement to take forward work in the energy sector. As a major step toward meeting the energy challenges facing the EU, in January 2007 the European

Commission proposed a comprehensive package of measures to establish a new Energy Policy for Europe to combat climate change and boost the EU's energy security and competitiveness. The Commission's Communication "An Energy Policy for Europe" set a series of ambitious targets on greenhouse gas emissions and renewable energy and aim to create a true internal market for energy and strengthen effective regulation. In March 2007 the European Council approved the Commission proposal by unanimity, and adopted a comprehensive energy Action Plan for the period 2007-2009, setting precise, legally binding targets as a symbol of Europe's determination. This decision showed that, on grand challenges which are perceived as strategic for Europe as a whole, the Community is able to mobilize the needed support and commitment both in accepting clear targets, and to ask Member States for fair efforts, reflecting their different starting points and circumstances.

In spite of the fact that Energy is not an exclusive competence of the European Union, and it is not considered a common policy by the treaties, the importance of this issue and the scale of the climate challenges set the context to act before a legal base is established. Therefore, in the Lisbon Treaty as regards areas of competence, the restrictions imposed have been offset by the new legal bases for tackling climate change and energy solidarity which will make it possible to implement the relevant conclusions of the European Council. The innovations brought in by the new Treaty on energy and climate change will provide a sound legal basis on which to adopt the measures on alternative energy sources and environmental protection already agreed in principle by the European Council but now needing to be translated operationally into binding legislative acts.

Similarly to energy, higher priority has also been given to research and innovation at the Hampton Court Summit as key issues on which Europe needs to act to address the challenges of globalisation. R&D policy has been therefore placed in the common agenda of Member States and defined as a priority policy for the delivery of jobs and growth. Among the various challenges addressed, also the modernisation of Europe's universities, involving their interlinked roles of education, research and innovation, has been acknowledged not only as a core condition for the success of the broader Lisbon Strategy, but as part of the wider move towards an increasingly global and knowledge-based economy. At the informal meeting at Hampton Court, universities were also acknowledged as foundations of European competitiveness and the 2006 Spring European Council agreed on stronger action at European level to drive forward this agenda in universities and research in the context of the renewed

partnership for growth and employment. However, in the National Reform Programmes based on the Integrated Guidelines for Growth and Jobs few Member States addressed these issues as a national priority. In this respect the Commission has already proposed the establishment of the European Institute of Technology (EIT) which is intended to provide an innovative model to inspire and drive change in existing universities, in particular by encouraging multidisciplinarity and developing a strong partnerships with business. Needless to say, the ERC can and is actually playing a structuring role in the ERA setting a de facto a reference process and standard in evaluating excellence and creating a context for universities differentiation and competition. Of course, the EIT and the ERC alone cannot be the only solutions in the drive to modernise Europe's universities and other actions, along the line of creating autonomous agencies, can be foreseen. As an example, there is ample room to support capacity building in Universities that want to compete at a European and global level taking on board the widely shared modernization principles that inspire the bologna process or the modernization agenda of universities.

## 7. Conclusions

It is recognized that strengthening and implementing EU-wide R&D policies is a core instrument for the full development of the Lisbon Agenda, but why should we have EU-wide R&D policies beyond those of national and regional Governments? An argument is transnational cooperation in R&D programmes and infrastructures. This is certainly a stimulus for European competitiveness in the Global Knowledge Society<sup>24</sup>, nevertheless, as we have argued, *"the main rationale for EU-wide R&D policies is based on the need to develop an Open, Integrated, and Competitive European Research Area."* Only within such an ERA can transnational cooperation achieve its full potential and - more importantly – can all European regions find their competitive advantage through a process of 'smart specialization'<sup>25</sup>. We have argued that to consolidate such an ERA – and, correspondingly, the *"fifth freedom"* of the free movement of knowledge, ideas and researchers in Europe – "EU and national and

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<sup>24</sup> In fact, under the initiative of the EC, the EU is playing a leading role in 'Global Infrastructures and Initiatives' (e.g. ITER, Global Warming).

<sup>25</sup> "Smart specialisation in a truly integrated research area is the key to attracting more R&D to Europe" argues the Knowledge Economists' Policy Brief n° 1, October 2007, by Dominique Foray<sup>25</sup> and Bart Van Ark<sup>25</sup>

regional reforms,” as well as “better governance and coordination of S&T policies” are needed.

To set the discussion of these ‘ERA needs’ into perspective, we have first discussed the ‘rationale for an *Open, Integrated, and Competitive European Research Area*,’ some basic principles of R&D governance, as well as some policy trends and weaknesses of the ERA.

Regarding reforms, we have emphasize, at the EU level, *the importance of having a proper legal framework for setting up competitive European transnational R&D institutions, working with financial rules based on trust and proper S&T evaluation*, and, at the national and regional level, the need for reforms of public Universities and other Research Performing Organizations<sup>26</sup>.

Regarding the ERA governance we have emphasized that, while there have been very positive developments – in particular, the creation of the ERC – there is an urgent need to rethink and reinforce the current governance structure. The current tendency of increased stakeholders’ involvement in the implementation of the EU research policy, while it shows the capacity to mobilize new actors in fairly complex S&T initiatives, it also raises many concerns: i) it is, to a large extent, an ad-hoc outsourcing of EC competences, given the pressure placed on the Commission to ‘simplify its services and reduce costs’; ii) it creates structures with complex mandates that may violate some basic principles of ‘governance and trust’; iii) it may unnecessarily polarize the ERA research and technological communities, with ‘insiders and outsiders,’ contrary the stated goal of achieving integration.

Based on these considerations and in order to pursue the main objective of developing an *Open, Integrated, and Competitive European Research Area*, we make the following recommendations regarding the ERA governance:

1. National or regional governments (and their funding agencies), should not only operate according the stated ‘principles of trust’ (some already do, others require reform), but should also operate according to the above ERA perspective, e.g. removing effective barriers to Open

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<sup>26</sup> See, for example, “Report of the ERA Expert Group on: ‘Strengthening research institutions with a focus on university based research’”, January 2008.

EU Competitions and taking advantage of EU evaluation capacities<sup>27</sup>, even if research has to be carried out locally.

2. EU institutions, such as the ERC (founded with the stated ‘principles of trust’), should be open to, and capable of, providing service to national and regional governments, and should design policies and programmes which can have a multiplicative, *leveraged*, effect on national and regional policies<sup>28</sup>.

3. While flexible coordination/cooperation may be the dominant mode in supporting R&D initiatives (in order to properly internalize economies of scale and scope, and knowledge spillovers), the experience in intergovernmental programmes (e.g. Eureka, ERA-Net, Article 169, etc.) shows the inherent complexity of intergovernmental governance, and suggests a different method of flexible cooperation: *to limit the intergovernmental intervention, and the EC leadership, to their policy role of setting and coordinating priorities, programmes and budgets, while delegating the evaluation, selection and management processes to ‘autonomous EU funding agencies,’* based on the stated ‘principles of trust.’

4. The current EU (EC) governance structure must be simplified and reinforced, creating new ‘autonomous EU funding agencies,’ to which properly EC and intergovernmental programmes can be delegated (consistently with 3). Nevertheless, in order for these agencies to properly fulfil their role of strengthening the ERA, careful consideration must be placed on their specific governance structure (e.g. role of the stakeholders and shareholders), their professionalism, their ability to mobilize the scientific and technological communities in open competitions, their capacity to implement programmes delegated by different governmental levels, etc.

It is common to centre the discussion on R&D policy on budgets and thematic priorities, we have almost completely, and purposely, abstracted from ‘the what’ (what should be researched, financed, etc.) to focus our attention on ‘the how’ (how should be R&D policy organized and implemented). In fact, our recurrent theme, and the corresponding policy recommendations, is no more than a vindication of the ERA – as land of the ‘fifth freedom’ – as an achievable ‘how’: An ***Open, Integrated, and Competitive European Research Area***.

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<sup>27</sup> In fact, at the local level the ‘independence principles’ (i & ii) are often too problematic to guarantee an effective ERA competition.

<sup>28</sup> ERA-NET+, where the EC provides additional funding to joint calls for specific R&D funding set by a number of national agencies, is a step in this direction. Another initiative in this direction, that will help the ERA, is the collaboration of the ERC with national & regional agencies, according to which these agencies (on a voluntary/flexible basis) fund researchers (possibly, working in their country or region) who pass the ERC standards of excellence, but can not be funded with the limited ERC funds.

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