European Economic and Social Committee

INT/358
Green Paper on the European Research Area – New Perspectives

Brussels, 24 October 2007

OPINION

of the
European Economic and Social Committee
on the
Green Paper on the European Research Area - New Perspectives
COM(2007) 161 final

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On 4 April 2007 the European Commission decided to consult the European Economic and Social Committee, under Article 262 of the Treaty establishing the European Community, on the

Green Paper on the European Research Area – New Perspectives
COM(2007) 161 final.

The Section for the Single Market, Production and Consumption, which was responsible for preparing the Committee's work on the subject, adopted its opinion on 4 October 2007. The rapporteur was **Mr Wolf**.

At its 439th plenary session, held on 24 and 25 October 2007 (meeting of 24 October), the European Economic and Social Committee adopted the following opinion by 107 votes , with 2 abstentions:

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1. Summary and recommendations

1.1 The Committee sees an urgent need to substantially step up current measures to promote research and development (R&D) in Europe, to improve the framework for R&D and to ensure adequate funding. As well as effective Community, national and business-backed R&D programmes, we need a European internal market for research and development in order to better harness and release the potential – either available now or still to be cultivated – within the European Union. This is what is meant by the European Research Area.

1.2 The Committee therefore welcomes the Commission's intention to strengthen and expand the European Research Area. The objectives defined and proposals made are broadly correct and worthy of support, but they need to be supplemented and in some cases clarified or corrected.

1.3 The Committee endorses the objective of creating an attractive European labour market for researchers which also provides for and rewards mobility. The most important issues here are contract conditions, attractive salaries, social security cover that is portable across Europe, and family integrity. The Member States in particular are very deficient in this respect. The Committee therefore calls on them above all and on the relevant social partners to correct these deficiencies and especially to also offer young researchers attractive career prospects that can compete with alternative career opportunities for top-flight academics. This will ensure that more young people will again be prepared to invest energy and time in a very difficult, demanding and selective course of study and thus help to avert the looming shortage of qualified science and technology experts in Europe.

1.4 The Committee supports the European Council's Barcelona objective. However, it has now been decided that the Community will contribute only around 2% (i.e. just one fiftieth) of the

total investment in research and development aimed for under the Barcelona objective. This means that Member States carry by far the biggest political responsibility for achieving the Barcelona objective, and industry by far the biggest economic responsibility. The Committee's recommendations are therefore addressed in particular to the Council, the Parliament and the Member States, urging them to take all the necessary steps to again make Europe the global leader in research and development and to put in place the requisite measures needed to achieve this goal.

1.5 The Committee reiterates its recommendation that the European Community should raise its contribution to the total target R&D spending to at least 3%, in order to boost the multiplier effect of Community research funding on required research investment by the Member States and industry. In addition, moneys from the Structural Funds are to be used for R&D infrastructure measures, and funding measures through the EIB stepped up. This recommendation has become even more compelling in view of the very serious and long-underrated energy and climate issues to be faced.

1.6 The Committee supports the objective of creating world-class science and technology infrastructure, but this must be backed up by long-term, reliable funding. The success and purpose of this investment is contingent on the involvement of the relevant institutes and university groups in the Member States being involved, and on committed participation of industry in technology projects. Such networking is the only way to create a complete system and produce value added for Europe.

1.7 The Committee supports the objective of strengthening research institutions – and their umbrella organisations – as the main initiators and backers of research and development. These institutions must be able to plan for the longer term, and have adequate facilities and decision-making powers. This requires greater autonomy in the use of financial resources, a sufficiently large share of basic funding, whole-project funding, the possibility of carrying resources over to the following year, the reduction of progress-hampering red tape for scientists involved in research and teaching, incentives and the promotion of high-quality work through extra research funding based on competitive tendering.

1.8 The Committee sees Joint Technology Initiatives and technology platforms as important instruments for creating technological innovation in strategically important research areas. These require public-private sector partnerships and joint research programmes, and small and medium-sized enterprises (SMEs) should also be involved as appropriate. The Knowledge and Innovation Communities (KICs) of the European Technology Institute (ETI) that are to be set up should draw on experience gained with these. Experience with ERA-Net and CORNET, as well as the EUREKA clusters, could also be valuable here.

1.9 The Committee endorses the goal of opening the European Research Area to the world. But the crucial criterion here is its attractiveness: this task can only be considered to have been accomplished when the current lamentable "brain drain" has been halted, not just in

quantitative but also in qualitative terms, i.e. in respect of the world's highest performing and most successful researchers. But in order to achieve this, all the key factors must be right: job position, facilities, working conditions, political situation, career development prospects and autonomy, personal income and social recognition.

1.10 The Committee favours the *open coordination* method, whereby Member States' strategic goals and policies are evaluated and their experience compared in order to ensure coherence and optimise European research policy. In contrast, any detailed top-down *coordination* of European research in a bid to secure general standardisation and penetrating research organisations and companies must be rejected. The Commission should therefore avoid the impression that its aim is to introduce central management of European research. It is a question of achieving a proper balance between the Community framework, Member State autonomy, and institutional and individual initiatives and planning ability. Only a plurality of methods, approaches and choice of issues can in each case ensure the best outcomes, procedures and innovations.

1.11 The Committee repeats its admonitions to cut red tape. The Committee therefore recommends that *Reducing red tape* be included as a further major policy aim in the Commission's future agenda. This means developing ways, in collaboration with the Member States and research bodies, to simplify overregulation and the deluge of European, national, regional and institutional reporting requirements, application procedures, reviews, evaluations, authorisation arrangements, etc. and reduce them to what is strictly necessary. The competitive promotion of excellence will initially increase the amount of red tape that will be required of researchers. This makes it all the more important to find an acceptable solution through reduction and simplification overall. Fear of individuals making mistakes should not lead to overregulation and obstructions for everyone.

1.12 The Committee believes it is essential that funding bodies, especially the Commission, involve staff with proven scientific expertise, who are familiar with the particular features and "community" of the scientific area in question – and maintain their knowledge over the long term (making regular job rotation counterproductive).

1.13 The Committee recommends that the European Research Area should be complemented by a *European Knowledge Area* designed to create a European knowledge-based society. This will require a solid and broad education for all citizens, and additional high-level specialised training for scientists and engineers. Hence there is also the reference to appropriate "knowledge management". Research and development build on existing knowledge to create new knowledge.

1.14 The Committee recommends that clear and comprehensible rules be developed to manage the wide range of Community instruments for promoting and coordinating R&D. This includes a summary list (and instructions for use) of all instruments and measures available to the Commission for promoting and coordinating R&D objectives. This should also show whether,

among the growing plethora of instruments, the purpose of each is adequately defined and the instruments properly separated, and whether they can be easily understood and applied both by potential users and by Commission staff or whether they need to be reorganised.

1.15 Many of the issues addressed in the Green Paper must be considered individually. For these and other relevant aspects, the reader is referred to the full text of this opinion.

2. Commission communication

2.1 The background to this Commission communication is the earlier debate about and adoption of the Seventh Framework Programme for Research and Technological Development – which has now come into effect – the research areas selected for it (so-called specific programmes), the instruments available and the participation rules. In its communication, the Commission is therefore no longer concerned with the content of research, but solely with the strategic objectives of the European Research Area.

2.2 Following a brief account of the background to the Green Paper, the Commission summarises the tasks and objectives of the European Research Area, which are discussed, examined and adjusted to take account of new developments in the light of the current situation. The communication takes as its premise the importance of European research and development for the Lisbon strategy, as well as the question of R&D competitiveness at a global level.

2.3 The following specific tasks and objectives are identified:

- **an adequate flow of competent researchers** [1] with high levels of mobility between institutions, disciplines, sectors and countries;
- **world-class research infrastructures**, integrated, networked and accessible to research teams from across Europe and the world, notably thanks to new generations of electronic communication infrastructures;
- **excellent research institutions** engaged in effective public-private cooperation and partnerships, forming the core of research and innovation "clusters" including "virtual research communities", mostly specialised in interdisciplinary areas and attracting a critical mass of human and financial resources;
- **effective knowledge-sharing**, notably between public research and industry, as well as with the public at large;
- **well-coordinated research programmes and priorities** (national, regional and European);
- **a wide opening** of the European Research Area to the world.

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1 In the German version of the communication, wording should be chosen that avoids the potential connotation of the term "Austausch" (exchange) i.e. that researchers are a "commodity" at the disposal of third parties. (Translator's note: this does not affect the English version.).

2.4 The paper gives a résumé of what has been achieved so far and, on this basis, proposes future measures to consolidate and further expand the ERA. The current EU Research Framework Programme was explicitly designed by the Commission to support such measures. Its funding has been substantially increased, although by less than the European Commission had proposed (and indeed less than the Committee had recommended). New initiatives launched in connection with the 7th Framework Programme (2007-2013), such as the European Research Council, will have an important impact on the European research landscape. The future European Institute of Technology could also help to create world-class knowledge and innovation communities.

2.5 At the same time the Commission has pointed to shortcomings that should be overcome, for example (in brief):

- Career opportunities for researchers are still limited.
- Businesses often find it difficult to work with research institutions.
- National and regional research funding is still largely uncoordinated.
- Reforms undertaken at national level often lack a European perspective and coherence.

2.6 Other aspects of the Green Paper are addressed in the Committee's comments below.

2.7 In order to stimulate a wide debate on the Green Paper, the Commission has included 35 specific questions in the text. The answers expected from Parliament, the Council, the EESC, the Committee of the Regions and the Member States, as well as researchers and research institutes, are to be incorporated into proposals for measures during 2008. Answers to many of these questions are implicitly provided in point 3 below, while some specific issues are addressed in point 4.

3. General Committee comments

3.1 **Importance of scientific excellence.** As the Committee has observed on several occasions[2] top performance in science and technology, and their conversion into a competitive economic force, are essential preconditions so as not to jeopardise our future global position and the European social model. There is therefore an urgent need to substantially step up measures in favour of research and development in Europe, to set the political priorities required for this, and to improve the necessary framework and establish the financial prerequisites. It is important to apply the principle of competition based on criteria of excellence. The Committee has on a number of occasions given its views on the rules for the requisite state aid[3].

2 CESE 983/2007, 12.7.2007.
OJ C 325, 30.12.2006, p. 16.

3 OJ C 325, 30.12.2006, p. 16.

3.2 **European internal market for research and development**. In addition to effective Community, national and industry-based research and development programmes, we need a European internal market for research and development, in order to better harness and release the potential – either available now or still to be cultivated – within the European Union. This is what is meant by the **European Research Area**.

3.3 **Overall endorsement.** The Committee therefore welcomes the Commission's stated intention to consolidate, strengthen and further expand the European Research Area (and thus press ahead with what has been a broadly favourable development). It also notes that important aspects of its previous recommendations are reflected in the text[4]. The objectives defined by the Commission are the right ones, and its proposals are generally considered to be suitable and worthy of support, but they need to be supplemented and in some cases clarified or corrected.

3.4 **Current situation**

3.4.1 **The scientific community.** The European Organisation for Nuclear Research (CERN)[5] was set up over 50 years ago. This independent effort of the international scientific community – i.e. a project mounted by leading international scientists[6] – received the support it needed from key policymakers in Europe. Thus a first-class European laboratory was set up, something that individual countries would have been unable or unwilling to finance and use on their own. For similar reasons, other transnational European organisations were later set up, such as the ECMWF, EMBO, ESRF, ESO, ESA and ILL[7].

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4 OJ C 110, 30.4.2004, p. 3.
OJ C 110, 30.4.2004, p. 98.
OJ C 157, 28.6.2005.
OJ C 65, 17.3.2006.
OJ C 185, 8.8.2006.
OJ C 309, 16.12.2006.
OJ C 325, 30.12.2006.

5 Since this title is misleading (CERN's activities extend beyond nuclear research), it is nowadays often known as the European Laboratory for Particle Physics, which gives a better description of its current work.

6 The terms "scientist" and "engineer" as used by the Committee are gender-neutral. The Committee wishes here to reiterate its often-stated commitment to full gender equality in research and development (cf. point 3.16.2).

7 ILL: Institut Laue-Langevin
ECMWF: European Centre for Medium-Range Weather Forecasts
ESRF: European Synchroton Radiation Facility
ESO: European Southern Observatory
EMBO: European Molecular Biology Organisation
ESA: European Space Agency
See also http://www.eiroforum.org.

3.4.2 **European Community**. The Treaty setting up the European Atomic Energy Community (EURATOM), which was signed on 25 March 1957, is one of the three treaties establishing the European Communities. This was the starting-point for the European Community's involvement in the sphere of research and development[8]. With the entry into force of the first R&D Framework Programme in 1986, the foundation was laid for a broad Community research policy with more far-reaching objectives than EURATOM. With the decision taken in 2000, when drawing up the Lisbon strategy, to establish a European Research Area, Europe's policymakers affirmed their intention to create a formal framework for European research. The European Research Area was to become an emblematic project whose rationale and objectives were geared towards the Lisbon strategy.

3.4.3 **Barcelona objective.** The Committee has repeatedly said that it supports the Barcelona objective formulated five years ago by the European Council as a follow-on from the Lisbon strategy. This requires that the Union's total R&D expenditure should be increased so as to reach almost 3% of GDP by 2010. Two-thirds of the required investment was to come from the private sector. However, it has now been decided that the Community will contribute only around 2% (i.e. just one fiftieth) of the total investment in research and development aimed for under the Barcelona objective.

3.5 **Political commitment of the Member States**. This means that Member States carry by far the biggest political responsibility for achieving the Barcelona objective, and industry and the private sector by far the biggest economic responsibility. The recommendations and calls of the Committee are therefore addressed in particular to the Council, the Parliament and the Member States, urging them to take all the urgently necessary steps and to support the targets set out in the Green Paper, in order to make Europe the global leader in research and development again, first by realising the Barcelona objective, and by also taking all other measures needed to achieve this goal.

3.6 **Better use of the multiplier effect of Community support for research.** Community funding for research is also very important, however, because it not only acts as an integrating and coordinating factor but above all also has a multiplier effect on the research investment provided by the Member States and industry. The strength of this multiplier effect should therefore be substantially enhanced, so that the Member States and industry can finally make the full contribution that is required to achieve the as yet unmet Barcelona objective. Europe must become aware that it was once the leading area for research and innovation and aim to revive that tradition.

3.6.1 **Increasing the Community contribution.** The Committee has in the past noted [9] that the current R&D budget is not sufficient to use this multiplier effect. It therefore repeats its

8 For a more detailed account, see CORDIS Focus Newsletter No 279 of June 2007.

9 CESE 40/2007, OJ C 325, 30.12.2006.

urgent recommendation that the Community contribution to total target R&D spending in the European Research Area, which is currently well under 2%, be increased to at least 3% at the impending budget revision in 2008. It also recommends allocating a substantial amount of resources from the Structural Funds to R&D-related infrastructure measures[10,11], as well as radically increasing support from the EIB.

3.6.2 **Urgent need for a policy decision.** A statistical bulletin just published by the Commission[12] on the current state of European research and its funding compared with that of international competitors confirms the extreme urgency of translating the Committee's above-mentioned recommendation into a policy decision. The matter is further complicated by the very serious and long-underrated energy and climate issues to be faced.

3.7 **Critical mass, pooling of resources and expertise, European value added.** The Community should address and fund primarily those research tasks and projects critical for science and technology progress that individual Member States are not prepared or economically able to support, or whose impact is substantially increased through a Community process and a networked Europe-wide approach. This will result in significant added value compared with the efforts of individual Member States.

3.8 **Infrastructure and excellent research institutions.** In many particularly relevant areas of research, costly infrastructure and large apparatus are essential to securing fundamentally new findings and technological progress, and they provide technological development (at the pre-competitive stage) with novel options for improvements and innovation. The Committee therefore considers the objective cited in the Green Paper of *Developing world-class research infrastructures* to be extremely important. Such infrastructures are the basis and catalyst for top-level research. They are a major factor in attracting the best scientists and engineers, and are thus a prime means of achieving another important objective that should be endorsed, namely the *creation of excellent research institutions* which draw attention to the emblems *European research* and *European Research Area*.

3.8.1 **ESFRI[13] list.** The Committee therefore welcomes the *ESFRI list*, which was drawn up by the Member States and the Commission, and has been commended and endorsed by the Council[14]. The Committee also notes that the primary involvement of the Member States here

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10 The Committee also welcomes the similar recommendation of the European Research Advisory Board, EURAB: http://ec.europa.eu/research/eurab/index_en.html.

11 Here, too, the Committee calls in particular on the Member States to take the necessary policy decisions.

12 European Commission: Key Figures 2007 on Science, Technology and Innovation - Towards a European knowledge area. Monday 11 June 2007.

13 ESFRI: European Strategy Forum on Research Infrastructures. http://cordis.europa.eu/esfri/.

14 Competition Council (Internal Market, Industry and Research) of 21 and 22 May 2007.

will have to be complemented by a stepped-up, reliable and sustained effort on the part of the Commission, since the political will to achieve exceptional pioneering work in science and technology is especially visible in this area. The Committee therefore emphatically endorses the consistent pursuit of the "road map" and substantial financial involvement of the Community in building and maintaining these facilities over the long term. It draws attention to the importance of proper contract arrangements to make facilities accessible and attractive to partners or users from the whole of the European Research Area, and also supports the efforts of partnerships or participation from outside Europe[15].

3.8.2 **Steady funding.** It is particularly important that funding – especially for projects conceived as long-term ventures because of the high levels of investment involved – should be steady and reliable until the objectives have been achieved, provided they meet the criterion of scientific excellence. In this area in particular, substantial fluctuations, uncertainties or even interruptions in financing not only waste costly financial investment and science and technology development work but also break down networks that have been developed, and destroy both international cooperation and trust in future commitments. This is also detrimental to the European labour market for scientists and engineers.

3.8.3 **Involvement of universities and institutes.** For this substantial investment in infrastructure projects to be effective, and for high-level research to expand as necessary, it is essential that the relevant university groups, institutes and research bodies based in the Member States be involved in a responsible capacity in developing and using the test facilities concerned: such networking is the only way to create a single system and secure European value added. Thus it is also necessary to provide adequate funding for such networking and to ensure that the *cooperation* and *ideas* elements of the programmes are given sufficient resources, in particular for travel and onsite visits and for communication systems and equipment. The Committee would also stress the key importance of promoting mobility.

3.8.4 **Unhindered mobility**. The Committee endorses the aim of ensuring unhindered mobility within the European Research Area between Member States, organisations and the private and public sectors. Mobility not only fosters career development, the pooling of knowledge and technical experience, but also generally broadens horizons, enhances good judgment and encourages cultural understanding. This is why shortcomings and unsound measures that are still obstacles to unhindered mobility must be rectified or eliminated. These include problems between Member States, insufficient recognition/portability of acquired social entitlements, as well as tax disadvantages or the strain involved in families having to relocate.

3.8.5 **Situation in the new Member States**. However, care must be taken and incentives worked out to ensure that the desirable mobility within Europe for researchers from the new Member States does not lead to a long-term intra-European "brain drain". The Committee has already

15 For instance, the ITER project.

pointed out in an earlier opinion that the creation of attractive research institutes in the new Member States is particularly important for this very reason.

3.9 **Appreciation of the European Research Area.** Efficient and successful international cooperation, especially on large-scale European Community projects, creates a feeling of team spirit between those involved, which enhances appreciation of the European Research Area and Europe's image.

3.10 **Own initiatives and scientific conferences.** CERN and the development of the European fusion research institutes are examples of both the will and ability of the scientific community to seek and find international partners on their own initiative, and to obtain international funding from governments of third countries. This is also predicated on the provision of funding for especially relevant science and technology conferences in Europe, and grants for younger European scientists in particular to take part in international conferences.

3.10.1 **Science and technology associations – civil society organisations.** Specialist conferences are the main forum for publicising and evaluating findings, pooling knowledge and ideas, launching cooperation initiatives and developing new or improved concepts. Such conferences are generally organised by science and technology associations[16], which are typical civil society organisations. The Committee therefore recommends that there should be greater awareness and recognition of their value and that their efforts to disseminate knowledge, evaluate findings and coordinate research should be drawn on more often and encouraged.

3.11 **Framework programmes.** The Committee considers the Community R&D Framework Programme and the framework programme of the European Atomic Energy Community to be the main Community instruments for realising the European Research Area. As an adjunct to the specific programmes relating to *infrastructure* and *ideas*, key incentives for coordinated cooperation (see point 3.13) are also generated in particular by the *cooperation* and *people* programmes and related funding. Adequate implementation of these programmes is thus a substantial element in creating a cross-border, synergistic identity for the *European research* and the *European Research Area*.

3.11.1 **Basic research and applications.** It is significant that basic research has been explicitly included and its crucial importance in progress and innovation recognised. This creates the need for a **balance** between the objectives of promoting basic research on the one hand, and applied and product- and process-oriented research on the other. As the Committee has often

16 For example the European Physical Society, the European Federation of National Engineering Associations, the European Federation of Chemical Engineering, the European Academies (EASAC, ALEA, IAP), etc. Many of these also belong to umbrella organisations, such as the Initiative for Science in Europe (ISE).

noted[17], there are no sharp dividing lines between these areas, but rather many interactions: they influence each other.

3.11.2 **Joint Technology Initiatives, technology platforms and the ETI.** The Committee draws attention to the special role played by Joint Technology Initiatives and technology platforms, which serve to create partnerships in strategic research areas between the public and private sectors and enable joint research programmes to be conducted. The Committee recommends that experience gained with these be drawn on when setting up the new **Knowledge and Innovation Communities (KICs)** of the European Technology Institute (ETI). Experience with ERA-Net projects and EUREKA clusters could also be valuable.

3.11.3 **SMEs**. Adequate involvement of small and medium-sized enterprises (SMEs) is particularly important in public-private partnerships, and in business partnerships too. The Committee welcomes the Commission's considerable efforts in this area to date and its desire to continue these in the future. The CORNET (Collective Research Networking) project[18], launched through ERA-Net, can also be helpful here.

3.11.4 **Withholding of data**. Free dissemination of data on new findings was and still is one of the keys to the success of modern science (cf. point 4.4.2, **Open Access**). Withholding of data raises problems, not only in relation to intellectual property issues but above all regarding the stage of development of novel/innovative technologies at which withholding data, for reasons of free-market competition[19], hinders the necessary exchange of knowledge and further cooperation with and between business partners. The Committee recommends that the Commission should examine this important question in detail, because it determines the success of cooperation, especially cooperation between the public and private sectors.

3.12 **Strengthening research institutions**. The Committee supports the very important goal of strengthening research institutions – and their umbrella organisations – as the main initiators and backers of research and development. These institutions coordinate, plan and conduct research, and the working environment, latitude of action, and research style that develop there determine the reputation and success of each body. These organisations must therefore be able to plan for the longer term, and have adequate facilities and decision-making powers. This requires greater autonomy in the use of financial resources, a sufficiently high share of basic public funding (typically at least 75-80%), whole-project funding, the possibility of carrying resources over to the following year, reduction of red tape for scientists, incentives and promotion of high-quality work through adequate long-term extra funding based on competitive tendering and performance.

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17 OJ C 325, 30.12.2006 (point 4.6 of the EESC opinion).

18 See http://www.cornet-era.net, as well as CORDIS focus, Supplement No. 24 of June 2007.

19 And, if no patent grace period has been granted, so as not to forfeit the possibility of later applying for a patent.

3.13 **Open coordination.** Key factors in encouraging bilateral *open coordination* and evaluation of research policies and strategic goals between the Member States are the tried-and-tested European-level decision-making processes relating to Commission research policy initiatives and the consultative phases involved in preparing them. The Committee also considers complementary coordinating measures with and between the Member States and the regions on specific priorities or infrastructure projects to be important and sensible in order to improve coherence and optimise European research policy. Coordination is therefore also desirable when setting up European Intergovernmental Research Organisations for large projects and infrastructure (see point 3.8). The Commission also exercises a coordinating role through the support measures under the Seventh Framework Programme (see point 3.11).

3.14 **Avoiding excessive coordination.** On the other hand, any top-down *detailed coordination* of European research as an end in itself, or with the objective of a general standardisation affecting individual projects and penetrating research organisations or companies, cannot be accepted. This might be based on the explicit intention of avoiding duplication[20] and fragmentation, for instance, but it would reduce the required diversity of research approaches and methods (see in particular point 4.7.1) and generate a negative attitude among the researchers, institutions and businesses involved. The Commission should certainly avoid the impression that its aim is to introduce central management of European research; this would further fuel the existing concern of the general public[21] in the Member States about excessive centralisation in Brussels. It is much more a question of achieving a proper balance between the Community framework, autonomous decision-making by the Member States, and institutional and individual initiatives and planning ability.

3.14.1 **Plurality of methods, approaches and choice of issues.** Only a plurality of methods, approaches and choice of issues can ensure the best outcomes, procedures and innovations in each case. Plurality is not wasteful, but is a necessary means of optimising and making progress in the search for new knowledge and techniques. The Committee recommends that the European Research Council in particular be consulted about this important issue of remits.

3.15 **Another objective: cutting red tape.** The Committee nevertheless repeats its previous pleas that the Commission should include *reducing red tape* as another major objective in the future political agenda of the European Research Area. Ways must be developed with the Member States and research bodies to simplify overregulation and the deluge of European and national institutional reporting requirements, application procedures, reviews, evaluations, authorisation arrangements, etc. and if necessary condense and reduce them to what is strictly necessary. Competition to promote excellence, secure funding etc. – which is supported by

20 In its opinion on *Science, society and the citizen in Europe* (CES 724/2001), the Committee noted (point 4.7.5): "Because of the need for proof of reproducibility, parallel or repeated experiments by other research groups, generally using modified techniques or procedures, are often categorised as duplication of research. This is in fact an essential element of scientific method and progress. It is a guarantee against errors or even falsification."

21 Cf. Lüder Gerken and Roman Herzog, "Europe's World", summer 2007 issue.

the Committee – will initially increase the amount of red tape that will be required of researchers because of administrative and approval procedures. This makes it all the more important to find an acceptable solution through a reduction and simplification of all these processes. The Committee has already[22] commented that fear of individuals making mistakes or behaving wrongly should not lead to overregulation and obstructions for everyone. The same principle should apply to the modus operandi of funding bodies and researchers.

3.16 **Attractive employment and better career opportunities.** The Committee endorses the important goal of creating an attractive labour market for researchers. This means ensuring that contracts, social security arrangements and family integrity are arranged and improved in such a way that researchers do not feel that advantage is being taken of their idealism, e.g. because of low pay, protracted contract negotiations and excessive uncertainty about their future career development. They might then come to the conclusion that their investment in very demanding, specialised training would not be rewarded by a successful career in Europe.

3.16.1 **Deficiencies in the Member States.** Deficiencies in the Member States are a particular problem, and mistakes can still be seen[23]. The Committee therefore urges in particular the Member States and the social partners in each country to rectify these deficiencies and especially to also offer young scientists attractive career opportunities with prospects for advancement, opportunities that can compete with those of alternative career paths for top-flight academics. This is the only way to ensure that more young people with the right talents are prepared to invest energy and time in a demanding and selective course of study and thus help to avert the looming shortage of science and technology experts – and graduates with the right qualifications - in Europe.

3.16.2 **Gender equality.** The Committee reiterates its commitment to equal opportunities and equal treatment of men and women. We need the best talents of both – what counts is ability and performance. (The terms "scientist", "researcher" and "engineer" are gender-neutral.)

3.16.3 **Mobility between institutions, disciplines, sectors and countries.** The Committee also endorses the objective set out in the Green Paper of improving mobility between institutions, disciplines, sectors and countries. It points to its above recommendations in this regard, and also to its earlier recommendation to create an attractive grant (sabbatical) system for personnel exchanges between academia and industry.

3.16.4 **Family integrity.** The Committee has many times mentioned a particularly important aspect of promoting mobility, namely facilitating and promoting family integrity. Important concerns here are the career of the spouse (e.g. in the case of dual-career couples), suitable schools for children and help with moving house (reimbursement of costs, taxes).

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22 Cf. CESE 983/2007, 26.7.2007, point 6.4.

23 For example, the new public services wage agreement in Germany strongly discourages mobility.

3.17 **A wide opening of the European Research Area to the world.** The Green Paper mentions opening the European Research Area to the world as a very important objective. The Committee fully supports this objective. Achieving this goal will be a crucial test of the Lisbon strategy's success.

3.17.1 **Attractiveness is the key.** However, the key factor here – signifying more than a formal opening in principle, which has already been achieved in many respects – is the attractiveness of the European Research Area: invitations to leading international researchers are the first step required; the challenge then is to actually get them to come and, in the case of European scientists working outside Europe, to ensure their eventual return.

3.17.2 **Overcoming the "brain drain" problem.** This task will not have been achieved until the current lamentable "brain drain" has been halted, not just in quantitative but also in qualitative terms, i.e. in respect of the highest performing and most successful scientists and engineers. But in order to achieve this all the key factors must be right: job position, facilities, working conditions, a stable situation, career development possibilities and autonomy, personal income (including social benefits) and social recognition.

3.18 Building on achievements. Despite the persistent lacunae and the work that is still to be done, the Committee is pleased to see that efforts so far in European research and the European Research Area are showing initial signs of success and generally point in the right direction. It is therefore important to continue that progress through ongoing and rapid growth in Europe's R&D capacity, underpinned by competition-based funding policy, networking and the impact thereof on integration and, in particular, through the creation of an attractive and stable environment and appropriate career opportunities without overregulation and centralisation. **The European Research Area must be a concept with worldwide reach.**

3.19 **European Knowledge Area.** The Committee has noted on a number of previous occasions that the European Research Area should be complemented by a "European Knowledge Area"[24]. A key reason is the goal of creating a European knowledge-based society, which presupposes a solid education for all citizens and the high-level specialised training also required for scientists and engineers. Lifelong and independent learning are also very important. Since this opinion concerns the European Research Area, the Committee would also point to the need for appropriate "knowledge management", to ensure that knowledge acquired is recorded, organised, disseminated, accessible and conserved. Research and development build on existing knowledge in order to create new knowledge.

24 Cf. in particular the EESC opinion on "Investment in Knowledge and Innovation", INT/325 (CESE 983/2007, 26.7.2007).

3.19.1 **Knowledge management and technology.** Knowledge management is also important for the safe application[25] of technical procedures, so as to ensure optimum and secure use, minimise risk and not endanger the population. In this area the Commission should also take appropriate measures in the future, in collaboration with the relevant international organisations, and promote the necessary research programmes.

3.19.2 **Textbooks and review papers.** Good textbooks, general review papers and manuals are important in maintaining, explaining and organising knowledge, and especially for high-quality training. Experience, effort and time, and freedom from other work, is required in order to produce these. The Committee recommends that such activity be included in the list of tasks that should receive funding, especially since this onerous work generally does not produce any commercial gain for the authors.

4. Specific comments on the questions posed in the Green Paper

The Committee will now offer some specific comments on the 35 questions posed in the Green Paper, insofar as these issues were not dealt with in point 3 above. For reasons of brevity most of these questions are not recapitulated in detail, but the reader is referred to the Green Paper.

4.1 Questions 1-3: **Elements of the European Research Area vision**: the basic precondition is an open social attitude to research and development which understands and respects the key importance of R&D for welfare, competitiveness, progress and culture. It is also important that there should be adequate communication between different disciplines, especially between the arts and the sciences; this should include efforts to agree on methodological principles. This is also a prerequisite for creating the necessary framework and setting priorities at all policy levels. In addition, the Commission and the Member States can do more than they have done in the past to encourage exchanges of experience between the scientific community and civil society in general, and to publicise the European Research Area, through symposiums and conferences. The media should also play a key role, but the emphasis should be on providing information rather than opinion-forming. The Committee supports the Commission's concern to ensure *an open discussion and further steps*.

4.2 Questions 8 and 10: **PhD candidates.** Action must first be taken with respect to young scientists who have completed their first degree, i.e. PhD candidates. These are not students or trainees[26] but essential contributors to research and teaching. Research and teaching in themselves, together with reading the appropriate literature, and taking part in conferences, seminars and summer schools, are the best form of further training. But participation must

25 Cf. for example the Proceedings of the International Conference on Knowledge Management in Nuclear Facilities, June 2007.

26 The objective of a doctoral thesis is to demonstrate independent scientific activity.

also be strongly promoted and made possible. Initiative and autonomy must be encouraged and rewarded; these qualities will not develop in response to a teaching-based approach.

4.3 Question 12 *et seq.*: The basis should be ETI and its Knowledge and Innovation Communities, which can be instructive.

4.3.1 Question 18: First, information should be gathered from specific cases. Risk and liability issues – e.g. where a partner drops out – should be clarified.

4.3.2 Question 19: The first step is to draw on the experience of research bodies in the Member States with existing "virtual institutes". A bottom-up approach should also be favoured.

4.3.3 Question 20: (i): Proposals should be gathered from the institutions concerned.

4.3.4 Question 20: (ii): **No objectively measurable criteria.** The Committee has very strong reservations here, as there is a risk that emphasis would be placed on quantitative criteria that are supposed to be objectively measurable, and such criteria are virtually non-existent in research[27]. Such criteria may well be useful in the case of product-oriented development, but in research they would promote short-termism and sloppiness (jockeying for funding). Even in industry, research institutes have scope for longer-term and basic research, whose importance is indeed evidenced by the most successful labs[28], but such research is not easy to justify on the basis of prescribed assessment procedures based primarily on "quantitatively measurable" criteria. The Committee also refers the reader to comments in previous opinions[29].

4.4 Question 21: **Sharing knowledge: raw data.** This is a difficult and delicate question. (At what point in the investigation chain are "raw data" produced? Their accuracy often still has to be checked or evaluated by the person who conducted the original study.) This has implications for the relationship of trust between individual researchers[30]. There is no mention of issues relating to how experiments are conducted or to interpersonal factors (team spirit, competition, priorities, etc.) among researchers. It is helpful to provide incentives to share knowledge directly. The key factor is the reproducibility of findings. The Committee strongly advises against a prescriptive approach, especially at European level; recommendations would be useful in certain cases on the minimum length of time for keeping raw data and who should be responsible for this. In addition (see also point 3.19.1 above), there is the question of general "knowledge management", in order to ensure that knowledge

27 See for instance "Erwägen, Wissen, Ethik" (EWE), 18/2007 series, issue no. 1, p. 12, chapter 3.4 (ISSN 1610-3696).

28 For example, BELL's cosmic microwave background radiation, and IBM's high-temperature superconductors.

29 See, for example, point 7.5 of CESE 983/2007, 26.7.2007.

30 In basic research, it concerns above all the priority of a discovery or idea; in applications it also concerns patent issues.

is not lost. It might also be appropriate for the European Research Council to address this question.

4.4.1 Returning to question 21: **Problems of access to information and data-sharing.** Yet another problem is addressed here, namely that of free and rapid access to data that has already been published in the specialist journals of academic publishers. Because of the current interpretation of copyright, there is no free access to online libraries and copies may no longer be sent electronically, thereby drastically restricting swift access to important science and technology literature archives and radically hindering scientific knowledge-sharing and progress.

4.4.2 **Open access.** The Committee thus urges the Commission all the more to address this question and seek new and better solutions. One possibility would be "open access" information systems[31], e.g. in recognised open-access technical journals with peer review (see below).

4.4.3 Question 23: **Grace period.** The Committee has on several occasions called for a grace period in order to reduce the tension between publishing as quickly as possible (researchers are judged on the basis of their publications) and applying first for a patent.

4.5 Questions 25-29: **Optimising research programmes and priorities.** Generally speaking the experience with ERA-Net should be brought to bear here.

4.5.1 Question 25: **Evaluation principles.** The question of common – presumably meaning harmonised – principles for peer review, quality assurance and evaluation is a difficult one, since, on the one hand, there is no perfect evaluation procedure, only better or less good ones and, on the other hand, research bodies have different approaches, at least as far as the details are concerned, which means that the (relative) effectiveness of different procedures must be taken on board as a criterion. Thus, at this point too, the Committee has reservations in principle about any intended harmonisation. It is true that peer review is undoubtedly the best procedure[32], but its quality and efficacy depend very much on the details[33]. Above all it is important to avoid cutting corners, which easily happens with the ongoing and multiple evaluations that are nowadays often required. Hence the principle of less frequent but more thorough evaluations.

4.5.2 Again (but not exclusively) relating to question 25: **Staff with expertise.** In particular it is absolutely essential that funding bodies, including the Commission, involve staff with proven

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31 See http://www.open-access.net/RMK.

32 On the other hand, the more innovative (atypical) procedures, ideas, measures or models are, the less feasible it is even for peer review to provide an accurate assessment. This makes it all the more important for there to be a plurality of competing approaches and methods (see point 3.14.1).

33 This issue is discussed in a number of articles in "Forschung und Lehre" (German Association of University Professors and Lecturers), 6/07, ISSN 0945-5604: www.forschung-und-lehre.de.

scientific expertise, who are familiar with the particular features, peers and "community" of the scientific area in question – also on the basis of previous research activity – and maintain their knowledge over the long term (making regular job rotation counterproductive). The principle that fear of individuals making mistakes should not lead to overregulation and obstructions for everyone also applies here. The example of highly successful research bodies should be followed.

4.5.3 Question 26: **Simplification.** Further simplifying the relevant rules and procedures in order to remove excessive red tape for researchers has often been mentioned as an objective. However, the Committee is aware that its general call for plurality and a "bottom-up" approach could be seen as conflicting somewhat with the call for simplification and removal of excessive red tape. It therefore endorses a coordinated approach (see also point 3.15) involving joint evaluation for all projects in which the Community and its funding programmes are, or are likely to be, substantially involved. The European Research Council should be consulted about the choice of evaluation procedures.

4.5.4 Question 29: **Membership of intergovernmental research organisations.** The meaning of "membership" must be clarified. Membership of consultative bodies is useful as, of course, is membership of the relevant oversight bodies, if these are co-financed by the Community. However, the Committee would definitely advise against membership of executive bodies.

4.6 Questions 30 and 31: **Opening to the world: international cooperation in science and technology.** The Committee fully supports the objective relating to research policy. As far as instruments are concerned, a distinction must be made between programmes that require large-scale equipment such as accelerators, nuclear fusion plants, satellites and wind tunnels, and programmes that are spread over a number of centres or share equipment. The experience of existing cases should be drawn on as far as possible, although there is a risk of generalising and therefore glossing over the differences between individual cases. Generally speaking the Committee believes that effective mechanisms or precedents already exist here, obviating the need for additional instruments.

4.7 **General comment on the Commission's questions.** The questions posed by the Commission give the impression that it is continually seeking general rules that are intended to be valid for all individual cases arising in the Member States. The Committee would have serious reservations about such an approach (see point 3.14.1).

4.7.1 **Autonomy and a "bottom-up" approach rather than standardisation.** This means that any efforts tending towards excessive standardisation should be rejected. Standardisation prevents best practice from first being empirically established through competition – which the "bottom-up" principle basically allows – between different procedures, methods and cultural approaches, and thus also prevents the advantages of gradual progression from being tapped. This is the only way to identify which approach is particularly effective, deserves further funding and can serve as an example.

4.7.2 **Existing mechanisms are adequate.** Existing mechanisms at both the policymaking and programme and project levels already provide sufficient and reasonable scope in this regard. Further measures and rules can also be introduced or adapted later, if there is a well-founded specific need.

4.8 **Existing Community instruments for promoting and coordinating R&D.** On the other hand, the Committee recommends that general, clear and comprehensible rules should be developed to manage the wide range of Community instruments for promoting and coordinating R&D. It would be very helpful if the Commission listed and described (i.e. provided comprehensible instructions for use for) **all** the instruments and measures available to it for promoting and coordinating R&D objectives. This would also show whether, among the growing plethora of instruments, the purpose of each one is adequately defined and the instruments properly separated, and whether they can be easily understood by potential users and Commission staff or need to be overhauled to make them clearer.

Brussels, 24 October 2007.

The President of the European Economic and Social Committee	The Secretary-General of the European Economic and Social Committee
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