European Parliament

The European Research Area

Evolving concept, implementation challenges

IN-DEPTH ANALYSIS

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This publication aims to provide an overview of the European Research Area concept, based on an historical perspective of more than 40 years of European policies in research. The paper focuses on the role of the different European institutions in modelling the concept and in addressing the barriers to its implementation.

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EXECUTIVE SUMMARY

In 1972, the Commission proposed the first guidelines for a Community policy on research and innovation with two dimensions: Member State cooperation in tackling common issues, and national research policy coordination. The former dimension was implemented gradually and led to the adoption of the first framework programme for Community research in 1983. To implement the latter dimension, the European Commission proposed the creation of an 'effective single area for European science' in 1973.

However, it took almost 30 years, until 2000, for the European Commission to propose the concept of a 'European Research Area' (ERA), subsequently endorsed by the European institutions. The ERA concept is based on the idea that a gain in efficiency can be obtained if isolated national research systems become more interoperable, allowing for better flows of knowledge, technology and people among them and creating a more integrated European system for research.

Between 2000 and 2004, the Commission developed the concept, to promote ERA implementation. In 2008, the Council of the European Union became more involved through the launch of the 'Ljubljana process', including the definition of a 2020 ERA Vision. In 2012, the European stakeholders – organisations funding and performing research, universities, and similar bodies – were integrated in the process. The Council's 2015 publication of an 'ERA Roadmap' aims to increase Member State participation, as they are expected to implement the necessary reforms to establish the ERA, but are considered to have been the partners least involved to date.

The activities developed at European level under the ERA concept led to more national research system integration, coordination and interoperability in Europe, especially on the issues of research infrastructures, researchers' careers and mobility, joint programming of research programmes and public-private partnerships.

However, strong barriers to reaching an optimal situation remain. Firstly, the division of research competences between European, national and regional level has not been clearly defined. Secondly, national research system diversity and the gap between the leading regions in research and innovation and those lagging behind induce tensions in the distribution of resources and on setting the right balance between competition and cooperation. Moreover, the application of the principle of using cooperation tools to foster national research policy coordination has added complexity and brought about fragmentation of the framework programme for research.

The use of legislation to enforce ERA implementation, a possibility offered by the Lisbon Treaty since 2009, has so far met strong opposition from the Council. This option is also complicated, given that neither the European research system that would emerge from the application of the ERA concept, nor the path that should be taken to reach this situation, have yet been agreed between the European institutions, the Member States and the stakeholders. The future of ERA implies intensified discussions between all these players to design a coherent European research system, to define its structure and its governance, and to agree on common objectives.

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List of main acronyms used

CREST: *Comité de la Recherche Scientifique et Technique*

ERA: European Research Area

ERAC: European Research Area Council

FP: Framework Programme

IU: Innovation Union

NRP: National reform programme

OMC: Open method of coordination

R&D: Research and development

R&I: Research and innovation

TEC: Treaty of the European Community

TFEU: Treaty on the Functioning of the European Union

Key European stakeholders for research policies

ALLEA: the federation of All European Academies was founded in 1994 and currently brings together 56 academies in more than 40 countries from the Council of Europe region.

Business Europe: is an association founded in 1958 of 40 national business federations from 34 countries representing the interests of enterprises.

CESAER: the Conference of European Schools for Advanced Engineering Education and Research – is a non-profit international association of 50 European universities of technology and engineering schools/faculties from 24 countries, founded in 1990.

EARTO: the European Association of Research and Technology Organisations is an association of 91 members representing more than 350 research and technology organisations across the European Union and countries associated with the framework programme founded in 2000.

EIROForum: this forum of eight European Intergovernmental Research Organisations was established in November 2002 by the signature of a Charter.

ESF: the European Science Foundation was established in 1974 to act as a coordinating body for Europe's main research funding and research performing organisations. Its mandate was progressively modified by the creation of Science Europe and terminated in 2016.

EUA: the European University Association founded in 2001 represents 850 universities from 47 countries.

Eurodocs: the European Council of Doctoral Candidates and Junior Researchers is a federation of 35 national association representing early stage researchers founded in 2002.

Euroscience: is the non-profit grassroots researchers' association in Europe founded in 1997.

LERU: the League of European Research Universities is an association of 21 research-intensive universities from 10 countries founded in 2002.

Nordforsk: NordForsk was established in 2005 by the Nordic Council of Ministers and represents the actors of the research systems of the Nordic countries.

Science Europe: is an association of 47 European Research Funding Organisations and Research Performing Organisations from 27 countries, founded in October 2011. It included EUROHORCs, the European Heads of Research Councils association established in 1992 to represent the national research founding organisations (national research councils).

1. Historical roots

The European Research Area (ERA) concept proposed in January 2000 had matured for almost 30 years. Indeed, the idea can be traced back to the first formulation of a European research policy at the beginning of the 1970s.

1.1. A Community policy in research and development

The European Commission communication[1] to the Council, presented by the Commissioner for Industry and Research, Altiero Spinelli in June 1972, represented the first concrete attempt to define the guidelines of a Community policy in research and development (R&D).[2] This initiative was justified not only by the expected enlargement of the Community from six to nine Member States that would increase the Community's internal R&D capacity, but also by the need for the Community to face increasing 'competition through innovation' especially from the United States and Japan. Moreover, it built on the successes of the Euratom programme and on the establishment of common research centres and networks like the European Council for Nuclear Research (CERN) and the European Molecular Biology Organization (EMBO).

This initiative was also based on evidence that large research programmes addressing social needs were required and that Member State R&D policies were facing financial limitations of the nation states. The idea of developing a common international Community strategy on research and development was seen as an additional positive outcome of this process.

This common policy would be based on two dimensions: the **coordination of national research policies** and the **cooperation of the Member States** in tackling common objectives.[3] Two key objectives of this common policy were:

- Increasing the researchers mobility and limiting the administrative and social barriers that prevent mobility;
- Rationalising investment in new large research infrastructures and promoting open access to all researchers of the Community to existing infrastructures.

The development of concerted or joint programmes financed totally (direct actions) or partially (indirect actions) by the Community was seen as the main tool to promote cooperation between Member States. While the Joint Research Centre[4] was seen as the tool best adapted to perform direct actions, the establishment of an independent European Agency for Research and Development was proposed for the implementation

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1 *Objectifs et moyens pour une politique commune de la recherche scientifique et du développement technologique*, Commission of the European Communities, COM(72) 700, 14 June 1972.

2 This follows the activities of the working group *Politique de la Recherche Scientifique et Technique* (PREST) established in March 1965 under the 'Comité de Politique économique à moyen terme'. PREST published a report in October 1967 leading to a first resolution of the Council on Community research policies on 31 October 1967. PREST published a second report in March 1969 in preparation for the 'Second Programme on mid-term economic policy' that devoted a full chapter to research policies.

3 The first dimension will lead to the development of the concept of ERA, while the second will lead to the establishment of the framework programme for research.

4 The Joint Research Centre was established in 1957 by the Euratom Treaty to carry out research activities in the field of nuclear research. The Commission suggests in the communication to extend its scope and to transform it into a polyvalent body to provide research services to meet the needs of society in many areas.

of indirect actions funded by the Community. An external body, the European Science Foundation was proposed as an additional tool to promote external cooperation with non-Member States. The Community would support this foundation financially.

In order to define priorities, a European Research and Development Committee (*Comité Européen de Recherche et de Développement* – CERD) was to be established to advise the Commission.[5] A '*Comité de Consultation et de Concertation*' would allow for discussion between the Commission and high representatives of the Member States.[6] Finally, the Council of Ministers for Research and Development would meet on a regular basis in order to adopt the decisions to establish a common policy in this field.

Difficulties were foreseen in the process of establishing this common policy. The communication warned that 'the countries of Europe will have **to formulate and implement R&D policies of unprecedented complexity and diversity**'. Member States would have to find the proper balance between national, international and European actions. It was also important to keep 'a fair distribution of the activities throughout the Community'. Moreover, it was mentioned that 'the Community itself neither can nor should do or centralise everything', that 'common policy should generate common projects only in those cases where the need for them is acknowledged' and, finally, that the establishment of a common scientific policy 'can only take place gradually'.

The 'Spinelli communication' underlined **the central role of the European Parliament** in the implementation of a common research policy for the Community in the selection of the major social issues to be tackled by cooperation, noting that 'only democratic control would enable general policy lines to be adopted in the light of social needs and the inevitable tendency to arbitrary technocratic decisions to be curbed'.

1.2. Supporting coordination: a first version of the ERA concept

On 6 January 1973, the Ortoli Commission took office, with Ralf Dahrendorf succeeding Spinelli as Commissioner for Research and Science. In its Working programme,[7] Dahrendorf outlined for the first time the idea of a European Research Area:

> *The European Community could and ought to make its contribution to overcome the limits of national thinking in the development of science and create an **effective single area for European science** in which cooperation and competition complement each other in a sensible way.*

In this statement, Dahrendorf stressed two key conflicting features of the ERA: the call for **cooperation** between the Member States through joint actions and the need to maintain **competition** between European entities (universities, research centres, researchers). Dahrendorf's objectives under this concept of a single area for European science (see table 1) reiterated mainly those proposed by Spinelli a year before. He also stressed that 'Community activities in the fields of R&D shall neither represent a copy of, nor be in competition to, national activities' and that 'the formulation of a research and development policy for the Community is a task of high complexity.'

The coordination of national policies was supposed to lead to exclusion of unnecessary duplication of work; to an increase in the effectiveness of actions through distribution

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[5] The CERD met for the first time on 4 April 1973.

[6] This committee will be established in 1974 by the Council (see CREST below).

[7] Working programme in the field of Research, Science and Education, Commission of the European Communities, SEC(73) 2000, 23 May 1973.

of work or the concentration of resources or working groups; to an improvement of the dissemination of information; and to a progressive harmonisation of the procedures in operation in the Member States and in the Community in the R&D field. To achieve this coordination, Dahrendorf stressed that 'the Community is in need of an R&D information system collecting and processing all necessary information pertaining to scientific and technological infrastructures, and concerning the Community's research policies'. The implementation of this working programme was presented in July 1973 in a Commission[8] communication.[9]

Table 1 – The objectives of the single area for European science

1	Facilitate mobility of researchers within the Community
2	Facilitate international meetings in the Community
3	Stimulate European cooperation through concerted actions and projects
4	Find European level laboratories qualified to develop in special areas of research
5	Coordinate costly long-term projects
6	Common use of expensive big instruments (research infrastructures)

Data source: Commission of the European Communities (1973).

In January 1974, the Council Resolution on the coordination of national policies[10] established the 'Scientific and Technical Research Committee' (*Comité de la Recherche Scientifique et Technique* – CREST)[11] with representatives from the Commission and the Member States, to assist the Commission and the Council in their tasks leading to the coordination of national science policies.[12]

Between 1977 and 1980, under European Commissioner Guido Brunner, the Commission made several unsuccessful attempts to promote the establishment of a common policy in the field of science and technology.[13]

1.3. Supporting cooperation: the first framework programme

1.3.1. A common research strategy for scientific and technical research

In January 1981, Etienne Davignon became the Commissioner for Industrial Affairs, Energy, Research and Science in the Thorn Commission. In October 1981, a

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[8] In the meantime, on 18 June 1973 the Council adopted a series of decisions establishing Community programmes of research in the fields of solar energy, recycling of raw materials, protection of the environment, standards and reference substances.

[9] Scientific and Technological Policy Programme, Commission of the European Communities, COM(73) 1250, 25 July 1973.

[10] Council Resolution on the coordination of national policies and the definition of projects of interest to the Community in the field of science and technology, OJ C 7, 29 January 1974, pp. 2-4.

[11] CREST replaced PREST established in 1965.

[12] Other adopted resolutions dealt with the participation of the European Communities in the European Science Foundation (created on 18 November 1974), the establishment of an experimental programme to predict the evolution of research and technology in the 30 years to come and the initial outline programme of the European Communities in the field of science and technology.

[13] In June 1977, the Commission published a communication on common research policy including a draft resolution on the guidelines for this common policy and a draft decision on the promotion of industrial research projects. The European Parliament supported these initiatives. However, despite new communications in 1979 and 1980, the Council never adopted these regulations, which were subsequently withdrawn by the Commission.

communication[14] from the Commission proposed a common strategy in scientific and technical research:

> *The autonomy of Europe, the demands of our society, the needs of the economy and industry as well as the aspirations of the scientific community all call for a true Community R&D strategy.*

The strategy, 'geared to stimulating the efficacy of European Science and to developing specific major projects of particular interest to the Community', was supported mainly by the argument of greater efficiency of funding at the European level while stating that there are limits for the Community to act.[15] The central element of this strategy was '**an overall framework programme embracing all Community research**' integrating the Community's research programmes, developed disjointedly since 1973.[16] It was expected that 'the Member States and the Community institutions would:

- discuss national policies and bring them together (making the necessary choices between national, international and Community level action);
- re-arrange priorities to take account of changes in the medium and the long term;
- decide what joint actions and initiatives should be selected.'

1.3.2. The structure of the first framework programme

Following the publication of this overall strategy, the Commission proposed the first guidelines for this framework programme in June 1982.[17] The main aim of the framework programme was to define the objectives, i.e. the topics and areas on which research cooperation will be funded at Community level. However, the Commission argued in a separate communication[18] that there was a need to promote a complementary programme to stimulate the Community's scientific and technical potential giving 'the capacity to undertake "non-constrained" operations'. 'This programme should allow for rapid identification of opportunities; speed of reaction; testing and verification of hypothesis prior to the preparation of major programmes, projects or activities; improvement of scientific communication; training through staff mobility[19] and the exchange of ideas'. In order to get advice on the development of this complementary programme, the Commission established[20] the Committee for the European Development of Science and Technology (CODEST) which replaced the CERD.

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[14] Scientific and technical research and the European Community – Proposal for the 1980s, Commission of the European Communities, COM(81) 574, 12 October 1981.

[15] 'Whilst it might well be said that the Member States can no longer afford to spend enough to achieve their ambitions, it is equally true that the Community to which they belong needs to develop ambitions to match the resources it could deploy.'

[16] In 1979, 100 million ECU were spent on these programmes, mainly on energy research, environment and raw materials. This represented 1.5% of the total budget spent in research by the Member States.

[17] Framework programme for community scientific and technical activities 1984-1987: first outline, Commission of the European Communities, SEC(82)896, 3 June 1982.

[18] 'A different kind of community activity is required to develop and reinforce the measures already undertaken at the national, international and community level, with a view to developing European science and technology in a more satisfactory way', Stimulating the Community's scientific and technical potential', Commission of the European Communities, COM(82) 322, 8 June 1982.

[19] In its resolution on the experimental Community action, the European Parliament 'urges that this programme should concentrate on the mobility of, and cooperation between, individual researchers and teams of researchers', OJ C 161, 20 June 1983, pp. 176-178.

[20] Commission Decision of 6 December 1982 on the creation of the Committee for the European Development of Science and Technology, OJ L 350, 10 December 1982, pp. 45–46.

The Community action to stimulate the efficacy of the European Economic Community's scientific and technical potential was adopted[21] in June 1983.[22] The first framework programme was adopted by a Council resolution[23] in July 1983.

1.3.3. The European Parliament and the European Research Area concept

In November 1982, the European Parliament adopted a resolution on the common research policy, calling for an independent research and industrial strategy at European level, supporting the establishment of a Community policy in this field, as proposed by the Commission. In this resolution, it appears that key elements included in the ERA concept in 2000 were already supported by the European Parliament back in 1982.

The Parliament advocated for stronger cooperation and coordination of science policies at European level. It 'expects that this cooperation and the activities of the European public research organisation will lead to **the establishment of a European "scientific area"** and better integration of national programmes, if possible, towards Community objectives'. It also placed an emphasis on the need to 'upgrade the status of European researchers' through 'increased mobility and better career prospects' and the need to put large scale research on a European footing. It asks Member States 'to increase their research efforts to at least 2.5% of their gross domestic product' (GDP). Finally, it 'insists on a Treaty amendment that will break with the existing ad hoc basis and anchor research policy firmly in the EEC Treaty with a clear allocation of responsibilities between the institutions'.

1.4. The introduction of research policy in the European treaties

1.4.1. The Single European Act

The adoption of the Single European Act in 1986[24] answered the request formulated by the European Parliament in 1982. Article 24 of the Single Act introduced a Title VI on 'Research and Technological development' to the Treaty of the European Economic Community (EEC). Under this title, the aim of the Community is to 'strengthen the scientific and technological basis of European industry'.

As presented in Article 130g,[25] 'the Community shall carry out the following activities, complementing the activities carried out in the Member States:

- implementation of research, technological development and demonstration programmes, by promoting cooperation with undertakings, research centres and universities;
- promotion of cooperation in the field of Community research, technological development, and demonstration with third countries and international organisations;
- dissemination and optimisation of the results of activities in Community research, technological development, and demonstration;
- stimulation of the training and mobility of researchers in the Community'.

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[21] Council Decision of 28 June 1983, adopting an experimental Community action to stimulate the efficacy of the European Economic Community's scientific and technical potential, OJ L 181, 6 July 1983, pp. 20-23.

[22] The plan was renewed in 1985 for the period 1985-1988.

[23] Council resolution of 25 July 1983 on framework programmes for Community research, development and demonstration activities (1984 to 1987), OJ C 208, 4 August 1983, pp. 1-4.

[24] OJ L 169, 29 June 1987, pp. 1-28, The Single European Act entered into force on 1 July 1987.

[25] This article has never been modified (Article 180 TFEU).

The two key dimensions of the common policy – coordination and cooperation – were introduced into the Treaty. Article 130h affirmed that 'Member States shall, in liaison with the Commission, coordinate among themselves the policies and programmes carried out at national level'. Article 130i gave a firm legal basis to the framework programme for research.[26]

1.4.2. The Treaty on European Union – Maastricht Treaty

In 1992, the Treaty on European Union[27] (TEU) introduced new modifications to the EEC treaty renamed the Treaty on European Community (TEC).[28] The TEU introduced in Article 3 of the TEC 'the promotion of research and technological development' as one of the activities of the European Community. It also amended some of the articles on the title on 'Research and Technological development'.[29] Modified Article 130h clarified the objective of coordination, stating that 'the Community and the Member States shall coordinate their research and technological development activities so as **to ensure that national policies and Community policies are mutually consistent**'. It also gave the Commission the ability to take initiatives to promote this coordination.

1.5. More coordination through cooperation

In January 1993, when Antonio Ruberti took office as the Commissioner for Science, Research and Technological Development in the Delors III Commission, research cooperation was booming. The third framework programme was underway and the fourth was under discussion. However, the coordination of national and Community policies remained at a preliminary stage.

1.5.1. New impetus from the European Parliament and the European Council

In May 1994, the European Parliament adopted a resolution[30] on 'coordinating the research and technological development policies of the European Community and the Member States'. The Parliament reminded the Council of its 1974 engagements and the Council and the Commission of the engagement undertaken through Article 130h of the TEC. The Parliament asked the Commission to draft proposals to improve the coordination of R&D policies between the Member States and with Community policies. The EP also asked the Council of Ministers responsible for R&D to 'consider the situation and developments as regards coordination of research policies'.

A month later, in June 1994, the presidency conclusions[31] of the European Council meeting in Corfu urged that a new impetus to be given to 'reinforced coordination of research policy'. The European Council invited 'the Council to pursue a more systematic coordination of Community and national research policies' and 'the Commission to take any useful initiatives to promote such coordination'.

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[26] More information on the evolution of the title on research in the European treaties can be found in 'Research in the European treaties', EPRS, European Parliament, March 2016.

[27] Treaty on European Union, OJ C 191, 29 July 1992, pp. 1-110. The TEU was signed on 7 February 1992 and entered into force on 1 November 1993.

[28] The consolidated version of the TEC after the TEU can be found in OJ C 224, 31 August 1992, pp. 1-130.

[29] This title becomes Title XV of the TEC.

[30] Resolution on coordinating research and technological development policies, OJ C 205, 25 July 1994, pp. 471-472.

[31] Presidency Conclusions, European Council, 24-25 June 1994.

1.5.2. A new initiative from the Commission

In answer to these calls from the European Parliament and the European Council, the Commission published a new communication[32] on R&D policies in October 1994: 'Achieving coordination through cooperation'. The Commission noted that the objective of coordination of national and European R&D policies referred to in Article 130h TEC 'has remained largely a dead letter' but 'that the time has come ... to add a new dimension to the Community's RTD activities by taking coordination measures to make the national and Community policies more consistent and, thereby, make the still over-fragmented efforts more efficient.'

The Commission proposed '**a progressive approach to achieve better coordination by intensifying cooperation** at the various stages of drafting and implementing RTD policy'. The two concepts of cooperation and coordination were to be linked with each other based on the provisions made in the different articles of the TEC. The European budget provided to stimulate cooperation would be used as a 'carrot' encouraging the Member States to fulfil the objective of better coordination of R&D policies.

The Commission recognised that the 'coordination of national policies cannot be laid down by law' but 'can only come about through common assent and must become a habit, a state of mind driven by an awareness of its obvious benefits'. The objective was to act on the definition of R&D policies, the implementation of research activities and international cooperation. On the first point, the Commission stressed the need for better information on national R&D policies and for tools to improve the forecasting activities for the evaluation of scientific and technological policy options. The Commission wished to promote interregional cooperation and to support closer political cooperation and coordination supported by regular meetings at ministerial level and by a reformed CREST Committee. As far as international cooperation was concerned, the Commission stated that 'the Union must speak with a single voice on international bodies and in order to participate in worldwide programmes'.

As a conclusion, the Commission urged the Council 'to ensure that CREST effectively completes its original mandate and spends its time on working at the appropriate level on this essential task of achieving coordination through cooperation'. The European Science and Technology Assembly (ESTA) established[33] by the Commission in March 1994 to replace CODEST was also expected to provide advice in this process.

The Council reacted[34] positively on this communication in June 1995 by acknowledging the soundness of the measures proposed by the Commission regarding the information exchange on national policies. It agreed with the priorities set for CREST[35] to analyse and compare national and Community R&D policies and for the Council and the Commission to determine strategic objectives and priorities for Community R&D policy. However, these measures covered only partly the requests formulated by the Commission in its communication.

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[32] Research and Technological Development – Achieving coordination through cooperation, Commission of the European Communities, COM(94) 438, 19 October 1994.

[33] Commission Decision of 16 March 1994 on the creation of the European Science and Technology Assembly, OJ L 98, 16 April 1994, pp. 34–36.

[34] Council conclusions on the coordination of RTD policies, Council of the European Union, 1852th Council Meeting (Research), 9 June 1995.

[35] The Council adopted in September 1995 a resolution modifying the terms of reference for the CREST, unchanged since 1974, in order to adapt its role as advisory body to promote the coordination of national and Community research policies. OJ C 264, 11 October 1995, pp. 4-5.

In its resolution[36] on the communication, the European Parliament demanded an increased role for CREST in the coordination of national and European R&D policies, as well as with other EU policies. It asked for stronger exchanges between CREST and the Parliament's Committee in charge of R&D policies. It called for the principle of unanimity, which applies to the adoption of the Framework Programme by the Council,[37] to be reconsidered. Finally, the Parliament called again 'for the creation of a **genuine European scientific exchange area**.'

2. Launching and shaping the ERA concept

At the turn of the century, the scene had been set for a policy framework to support the coordination pillar of a common European R&D policy, whereas the cooperation pillar had already been effective for more than 15 years through the framework programme. Taking office in September 1999 as Commissioner for Research in the Prodi Commission, Philippe Busquin would prove to be the successful promoter of the idea of the European Research Area proposed by Dahrendorf.

2.1. Towards a European Research Area

2.1.1. The formulation of the policy concept

In January 2000, the communication[38] 'Towards a European Research Area' was direct:

> *In Europe, the situation concerning research is worrying. ... It cannot be said that there is today a European policy on research. National research policies and Union policy overlap without forming a coherent whole. ... Decompartmentalisation and better integration of Europe's scientific and technological area is an indispensable condition for invigorating research. We need to go beyond the current static structure of '15+1' towards a more dynamic configuration.*

The concept of a European Research Area introduced in the document aimed to address this 'fragmentation, isolation and compartmentalisation of national research systems' and 'the lack of coordination in the manner in which national and European research policies are implemented'. Despite the engagement of the Council in 1974, the Commission considered that all of these actions remained to be done in order to achieve tangible coordination of national and EU research policies. In order to move forward, the Commission proposed seven dimensions on which efforts have to be targeted (see table 2). This included research infrastructures and the mobility and careers of researchers, two topics already introduced in 1972.

The Commission proposed the use of a 'full panoply of instruments' to implement the ERA concept, from practical instruments to financial instruments, legal instruments (directives and regulations) and policy coordination instruments. It considered that 'a broad-based debate has to take place first and foremost in the European institutions'. The Commission will also 'seek the views of the representative organisations established at European Level'. Insisting that the 'situation is urgent' to take advantage of 'the transition to a knowledge-based economy', the Commission concluded its communication by stating a clear vision for ERA:

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[36] Resolution on the communication from the Commission on 'Research and technological development: Achieving coordination through cooperation', OJ C 166, 3 July 1995, pp. 113-116.

[37] This will be modified in 1997 by the adoption of the Treaty of Amsterdam.

[38] Towards a European Research Area, Commission of the European Communities, COM(2000) 6, 18 January 2000.

The European research area should be an area where the scientific capacity and material resources in Member States can be put to best use, where national and European policies can be implemented more coherently, and where people and knowledge can circulate more freely; an area attractive both to European researchers and to the best researchers from third countries and built on respect for the common social and ethical values of Europeans and their diversity.

Table 2 – Themes for action included in the ERA concept in 2000

1	**A series of material resources and facilities optimised at European level**: Networking of centres of excellence and creation of virtual centres; definition of a European approach to research facilities; maximising the potential offered by electronic networks;
2	**More consistent use of public instruments and resources**: More coordinated implementation of national and European research programmes; closer relations between European organisations for science and technology cooperation;
3	**More dynamic private investment**: Better use of instruments of indirect support for research; development of effective tools for the protection of intellectual property; encouragement of risk capital investment and company start-ups;
4	**A common system of scientific and technical reference for policy implementation**: Development of the research needed for political decision-making; establishment of a common system of scientific and technical references;
5	**More abundant and mobile human resources**: Greater mobility of researchers in Europe; introduction of a European dimension into scientific careers; greater place and role for women in research; giving young people a taste for research and careers in science;
6	**A dynamic landscape, open and attractive to researchers and investment**: Greater role of the regions in the European research effort; integration of the scientific communities of Western and Eastern Europe; making Europe attractive to researchers from the rest of the world;
7	**Area of shared values**: Tackling science/society issues on a European scale; development of a shared vision of ethical issues in science and of technology.

Data source: Commission of the European Communities (2000).

2.1.2. The Lisbon strategy

At its March 2000 meeting in Lisbon, the European Council adopted[39] a new strategy for the European Union 'to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion'. In order to achieve this goal, the European Council urged the Union to work towards the objectives set in the January 2000 communication on ERA and 'asks the Council and the Commission, together with the Member States where appropriate, to take the necessary steps as part of the establishment of a European Research Area'.

This implied the need, inter alia, 'to develop appropriate mechanisms for networking national and joint research programmes', 'to encourage the development of an open method of coordination for benchmarking national research and development policies', 'to take steps to remove obstacles to the mobility of researchers in Europe by 2002' and 'to ensure that a Community patent is available by the end of 2001'.[40]

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[39] Presidency Conclusions, Lisbon European Council, 23 and 24 March 2000.

[40] The European patent remains a work in progress to this day.

Given the connections between the players in the Commission, the Portuguese government holding the Council Presidency and Ministers for Research of various Member States, the concept of ERA was immediately included as a key element of the EU's overall strategy for the decade that followed, providing previously lacking momentum to launch this concept successfully.

The Open Method of Coordination

The Open Method of Coordination[41] is the soft governance tool, adopted by the Member States in Lisbon in 2000, to ensure satisfactory progress occurs in policy areas which are primarily of Member State competence. The OMC involves:[42]

- fixing guidelines for the Union combined with specific timetables for achieving the goals which they set in the short, medium and long-term;
- establishing, where appropriate, quantitative and qualitative indicators and benchmarks against the best in the world, and tailored to the needs of different Member States and sectors as a means of comparing best practice;
- translating these European guidelines into national and regional policies by setting specific targets and adopting measures, taking into account national and regional differences;
- periodic monitoring, evaluation and peer review organised as mutual learning processes.

2.1.3. European Parliament support

In its resolution[43] on the ERA communication in May 2000, the European Parliament stated it 'believes that European research will be at its most efficient if there is a joint European research area in which joint action is taken to define joint objectives and to make the best possible use of resources to achieve these objectives'. The EP particularly stressed some dimensions of ERA: mobility and careers, research infrastructures,[44] gender balance and the international dimension. It also focused on the involvement of the private sector by strengthening the cooperation between public and private actors.

The EP wanted to 'set a target that within two years **all EU Member States invest at least 3% of GDP in scientific research**.' The EP also considered that the Framework Programme should be used in a more efficient way to improve research cooperation and coordination at European level, as well as using tools outside the Framework Programme. The EP 'concludes that a "European Research Area" requires a highly important contribution to be made by the European institutions, in particular the Commission, directed to encouraging enhancement of effort and improved coherence among diverse programmes at regional and member state level'. Benchmarking of national R&D policies is seen as a way to improve coordination.

2.1.4. The Council's reaction

In its resolution on establishing a European area for research and innovation adopted in June 2000, the Council stressed the need to encourage joint programming activities

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41 Development of an open method of coordination for benchmarking national research policies, Commission of the European Communities, SEC(2000) 1842, October 2000.

42 CREST report on the Application of the open method of coordination in favour of the Barcelona research investment objective, CREST, ST 1206 2004 INIT, 14 October 2004.

43 Resolution on the communication 'Towards a European Research Area', European Parliament, 18 May 2000, OJ C 59, 23 February 2001, pp. 250-258.

44 However the European Parliament notes that ERA 'could lead to a concentration of research facilities to the detriment of peripheral areas', a concern shared by the Committee of Regions who, in its opinion, 'urges that excellence be based more on knowledge, cooperation and the use of intelligent instruments, rather than on competition between geographical areas'.

between the Member States on a voluntary basis and asked Member States to develop 'mechanisms for progressively opening their national research programmes'. It also welcomed the OMC as a tool to benchmark national research policies.

The Council 'invites the Member States and the Commission to cooperate in order to identify and take action with a view to removing present obstacles to the mobility of researchers to facilitate the creation of a genuine European scientific community'. It also invited the Member States and the Commission to work on gender issues,[45] careers, links between science and society, and expected the proposals of the Commission inter alia on research infrastructures, opening the ERA to the rest of the world and the regional dimension of research policy in Europe.

2.2. The Sixth Framework Programme: a tool to implement the ERA

As announced in the January 2000 communication, 'in form and in context the Sixth Framework Programme (FP6) will have to be thoroughly re-thought out in the light of the project to develop the European Research Area'.

In the October 2000 communication[46] 'Making a reality of the ERA', the Commission presented the broad FP6 guidelines that should be used as a tool to 'strengthen the coherence of research activities and policies conducted in Europe' and 'put research back at the heart of society'. The programme 'must be designed to exert a more "structuring" effect on European research'.

Framework Programme 6 should support research activities in areas of public benefit selected on the criteria of excellence[47] and European Added Value. The support of these specific thematic areas should also include a structuring effect, by promoting networks and joint programming of national activities. In addition, the FP should support transversal aspects essential to the development of ERA: research infrastructure, human resources (including mobility), innovation, and the links between science and society.

In its resolution[48] on this proposal, the Council considered that ERA 'must be the product of joint and voluntary effort and partnership between the European Union, the Member States, the applicant countries, the associated countries under the fifth framework programme, and all scientific and technical research stakeholders'. The Council agreed with the Commission criteria for the selection of the thematic areas and supported the idea of joint programming and the initiative on infrastructures. It emphasised the need to develop 'new instruments and means of action', for the achievement of the ERA, such as the participation of the Community in programmes undertaken by several Member States following Articles 164 and 165 of the TEC.[49]

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[45] The Commission had already established a working group on 'Gender in Research & Industry', known as the 'Helsinki Group', following its first meeting in November 1999.

[46] Making a reality of the European Research Area, Commission of the European Communities, COM(2000) 612, 4 October 2000.

[47] The communication stresses that there is a 'need to promote excellence as well as for balanced and coherent technological development in the EU as a whole'.

[48] Council resolution of 16 November 2000 on making the European area of research and innovation a reality, OJ C 374, 28 December 2000, pp. 1–3.

[49] For the renumbering of the treaty articles, see 'Research in the European treaties', EPRS, European Parliament, March 2016.

The European Parliament resolution[50] on the proposal supported the structure planned for FP6. The Parliament was in favour of new policy instruments, integrated in the FP, to promote genuine cooperation and coordination as long as they presented an equality of opportunities for the Member States. But the EP expressed 'the strongest possible reservations' concerning the principle of a 'variable geometry' for the use of Article 169 TEC related to Community support for Member State joint initiatives. The EP 'calls on the Commission to draw up an inventory of the legal obstacles in the Member States which stand in the way of the establishment of the European Research Area and to propose legislative or regulatory harmonisation measures to remedy them'.

Taking into account these comments, in February 2001 the Commission published its proposal[51] for FP6, structured in three parts: integrating European research; structuring the ERA; and strengthening the foundations of the ERA. As suggested in the 1990s, the FP – the tool to promote cooperation – had become the tool to foster coordination.

2.3. The various dimensions of the ERA concept

The Commission published a series of communications and working documents in 2001 on the various dimensions of developing and implementing the broad ERA concept:

- **Research infrastructures:**[52] difficulties in opening access to existing infrastructures and organising the coordination to build new European ones were predicted. Two steps were needed: scientific advice underpinning infrastructure and a mechanism to support infrastructure policy decisions. The instrument suggested to achieve the objectives was a dedicated 'High-level Panel on Research Infrastructures'.[53]
- **Joint programming:**[54] FP6 would include measures to support the networking of national research programmes 'opening up to researchers from other Member States and associated countries the national or regional programmes'.[55]
- **Mobility of researchers:**[56] the strategy proposed included not only geographical, but also intersectoral mobility at stages during a researcher's career. Social, cultural and linguistic barriers had to be addressed. Internal 'brain drain' between European regions was to be avoided.[57]
- **International dimension:**[58] 'the ERA must be open to the world.' In the context of the forthcoming accession of a large number of countries into the EU, concerns were expressed regarding their successful inclusion in ERA. The establishment of a

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[50] European Parliament resolution of 15 February 2001 on the Commission communication, Making a reality of the European Research Area, OJ C 276, 1 October 2001, pp. 271–276.

[51] Proposal concerning the multiannual framework programme 2002-2006, OJ C 180E, 26 June 2001, pp. 156–176.

[52] A European Research Area for Infrastructures, Commission of the European Communities, SEC(2001) 356, 27 February 2001.

[53] The European Strategy Forum on Research Infrastructures (ESFRI) was established in 2002.

[54] The Framework Programme and the European Research Area: application of Article 169 and the networking of national programmes, Commission of the European Communities, COM(2001) 282, 30 May 2001.

[55] This includes the establishment of the ERA networks (ERANETs) and the use of Article 169 TEC.

[56] A mobility Strategy for the European Research Area, Commission of the European Communities, COM(2001) 331, 20 June 2001.

[57] The Steering Group for Human Resources and Mobility (SGHRM) was established in 2002 to work on these issues.

[58] The international dimension of the European Research Area, Commission of the European Communities, COM(2001)346, 25 June 2001.

'forum for international scientific and technological relations' was a tool to achieve coordination of national policies in this dimension.[59]

- **Regional dimension:**[60] synergies were expected between the Union's research, innovation and structural policies. As disparities were widening between regions, there was a need to support the less favoured regions, especially in view of the enlargement challenge.
- **Science and society:**[61] it was important to promote scientific culture in Europe, to bring policies closer to the citizens, and to put responsible science at the heart of policy-making. The communication called for the organisation of 'science weeks' and of a 'European Convention for Science'.[62]

2.4. New momentum to reach a new objective

2.4.1. The 3% objective

In the communication[63] 'Making change happen' of January 2002, the Commission recognised that 'momentum has built up behind the ERA'. However, efforts had to be increased in order to reach the Lisbon objectives. The Commission asked the European Council 'to endorse action to strengthen the European area of research and innovation by setting a target of 3% of GDP for the overall level of public and private spending on research and development (R&D)[64] by the end of the decade.'

At its meeting in March 2002 in Barcelona,[65] the European Council agreed 'that there must be a significant boost of the overall R&D and innovation effort in the Union' and 'that overall spending on R&D and innovation in the Union should be increased with the aim of approaching 3% of GDP by 2010'. This decision is commended[66] by the European Parliament who had supported introducing this target since 1982.

In September 2002, a Commission communication[67] laid out the path to meet the 3% objective. The framework conditions required to achieve the objective included a 'sufficient supply of highly qualified human resources, a strong public research base, a dynamic entrepreneurship culture, adequate systems of intellectual property rights, a competitive environment with research and innovation-friendly regulations and competition rules, supportive financial markets, macro-economic stability and favourable fiscal conditions'. R&D intensity varies greatly between different regions in Europe and the upcoming enlargement would lead to an even larger diversity that 'calls

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[59] The Strategic Forum for International Science and Technology Cooperation was established in 2008. More information in 'EU scientific cooperation with third countries', Vincent Reillon, EPRS, European Parliament, July 2015.

[60] The regional dimension of the European Research Area, Commission of the European Communities, COM(2001) 549, 3 October 2001.

[61] Science and Society Action Plan, Commission of the European Communities, COM(2001) 714, 4 December 2001.

[62] The first European Science Open Forum (ESOF) was organised in Stockholm in 2004.

[63] The Lisbon Strategy – Making change happen, Commission of the European Communities, COM(2002) 14, 15 January 2002.

[64] The ratio between Gross Domestic Expenditure on R&D and GDP is called 'research intensity'.

[65] Presidency Conclusions, Barcelona European Council, SN 100/1/02 REV 1, 15-16 March 2002.

[66] Resolution on the outcome of the European Council of 15-16 March 2002 in Barcelona, European Parliament, 20 March 2003, OJ C 47E, 27 February 2003, pp. 629-633.

[67] More research for Europe – towards 3% of GDP, Commission of the European Communities, COM(2002) 499, 11 September 2002.

for differentiated but coordinated policies to establish a common upwards momentum to reach the 3 % objective'. In June 2003, the Commission published[68] an action plan to set out new initiatives, like the European Technology Platforms (ETP), to support the process at European level and help the Member States reach the 3% objective.

2.4.2. New momentum for ERA

In October 2002, almost three years after the ERA launch, the Commission drew[69] preliminary lessons on the implementation of the ERA. While the concept 'has very quickly become the main reference framework for thinking on and discussion of research policy issues in Europe', the main conclusion was that **'the initiative is hampered by insufficient participation of the Member States**'.

Developed to address the weaknesses – 'insufficient funding, lack of an environment to stimulate research and exploit results, and the fragmented nature of activities and the dispersal of resources' – the ERA is redefined as a combination of three related and complementary concepts:

- **the creation of an 'internal market' in research**, an area of free movement of knowledge, researchers and technology;
- **a restructuring of the European research fabric**, in particular through improved coordination of national research activities and policies;
- **the development of a European research policy** which addresses more than the funding of research activities.

'To create concrete conditions for genuine coordination which is permanent, all-embracing and significant in scope' the Commission planned to define a formal mechanism for the coordination of research policies as a whole, make use of the full Open method of coordination (OMC), establish a structure capable of providing this coordination in an effective manner,[70] and increase the use of legal measures where they are the most effective means. The situation regarding the Candidate Countries was worrying as their 'integration into the ERA remains at a rather theoretical level'.

The Council answered[71] the Commission's criticisms positively. It affirmed that 'a continuing strong commitment of the Member States is necessary for the successful implementation of ERA'. It agreed with the use the OMC 'based on joint and voluntary efforts and in full respect of the principle of subsidiarity and the independent role of national policies' and decided to engage in 'strengthening the role of CREST in contributing to improved coordination within ERA, possibly by reviewing its mandate and working methods'. Member States were also invited to 'encourage national research organisations in Europe to coordinate their activities'. In a November 2003 resolution,[72] the European Parliament 'is critical of the Council for not following up its

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[68] Investing in research: an action plan for Europe, Commission of the European Communities, COM(2003) 226, 4 June 2003.

[69] The European Research Area: Providing new momentum, Commission of the European Communities, COM(2002) 565, 16 October 2002.

[70] CREST, which is in charge of this task, has, according to the Commission, 'not carried this out fully up to now'. The composition of the CREST and the way it operates need to be reviewed.

[71] Conclusions on progress made in the development of ERA and on providing new momentum, Council of the European Union, ST 14913 2002 INIT, 28 November 2002.

[72] Resolution on investing in research: an action plan for Europe, European Parliament, 2003/148(INI), 18 November 2003.

words with deeds and of the Member States for making little or no effort to increase their R&D expenditure'.

2.4.3. The way forward

In June 2004, the Commission adopted a communication[73] to provide perspectives for future development of the ERA. This publication specified the implementation of the Multiannual Financial Framework announced[74] in February 2004 for the period 2007-2013. The six major objectives for research and innovation were: creating European centres of excellence; launching European technological initiatives (to be known as Joint Technology Initiatives through Article 171 TEC); stimulating creativity in basic research through competition between teams at European level (through the establishment of the European Research Council); making Europe more attractive to the best researchers; developing research infrastructures of European interest; and improving the coordination of national research programmes.

The Council supported[75] these proposals and the various new tools established in previous years: joint programming; public-private partnerships; the ESFRI; and a roadmap for infrastructures. The Council stressed the need for 'coherence between national and Community R&D policies', for 'complementarity with national research systems', and for closer links between science and society. The European Parliament adopted[76] the same conclusions and took the view that 'ERA will be possible only if an increasing proportion of funding for research is allocated by the Union with a view to coordinating European, national, and regional research policies more closely and if this funding is additional to research policy in and between the Member States'.

3. From the Commission to the Council

The first key communication[77] of the Barroso Commission which took office in November 2004 with Janez Potočnik as Commissioner for Science and Research, aimed for 'a new start for the Lisbon Strategy'. In the 'Knowledge and Innovation for Growth' section, the Commission encourages more investment on research and development by both the public and private sectors. The Commission also proposes the creation of a 'European Institute of Technology' (EIT) and 'European Technology Initiatives' (JTI).

In March 2005, the European Council recognised[78] that, five years after the launch of the Lisbon Strategy, 'the results are mixed'. The 3% objective was maintained and the Seventh Framework Programme, the broad outline of which was to be announced, was expected to 'lend fresh impetus to a European research area by enhancing European cooperation, mobilising private investment and helping to fill the technology gap'.

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[73] Science and Technology, the key to Europe's future, Commission of the European Communities, COM(2004) 353, 16 June 2004.

[74] Building our common future, Commission of the European Communities, COM(2004) 101, 10 February 2004.

[75] 2624th meeting of the Council of the European Union on Competitiveness, Annex IV, Council of the European Union, ST 15259 2004 INIT, 25-26 November 2004.

[76] Guidelines for future European Union policy to support research, European Parliament, 2004/2150 (INI), 10 March 2005.

[77] Working together for growth and jobs – A new start for the Lisbon Strategy, Commission of the European Communities, COM(2005) 24, 2 February 2005.

[78] European Council – Presidency Conclusions, Council of the European Union, 7619/1/05, 23 March 2005.

3.1. New frameworks

3.1.1. The Seventh Framework Programme

The communication[79] on 'Building the ERA of knowledge for growth', published by the Commission in April 2005 introduced the structure of the Seventh Framework Programme for research (FP7) which was not 'just another Framework Programme'. The aim was to put 'the knowledge triangle of research, education and innovation to work'. If 'FP6 was designed to help realise the ERA', FP7 'resolutely puts emphasis on research themes in areas where the EU should reinforce and better exploit its knowledge base' and 'is tailored to better meet industry's needs'. The new framework programme would be organised around four objectives:

- **Cooperation**: 'To gain leadership in key scientific and technology areas';
- **Ideas**: 'To stimulate the creativity and excellence of European research' through the establishment of the European Research Council (ERC)';
- **People**: 'To develop and strengthen the human potential of European research' enhancing researcher mobility through the Marie Curie Action programme;
- **Capacities**: 'To enhance research and innovation capacity throughout Europe' and to 'bring science and society closer together'.

Through the development of new instruments like the Joint Technology Initiatives and with a proposed budget of more than €72 billion – double the amount of the FP6 budget – FP7 'will leverage national and private investments' and 'will enable the EU to meet new science and technology challenges'. EU intervention 'can often be a more efficient and effective way of spending public money on research'. More EU research 'means less fragmentation of efforts through stronger coordination, more dissemination and more excellence through competition'.

The legislative proposal for FP7 was published[80] with the communication. It was finally adopted[81] by the Council and the European Parliament in December 2006, with the structure designed by the Commission, but a budget of only €50.5 billion.

3.1.2. National Reform Programmes

In July 2005, the Council introduced a recommendation[82] on the broad guidelines for the economic policies of the Member States and the Community. This recommendation invited the Member States to establish 'national reform programmes' (NRP) to achieve the objectives set by the Lisbon Strategy. Guideline 7 referred specifically to research, confirming the 3% objective for 2010 and asking Member States to 'further develop a mix of measures appropriate to foster R&D' through six priorities: improved framework conditions; more effective and efficient public expenditure on R&D; developing and

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[79] Building the ERA of knowledge for growth, Commission of the European Communities, COM(2005) 118, 6 April 2005.

[80] Proposal for a Decision of the European Parliament and of the Council concerning the seventh framework programme of the European Community for research, technological development and demonstration activities (2007 to 2013), Commission of the European Communities, COM(2005) 119, 6 April 2005.

[81] Decision No 1982/2006/EC of the European Parliament and of the Council of 18 December 2006 concerning the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007-2013), OJ L 412, 30 December 2006, pp. 1–43.

[82] Council Recommendation of 12 July 2005 on the broad guidelines for the economic policies of the Member States and the Community (2005 to 2008), OJ L 205, 6 August 2005, pp. 28–37.

strengthening centres of excellence; developing and making better use of incentives to leverage private R&D; modernising the management of research institutions and universities; and ensuring a sufficient supply of qualified researchers.

To support the process, the Commission published[83] the 'Community Lisbon Programme', describing the actions undertaken at Community level to support the Member States. In this context, the Commission issued a communication[84] providing guidance for the Member States in the preparation of their NRP related to research with the aim to achieve the ERA. Five years after the launch of ERA, the assessment of the current situation on European R&D policy remained the same:

> *'The EU currently displays a patchwork of national and regional research and innovation systems adapted to the varying local situations. Improving their efficiency requires more systematic cooperation among Member States on addressing transnational issues and developing synergies between their research and innovation systems. Development of coherent and mutually supportive policies by the regions, Member States and European institutions is essential for strengthening the European Research and Innovation Area.'*

In order to implement the ERA, '**Member States have to reform and strengthen their public research and innovation systems**' and '**national programmes need to increase their efficiency and complementarity**'. 'Whenever relevant, the Commission will analyse the NRP from the angle of research investment targets and research and innovation policy developments.'

'Member States will report annually on their research and innovation challenges, targets and policy developments and on progress with implementing them'. To support the reforms, the Commission would develop the 'European Trend Chart on Innovation' and an information system on national research policies.[85] It would also continue to provide European platforms to share and validate good practices, bringing together the relevant stakeholders. This work would complete and support the activities of the CREST on the peer review and benchmarking of national research policies.

The Council welcomed[86] these developments inviting the Member States 'to develop and implement initiatives to stimulate research and innovation as part of the NRP' and called on them to make optimal use of CREST as a learning platform for research policy. The European Parliament called[87] for the 'adoption of the ''Open Innovation'' approach [to] boost R&D capacity in the EU' and 'appeals to the Member States to take it upon themselves to relaunch the Lisbon Strategy'. However, Parliament 'notes that the objective of investing 3% of EU GDP in research by 2010 will probably not be achieved'.

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[83] Common Actions for Growth and Employment: The Community Lisbon Programme, Commission of the European Communities, COM(2005) 330, 20 July 2005.

[84] Implementing the Community Lisbon Programme: More Research and Innovation, Commission of the European Communities, COM(2005) 488, 12 October 2005.

[85] The ERAWATCH platform was launched in January 2007. It was replaced in January 2016 by the Research and Innovation Observatory.

[86] Conclusions of the 2694th Council Meeting Competitiveness, Council of the European Union, 14155/05, 29 November 2005.

[87] Resolution on implementing the Community Lisbon Programme: more research and innovation, European Parliament, 2006/2005(INI), 5 July 2006.

3.2. Commission revival of ERA

3.2.1. Open consultation on ERA

In its October 2005 communication, the Commission announced that it would 'step up its dialogue with stakeholders to identify regulatory barriers to research and innovation'. The green paper 'The ERA: new perspectives', published[88] in April 2007, opened this consultation and served as a trigger to revive the ERA process. Despite some achievements and the launch of a range of programmes and tools[89] since 2000, there was 'still much further to go to build ERA'. The aim remained the same:

> *'The core objectives – how to overcome Europe's S&T weaknesses and fragmentation, and achieve a coherent and effective European research policy – are still at the heart of the ERA concept'.*

The ERA was redefined around six priorities on which stakeholders were invited to react (see table 3). Three additional concerns were specified: European research policy should be deeply rooted in European society; the right balance should be found between competition and cooperation; full benefit should be derived from Europe's diversity. The Commission warned that 'the ERA vision may not be fully achieved before 10 or 15 years – around 2020'.

Table 3 – The six ERA priorities in the 2007 Commission green paper

1	**An adequate flow of competent researchers.** Creating a single labour market for researchers implies ensuring effective 'brain circulation' within Europe and with partner countries, and requires the endorsement of principles to be followed by concrete implementation and the portability of social security provisions.
2	**World-class research infrastructures, integrated, networked and accessible.** The EU budget is not big enough to provide core financing for the construction of new pan-European infrastructures. A legal structure allowing the creation of appropriate partnerships is also missing.
3	**Excellent research institutions.** Diversified research institutions should be embedded in the social and economic life where they are based, while competing and cooperating across Europe and beyond. More concentration and specialisation are necessary, which requires autonomy, professional management of research, and accountability.
4	**Effective knowledge sharing.** In the ERA, knowledge must circulate without barriers throughout the whole society.
5	**Well-coordinated research programmes and priorities.** A core ERA objective has been to ensure the coherence of national and regional research programmes and priorities on issues of European interest. Some progress has been made, but falls far short of the ambition and potential in this regard. Reciprocal opening of corresponding national and regional programmes to participants from other Member States should be achieved.
6	**A wide opening of the European Research Area to the world.** Closer coordination is necessary between the EU and Member States. With neighbouring countries, there is a need to establish a borderless 'broader ERA'.

Data source: Commission of the European Communities (2007)

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[88] Green Paper The European Research Area: New Perspectives, Commission of the European Communities, COM(2007) 161, 4 April 2007.

[89] The establishment of the ERA-NETs, the development of the ESFRI Roadmap, the implementation of the Marie Curie Actions programme, the Charter and the Code for the recruitment of researchers, the creation of the ERC, the EIT, the ETPs, Article 169 partnerships and the upcoming JTIs.

3.2.2. The stakeholders' point of view

ALLEA,[90] the federation of all European academies, expressing dissatisfaction with the ERA developments noted that 'there is a need for a political will to develop ERA' and expressed that 'attention should be focused on dismantling the barriers in research.' The League of European Research Universities (LERU)[91] was highly sceptical as to the approach that 'there should be centralised coordination and direction of research at the European level' and suggested three fundamental issues to be addressed in an ERA strategy: the particular role of European vis à vis national and regional funding; the research model for Europe, the nature of collaboration and the roles of institutions; and the key processes that should be priorities for Europe-level strategy.

BusinessEurope[92] believed that 'a change of emphasis for the ERA is needed in the current definition and implementation of this policy concept' by taking a flexible approach to knowledge-intensive activities that 'may achieve far more than continued focus on European-wide harmonisation of research programmes and infrastructures'. The European Association of Research and Technology Organisations (EARTO)[93] stated that 'the Commission should maintain the pressure for progress towards a more coherent, co-ordinated approach. But the political and budgetary realities remain formidable obstacles'. For its part, the European University Association (EUA)[94] appealed for university autonomy, research careers development, an increased budget commitment for the Member States and a new use of the OMC involving universities.

The EIROForum[95] stated that 'Europe needs an autonomous and competitive ERA, in which world-class research infrastructures and facilities are an integral part'. The 'unhindered mobility of researchers' was a key objective, as well as international cooperation. Euroscience[96] considered that 'ERA needs more vision, less implementation details'. The association noted that 'the main impediment to progress in implementing the ERA has been the Member States themselves, who jealously and anachronistically guard their positions'.

Finally, the European Science Foundation (ESF) and European Heads of Research Councils (EUROHORCs)[97] considered that 'the ERA concept is too strongly focused on increasing the co-ordination of research activities. ... Fragmentation is not so much an issue of too little co-ordination, but mainly a consequence of limited competition within and across protected national research areas'. To establish ERA, 'the national players have to act in concert'.

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90 Reflections of ALLEA on ERA, ALLEA, 2007.

91 The future of the European research area, LERU, August 2007.

92 BusinessEurope's response to the ERA Green Paper, BusinessEurope, August 2007.

93 Green Paper on the European Research Area: New Perspectives, EARTO, 2007.

94 European Commission Green Paper on the European Research Area: New Perspectives, EUA, 21 September 2007.

95 EIROforum Response to the Green Paper on the European Research Area: New Perspectives, EIROForum, September 2007.

96 Some New Perspectives on the European Research Area, Euroscience, 27 September 2007.

97 Comments on the European Commission's Green Paper on the European Research Area: New Perspectives, EUROHORCs and ESF, November 2007.

3.2.3. The outcome of the consultation

In November 2007, the Council stated that it 'considers[98] that faster progress is more than ever necessary' to achieve the ambitions of the Lisbon Strategy. In January 2008, the European Parliament also considered[99] that 'greater efforts are needed in all dimensions of EU research: people, infrastructure, organisations, funding, knowledge sharing and global cooperation, in order to overcome the fragmentation of research in the EU' and that 'a broader view of the creation of the ERA is needed, involving all relevant stakeholders'.

In its conclusions[100] to the consultation in April 2008, the Commission considered that 'stakeholders express strong overall support for the ERA vision and action on all six ERA dimensions.' It also acknowledged that 'there is generally little demand for binding legislative actions at European level' and that the stakeholders 'prefer flexible and adaptable, bottom-up cooperation schemes, networking, voluntary legal frameworks, the exchange of best practices and the establishment of guidelines'.

3.3. The Council takes the lead

In March 2008 the European Council launched the second cycle of the renewed Lisbon strategy following a communication[101] from the Commission in December 2007 and a key issue paper[102] published by the Competitiveness Council in February. In this last document, the Council asked the European Union '**to create a 'fifth freedom' – the free movement of knowledge**' in addition to the four freedoms of the internal single market (goods, capital, services and people). The European Council supported[103] this initiative and the guidelines adopted in 2005 for the NRP were maintained, with Member States invited 'to set out in their NRP how their R&D strategies will contribute to the creation and better governance of the European Research Area.'

3.3.1. The Ljubljana process

Under the Slovenian presidency, the Council started[104] taking the lead on ERA. In May 2008 the Council 'acknowledges that Europe now needs to develop a common vision and effective governance of the ERA'. Council launched the 'Ljubljana Process' of 'enhanced governance based on a long-term vision on ERA developed in partnership by Member States and the Commission with broad support from stakeholders and citizens'.

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98 Outcome of proceedings of the Council (Competitiveness) – Conclusions on the Future of Science and Technology in Europe, Council of the European Union, ST 14693 2007 INIT, 23 November 2007.

99 European Parliament resolution of 31 January 2008 on the European Research Area: New Perspectives, European Parliament, 2007/2187(INI), 31 January 2008.

100 Results of the Public Consultation on the Green Paper on the European Research Area: New Perspectives, Commission of the European Communities, SEC(2008) 430, 2 April 2008.

101 Strategic Report on the renewed Lisbon strategy for growth and jobs: launching the new cycle (2008-2010), Commission of the European Communities, COM(2007) 803, 11 December 2007.

102 Turning Challenges into Opportunities, Competitiveness Council, Council of the European Union, ST 6933 2008 INIT, 26 February 2008.

103 Presidency Conclusions of the European Council March 2008 Meeting, Council of the European Union, 7652/1/08, 20 May 2008.

104 Council Conclusions on the launch of the Ljubljana Process – towards full realisation of ERA, Council of the European Union, 10231/08, 3 June 2008.

3.3.2. The 2020 Vision for the ERA

In December 2008, the Council published[105] its vision for ERA in 2020:

> *By 2020, all players will fully benefit from the 'fifth freedom' across the ERA: free circulation of researchers, knowledge and technology. The ERA provides attractive conditions and effective and efficient governance for carrying out research and investing in R&D intensive sectors in Europe. It creates significant added value by fostering healthy Europe-wide scientific competition whilst ensuring the appropriate level of cooperation and coordination. It is responsive to the needs and ambitions of citizens and contributes effectively to the sustainable development and competitiveness of Europe.*
>
> *The ERA is firmly rooted in society and responsive to its needs and ambitions in pursuit of sustainable development. The ERA defines the European way to excellence in research and is a major driver of European competitiveness in the globalised world. The ERA provides a seamless area of freedom and opportunities for dialogue, exchange and interaction open to the world.*

The vision stated that 'a significant share of public funding of research is provided through ERA-wide open competition gradually promoting the necessary specialisation and concentration of resources' while there is a 'significant support from the cohesion policy and appropriate transnational coordination to ensure optimum deployment across Europe of scientific and technological capacities'. 'Common frameworks, guidance and, where appropriate, legislation facilitate the establishment and functioning of the transnational markets and networks in which the ERA actors can interact with each other effectively and efficiently.'

Nevertheless, the Council agreed 'that coordination and cooperation activities in the ERA are organised on a voluntary basis and that their implementation takes place in variable geometry in the spirit of close cooperation between the Community and the Member States and with due respect for the principle of subsidiarity'. Council again stressed the role of CREST in this process, and invited the Commission 'to propose a limited number of monitoring indicators and evaluation criteria to measure the progress'.

In terms of governance, specific configurations of CREST were established to tackle two ERA initiatives: the 'High Level Group on Joint Programming' (*Groupe de programmation conjoint* – GPC)[106] and the 'Strategic Forum for International S&T Cooperation' (SFIC).[107]

In May 2009, the Council adopted conclusions[108] inviting 'the future Presidencies, in cooperation with CREST, to establish and regularly update a Roadmap for the implementation of the ERA Vision 2020'.

3.3.3. The Lund declaration

The Lund declaration,[109] proposed in July 2009, under the Swedish presidency of the Council, aimed to provide new impetus for research coordination and cooperation in

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[105] Council conclusions on the definition of a 2020 Vision for the European Research Area, Council of the European Union, 16767/08, 9 December 2008.

[106] Council conclusions concerning joint programming of research in Europe in response to major societal challenges, Council of the European Union, ST 16775 2008 INIT, 3 December 2008.

[107] Council conclusions concerning a European partnership for international scientific and technological cooperation, Council of the European Union, ST 16763 2008 INIT, 3 December 2008.

[108] Council conclusions on the first steps of the Ljubljana Process towards the realisation of the European Research Area Vision 2020, Council of the European Union, ST 9956 2009 INIT, 18 May 2009.

Europe and to shape the structure of the upcoming eighth framework programme. It represented the outcome of four international stakeholder workshops.

The declaration stated that '**European research must focus on the Grand Challenges of our time** moving beyond current rigid thematic approaches. This calls for a new deal among European institutions and Member States, in which European and national instruments are well aligned and cooperation builds on transparency and trust'.

4. The stakeholders enter the game

4.1. Research in the Lisbon Treaty

As the Barroso II Commission took office in February 2010, with Máire Geoghegan-Quinn as Commissioner for Research, Innovation and Science, the Lisbon Treaty, signed in December 2007, had just entered into force. The Treaty of Lisbon clarified the competences of the European Union, introducing research as a shared competence under the new Article 4 of the TEC – renamed Treaty on the Functioning of the European Union (TFEU).

The Lisbon Treaty modified the articles related to research and technological development. Article 179 TFEU (ex-163 TEC) explicitly introduced the ERA as an objective for the Union. Article 182 TFEU (ex-166 TEC) on the framework programme for research was extended by a new paragraph 5, opening up the possibility to adopt European legislation to enforce the implementation of ERA:

> *As a complement to the activities planned in the multiannual framework programme, the European Parliament and the Council, acting in accordance with the ordinary legislative procedure and after consulting the Economic and Social Committee, shall establish the measures necessary for the implementation of the European Research Area.*

4.2. A new strategy for Europe

4.2.1. Europe 2020 Strategy and the Innovation Union

In March 2010, the Commission launched[110] the Europe 2020 Strategy for smart, sustainable and inclusive growth. The Innovation Union flagship was the key initiative 'to improve framework conditions and access to finance for research and innovation so as to ensure that innovative ideas can be turned into products and services that create growth and jobs'. The objective of the 3% of research intensity not reached for 2010 should now be reached by 2020. The strategy was adopted[111] by the European Council in June 2010. In its resolution,[112] the European Parliament noted that a more research-friendly and innovation-friendly investment climate must be created.

The Innovation Union (IU) flagship was presented in more detail in a document[113] published in October 2010. The ERA became one of the components of the IU and 'must be completed within four years – putting in place the frameworks for a truly free

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[109] The Lund Declaration - Europe must focus on the grand challenges of our time, Document published under the Swedish Presidency, 8 July 2009.

[110] EUROPE 2020 A strategy for smart, sustainable and inclusive growth, European Commission, COM(2010) 2020, 3 March 2010.

[111] Conclusions of the European Council, European Council, EUCO 13/10, 17 June 2010.

[112] Resolution on EU 2020, European Parliament, P7_TA(2010)0223, 16 June 2010.

[113] Flagship Initiative Innovation Union, European Commission, COM(2010) 546, 6 October 2010.

movement of knowledge'. However, the situation was still far from optimal, as 'national and regional research and innovation systems are still working along separate tracks with only a marginal European dimension'. With the entry into force of the Lisbon treaty, the Commission noted that 'the completion of the European Research Area is a legal requirement' and that 'significant reforms to national and regional policies are required' to achieve the objectives.

In its conclusions[114] on the IU, the Council 'invites the Commission to start preparatory work and organise a broad public consultation with a view to taking measures to achieve the ERA'. It also 'stresses the importance of quickly taking all measures necessary, in line with the 'ERA vision 2020', for a well-functioning and coherent European Research Area'. The objective to complete the ERA by 2014 was endorsed[115] by the European Council in February 2011 and approved by the European Parliament who saw it as 'a Treaty obligation' in a resolution[116] of May 2011. Nevertheless, the Belgium Presidency report[117] in November 2010 pointed out that there was still a long way to go:

> *A great deal of progress has been made, but the fact that the same issues as at the start of the ERA in 2000 remain at the forefront of the policy debate shows that much remains to be done. The multiplication of initiatives and the fragmentation of efforts slow down the achievement of concrete results. Complementarity, prioritisation and efficiency should be at the core of European research policy. Better policy mixes are called for.*

4.2.2. The evolution of ERA governance

In December 2009, the Council proposed[118] working on 'efficient and enhanced governance for strategic policy development and decision-making in the ERA in which the Union and the Member States demonstrate more leadership and commitment for the achievement of the ERA Vision 2020'. There was a 'need to establish the means to provide fresh and innovative impetus on the political level in order to be able to achieve the goals of the ERA' and 'CREST should play a more proactive role'.

In May 2010, CREST was renamed[119] 'European Research Area Committee' (ERAC) and defined as 'a strategic policy advisory body whose main mission is to provide timely strategic input to the Council, the Commission and the Member States on any research and innovation issue relevant to the development of the ERA'. In May 2011, the Council clarified[120] the mandates of the ERA-related groups[121] and their link to ERAC.

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[114] Europe 2020 Flagship Initiative 'Innovation Union' – Council conclusions, Council of the European Union, ST 17165 2010 INIT, 29 November 2010.

[115] Conclusions of the European Council, European Council, EUCO 2/1/11, 4 February 2011.

[116] Resolution on Innovation Union: transforming Europe for a post-crisis world, European Parliament, P7_TA(2011)0236, 12 May 2011.

[117] Belgian Presidency progress report on the realisation of the ERA, Council of the European Union, 16191/10, 15 November 2010.

[118] Council Resolution of 3 December 2009 on the enhanced governance of the European Research Area, OJ C 323, 31 December 2009, pp. 1–4.

[119] Council Resolution on Developments in the governance of the European Research Area, Council of the European Union, ST 10255 2010 INIT, 28 May 2010.

[120] Council Conclusions on the development of the European Research Area (ERA) through ERA-related Groups, Council of the European Union, ST 11032 2011 INIT, 1 June 2011.

[121] The ESFRI, GPC, SFIC, SGHRM and the ERAC Working group on Knowledge Transfer (KT).

4.3. Involving the stakeholders

In the communication on the Innovation Union, the Commission announced that it 'will propose a European Research Area framework' in 2012. Following the resolution on governance from the Council in December 2009, the new impetus for ERA would be based on a deeper involvement by stakeholders.

4.3.1. The ERA framework consultation

In September 2011, the Commission opened a public consultation for the launch of a renewed ERA framework. In the supporting document[122] accompanying the online questionnaire, the Commission recognised that 'in spite of the good progress, the EU has not yet fully realised its research and innovation potential'. 'The issues to be tackled relate to governance deficiencies and to the underdevelopment of a clear and coherent research policy between the EU and the Member States with clear objectives and a monitoring system.' 'Furthermore, there is also scope for improving the involvement of stakeholders in EU research policy and in the implementation of ERA.'

The EUA argued[123] that 'Europe's universities must have their "place at the table" in the ERA Framework mechanisms preparing new ERA instruments'. CESAER[124] 'sees the need to enforce more and better coordination and cooperation between the national research councils in Europe', finds the 'implementation and management of ERA instruments complex and cumbersome' and 'would welcome a stronger involvement in participatory ERA policy processes'. Eurodoc recommends[125] 'that the EU, Member States, universities, research institutions and stakeholders work together' on careers and mobility. Science Europe stated[126] that 'the national research funding and performing organisations in Europe must be the backbone of the ERA' and 'envisions an ERA that is able to act flexibly and effectively at whatever scale is most appropriate to the challenge in hand'. Finally, LERU noted[127] that 'insufficient commitment of financial resources combined with Member States' reluctance to align and coordinate national resources will, unfortunately, continue to prevent true integration of joint research programmes'.

In its opinion[128] on the ERA framework, ERAC noted that 'much has already been achieved' but 'there is much more that we can do together in building an ERA based on complementary and mutually reinforcing policies in the research and innovation landscape'. ERAC stated that the 'lack of clarity in the definition of the ERA is, however, an obstacle to setting our goals' and that 'the use of legislation to address obstacles to the ERA is not widely supported by Member States and should be used only where clear and significant need is agreed'.

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[122] ERA Framework Public Consultation: Areas of untapped potential for the development of the European Research Area, European Commission, September 2011.

[123] EUA position on the EC consultation document on the 'ERA Framework', EUA, 30 November 2011.

[124] Response to the Consultation on the ERA Framework, CESAER, November 2011.

[125] Eurodoc contributions to ERA, Eurodoc, October 2011.

[126] Science Europe contribution to the public consultation on the ERA Framework, Science Europe.

[127] The ERA: Priorities for research universities, LERU, December 2011.

[128] ERAC Opinion on the development of an ERA Framework, ERAC, ST 1215 2011 INIT, 9 December 2011.

In January 2012, the preliminary report[129] on the consultation concluded that a 'lack of political commitment is considered to be the major difficulty for transnationally coordinated research' and that 'the achievement of ERA needs a strengthened political commitment both at national and EU level'. 'Setting realistic milestones and common indicators, as well as involving main research stakeholders beyond Member States, would improve the evaluation and monitoring of ERA initiatives.' The consultation shows a 'widespread support for a higher participation of stakeholders in ERA processes, mainly through dedicated working groups'.

4.3.2. A reinforced partnership

In July 2012, the Commission published an ERA partnership Impact Assessment[130] that considered four policy options: business as usual; a reinforced partnership for ERA; sectoral legal measures for ERA; and an ERA framework directive. The impact assessment concludes that the Member States are 'favouring a soft/voluntary approach based on best practices rather than hard legislative measures.' 'Policy option 2 (Reinforced partnership for ERA) alone ensures a substantial level of progress towards compliance with the 2014 deadline imposed by the Council.' Nevertheless, the document stated that 'in case of insufficient and/or persisting progress, the Commission would propose legal or other action'.[131]

Based on these conclusions, the Commission published a new communication[132] on 'A reinforced ERA partnership for Excellence and Growth'. The document established five ERA priorities (see table 4) and defines ERA as:

> *a unified research area open to the world based on the Internal Market, in which researchers, scientific knowledge and technology circulate freely and through which the Union and its Member States strengthen their scientific and technological bases, their competitiveness and their capacity to collectively address grand challenges.*

The Commission again noted that 'national systems must be more open to each other and to the world, more inter-connected and more inter-operable. This will generate both more competition and more cooperation' whereas 'joint programming remains sluggish and optimal levels of competition have not been reached'. The pragmatic approach of the partnership should help Europe 'increase the efficiency, effectiveness and excellence of its public research system' and 'capitalise on its scientific, cultural and geographical diversity'. '**Member States must make the necessary national reforms and put in place the conditions needed to complete ERA**' supported by 'top-level steering by the Council'. The Commission would develop a 'robust ERA monitoring mechanism' and transmit 'a full assessment of progress' to the Council and the European Parliament.

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[129] Public consultation on the European Research Area Framework – Preliminary Report, European Commission, January 2012.

[130] Impact Assessment accompanying the document 'A Reinforced European Research Area Partnership for Excellence and Growth', European Commission, SWD(2012) 212, 17 July 2012.

[131] The Commission stresses the possibilities offered by Article 182.5 of the TFEU allowing 'the use of the legislative procedure to establish the measures necessary for the implementation of the European Research Area.'

[132] A Reinforced European Research Area Partnership for Excellence and Growth, European Commission, COM(2012) 392, 17 July 2012.

Table 4 – The five priorities of ERA in the 2012 ERA Framework communication

1	**More effective national research systems –** including increased competition within national borders and sustained or greater investment in research
2	**Optimal transnational co-operation and competition –** defining and implementing common research agendas on 'grand-challenges', raising quality through Europe-wide open competition, and constructing and running effectively key research infrastructures on a pan-European basis
3	**An open labour market for researchers –** to ensure the removal of barriers to researcher mobility, training and attractive careers
4	**Gender equality and gender mainstreaming in research –** to end the unaffordable waste of talent and to diversify views and approaches in research and foster excellence
5	**Optimal circulation, access to and transfer of scientific knowledge including via digital ERA –** to guarantee access to and uptake of knowledge by all

Data source: European Commission (2012).

The stakeholders were asked by the Commission to 'set out the specific ERA actions they will take'. When presenting the communication, the Commission signed a joint statement[133] with five major stakeholders – EARTO, EUA, LERU, Nordforsk and Science Europe – declaring that 'the direct involvement of research stakeholder organisations will strengthen the ERA'. The stakeholders and the Commission 'acknowledge their readiness to cooperate by sharing information and providing input to the on-going and future development of ERA policy, particularly in the context of a dedicated stakeholder platform which will be set up'. Bypassing the Member States, four of them also signed a bilateral memorandum of understanding[134] with the Commission that presented their planned contribution for the implementation of ERA.

In its conclusions[135] on the ERA partnership in December 2012, the Council 'invites Member States to identify the national reforms and actions needed for achieving the ERA in the context of the Innovation Union, according to their national specificities, and to present these reforms and their subsequent implementation when reporting on national ERA measures, where appropriate in the National Reform Programmes starting from the 2013 European Semester, to cooperate with national research stakeholder organisations in implementing the necessary measures and to contribute actively to the monitoring and evaluation of progress towards the achievement of the ERA'. The Council considered 'that achieving the ERA will require monitoring of ERA progress in close connection with the European Semester' and 'invites therefore the Commission to develop a robust ERA monitoring mechanism'.

[133] Joint statement on working in partnership in achieving the ERA, EARTO, EUA, LERU, Nordforsk, Science Europe and the European Commission, 17 July 2012.

[134] EARTO, LERU, EAU and Nordforsk signed bilateral memorandum of understanding. Science Europe published a unilateral statement.

[135] A Reinforced European Research Area Partnership for Excellence and Growth – Council conclusions, Council of the European Union, ST 17649 2012 INIT, 12 December 2012.

4.4. Monitoring progress

4.4.1. The ERA Progress Report 2013

In September 2013, the Commission published[136] the first ERA Progress Report. In this document, the Commission reaffirmed that '**reforms of national research systems are at the heart of the European Research Area**'. The Commission believes that 'it is essential not only to open transnational funding, but mainly to strategically align different sources of national and other funds at EU level'. Despite these efforts, 'the **European research and innovation landscape is still fragmented**'. Moreover, 'support to the completion of ERA from the Council, European Council, European Parliament, European Economic and Social Committee and Committee of Regions remains crucial'.

The European Council stressed[137] in October 2013 that 'it is important to accelerate structural reforms of national systems and to strengthen progress monitoring based on robust data provided by Member States'. On 8 October 2013, the European Parliament organised a debate[138] on the completion of ERA. Some Members of Parliament recognised the limitation of the voluntary measures to be implemented by the Member States and proposed the use of legislation. European Commissioner Geoghegan-Quinn confirmed that 'ERA is very much a work in progress' and 'is at a crossroads.' The Commission 'would like [the Member States] to align their rules so that we can have this great interaction that we want to see happening in a genuine ERA'.

Following this debate, a group of eight Members of the European Parliament, supported by the former European Commissioner for Research, Philippe Busquin, published[139] the manifesto 'A Maastricht for Research.' The authors recognised that 'ERA is still far away from realisation'. They suggested that an 'ERA framework Directive could be the appropriate, ambitious instrument to lead all Member States, or at least a group of pioneers'.

However, the Council in its conclusions[140] on the ERA Progress Report in February 2014 reaffirmed that 'the use of legislation at the European level to address obstacles to the ERA is not widely supported by the Member States and should occur only where a clear and significant need is agreed, i.e. **only as a last resort**'. The Council maintained that 'reforms of research and innovation systems are at the heart of ERA and that the Member States should accelerate national reforms'. It proposed 'to develop by mid-2015 an ERA roadmap at European level – which should serve the purpose of facilitating and reinforcing the efforts undertaken by the Member States'.

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[136] European Research Area Progress Report 2013, European Commission, COM(2013) 637, 20 September 2013.

[137] European Council Conclusions, European Council, ST 169 2013 INIT, 25 October 2013.

[138] Completing the European research area by 2014, European Parliament, 2013/2695(RSP), 8 October 2013.

[139] A Maastricht for Research, Amalia Sartori, Luigi Berlinguer, Christian Ehler, Maria Carvalho Da Graça, Teresa Riera Madurell, Catherine Trautmann, Patrizia Toia, Antonio Fernando Correia de Campos, Philippe Busquin, October 2013.

[140] Council conclusions on the progress report from the Commission on European Research Area (ERA) 2013, Council of the European Union, ST 6945 2014 INIT, 25 February 2014.

4.4.2. Pushing for the 3%

In June 2014, the Commission published a communication[141] aiming to support the Member States in their efforts to improve their research and innovation systems. The Commission focused on three priorities: improving the quality of strategy development and the policy making process; improving the quality of programmes; focusing of resources and funding mechanisms; and optimising the quality of public institutions performing research and innovation. The Commission would 'provide world-class data, analysis and intelligence on research and innovation policy and performance at EU and national level' by the development of the European Research and Innovation Observatory and the Policy Support Facility.[142]

4.4.3. The ERA Progress Report 2014

The second ERA Progress Report[143] published in October 2014 presented the positive steps and achievements for each of the ERA priorities defined in July 2012. Nevertheless the deadline for the completion of ERA set in 2011 had been reached and the Commission stressed that 'more efforts are needed to make ERA fully operational and, more than ever, **it is now up to Member States and research stakeholders to implement the necessary ERA reforms and make ERA work**'. Stakeholders for their part reported[144] on their actions to support the implementation of ERA.

While the report concluded that the 'conditions for the completion of ERA are now in place', it remains 'a gradual process'. The **Commission asks for 'tailor-made ERA national action plans and initiatives'** and noted again that 'different options might be considered to foster the development of ERA, including the legislative options'.

In December 2014 the Council recognised that 'the conditions for implementing a well-functioning ERA are now in place' but '**the full completion of the ERA is a long term process** and the paths, depending on the national contexts, can differ among Member States'. The Council agreed that 'it is now mainly up to the Member States and research stakeholders to implement the necessary ERA related reforms and, with the support of the Commission, to make the ERA fully operational and fully functioning'.

5. The Member States' call

On 1st November 2014, the Juncker Commission took office, with Carlos Moedas as Commissioner for Research, Science and Innovation. In his hearing[145] as Commissioner designate on 30 September 2014, Moedas stated that 'most of the tools that are at the European level [to implement ERA] are already there. What we are missing now is how you can actually do it with the Member States and ... make them implement those tools'. Moedas also considered that the possibility offered by Article 182.5 TFEU to adopt EU legislation for the enforcement of ERA should not yet be used. Moedas suggested waiting and working with the Member States that are defining an ERA Roadmap.

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[141] Research and innovation as sources of renewed growth, European Commission, COM(2014) 339, 10 June 2014.

[142] The two structures share a common website hosted by the Joint Research Centre.

[143] European Research Area Progress Report 2014, European Commission, COM(2014) 575, 15 September 2014.

[144] See the reports of EARTO in 2013, LERU and Nordforsk, EUA (Part I and Part II) in 2014 presenting the activities undertaken by the stakeholders based on the memorandum of understanding signed in 2012.

[145] Hearing of Commissioner designate Carlos Moedas, European Parliament, 30 September 2014.

5.1. The adoption of the ERA Roadmap

In May 2015, the Council adopted its conclusions on the ERA Roadmap[146] based on the proposal formulated by ERAC in April 2015. The ERA roadmap defined six priorities for ERA (see table 5) which are very similar to the priorities defined by the Commission in its 2012 communication. Based on the Council ERA Roadmap, Member States are expected to produce their own national ERA roadmap by mid-2016,[147] presenting the measures they will take.

In its opinion on the roadmap, LERU acknowledged[148] that the Member States 'finally take ownership of the ERA process with this ERA Roadmap 2015-2020'. However, LERU considers that 'the ERAC Roadmap now reduces the scope to key implementation priorities and pushes the timeframe to 2020' and that 'not one new idea for the realisation of ERA can be found in this Roadmap'.

The Council decided[149] in December 2015 to review the governance of the process and to reorganise the ERAC and the ERA-related groups. Each of the groups will act as an advisory body for one of the six priorities (see table 5). ERAC was given a new mandate and will coordinate the work of the ERA-related groups. This will be achieved through an 'ERAC Steering Board where all the ERA-related groups are represented.'

Table 5 – The six priorities of ERA in the ERA Roadmap

1	**Effective national research systems** – 'Effectively designed and efficiently functioning national research and innovation systems responsive to the specific objectives of each individual Member State are central to ERA implementation' (ERAC)
2	**Optimal transnational co-operation and competition**
2a	**Jointly addressing grand challenges –** 'At the European level, the Commission and Member States should work together to clarify the division of labour between the EU, Member States and transnational levels' (GPC)
2b	**Research Infrastructures** – 'Make optimal use of public investments in RI by setting national priorities compatible with the ESFRI priorities and criteria taking full account of long term sustainability' (ESFRI)
3	**An open labour market for researchers –** 'In an ERA which achieves this goal, research is an attractive career option across Europe and researchers are properly equipped with flexible skills matching current and future needs' (SGHRM)
4	**Gender equality and gender mainstreaming in research –** 'Translating national equality legislation into effective action to address gender imbalances in research institutions and decision making bodies and integrating the gender dimension better into R&D policies, programmes and projects' (Helsinki Group)
5	**Optimal circulation and transfer of scientific knowledge** – 'Fully implementing knowledge transfer policies at national level', 'Promoting Open access to scientific publications' (new group replacing the Working Group on Knowledge Transfer)
6	**International cooperation –** 'Develop and implement appropriate joint strategic approaches and actions for international STI cooperation on the basis of Member States' national priorities' (SFIC)

Data source: Council of the European Union (2015).

[146] Council conclusions on the European Research Area Roadmap 2015-2020, Council of the European Union, ST 9351 2015 INIT, 29 May 2015.

[147] Germany already produced a national ERA strategy in 2014.

[148] ERAC ERA Roadmap 2015-2020: Nothing new under the sun, LERU, 16 April 2015.

[149] Council Conclusions on the Review of the European Research Area advisory structure, Council of the European Union, ST 14875 2015 INIT, 1 December 2015.

5.2. Reinventing ERA

On 23 June 2015, the Commission organised a conference 'Opening up to an ERA of innovation' to once again provide a new impetus for the implementation of ERA. In his speech, Commissioner Moedas set out a new vision for ERA:

> *I would like us to chart a new path for European research and innovation policy. A new strategy that is fit for purpose for a world that is open, digital and global. ... 15 years ago, the European Research Area was conceived as a physical space. ... Now is the time to complete this first chapter of the ERA and Innovation Union [that] was about the physical ERA and bringing together research and innovation. The next chapter must focus on opening up our research and innovation systems and bringing together the physical and digital.*

Moedas reformulated the ERA and Innovation Union concepts under 'three strategic priorities: Open Innovation, Open Science, and Openness to the World'. However these priorities are not new. Open Innovation, which is about involving far more actors in the innovation process – from researchers, to entrepreneurs, to users, to governments and civil society – and Open Science, which aims at opening the scientific process and its results to society, are concepts already mentioned in a stakeholder report[150] acknowledged by the European Commission in January 2005. Finally, 'openness to the world' is a key component of ERA since the first ERA communication in 2000.

At the conference, the Commission and five stakeholders – CESAER, EARTO, EUA, LERU and Science Europe – signed a new joint statement[151] 'to take action on working in partnership in achieving the ERA'. This 'voluntary, non-binding informal agreement' stated that 'up to 31 December 2019 and if deemed necessary beyond, partners will in particular further strengthen efforts to make the ERA fully operational and to make ERA work'. The statement included the possibility of expanding the platform to new stakeholders and the objective 'to establish a communication strategy in order to pursue appropriate communication channels between the Stakeholder Platform and the other ERA governance partners'.

6. Outlook

6.1. Achievements since 2000

Based on this historical overview, the five key achievements contributing to the better coordination and interoperability of the research systems since 2000 concern:

- **Research infrastructures** – This is the most successful achievement of the implementation of ERA. ESFRI and the development of a European roadmap for research infrastructures[152] lead both to the development of new pan-European infrastructures and the effective European networking of existing ones.
- **Careers and mobility** – The adoption of common guidelines on this topic – for example the European Charter for Researchers and the Code of Conduct for the

[150] Responsible Partnering: Joining forces in a world of open innovation, EUA, ProTon Europe, EARTO and the European Industrial Research Management Association (EIRMA), January 2005

[151] Commission Decision on the signature of a Joint Statement to take action on working in partnership in achieving the European Research Area (ERA), European Commission, C(2015) 4063, 19 June 2015.

[152] The website of ESFRI provides information on ESFRI roadmap.

Recruitment of Researchers[153] in 2005 – as well as tools such as the Euraxess Portal[154] or the establishment of the RESAVER framework[155] for pension portability have helped improve mobility and career paths for researchers. However, more reforms are needed to allow free circulation of researchers in Europe.

- **Joint programming** – The creation of the ERA Networks (ERANET) under FP6 and the use of Article 185 TFEU[156] supported the development of public-public partnerships between the Member States inducing the definition of common priorities and research agendas improving the coordination of national research policies. Nevertheless, the part of national funding dedicated to these schemes remains low.
- **Public-private partnerships** – The establishment of Joint Technology Initiatives with the use of Article 187 TFEU also helped the coordination of research funding across national and sectoral borders. The European Institution for Innovation and Technology (EIT) established in 2008 also contributes to a pan-European coordination of research, innovation and training activities.
- **The European Research Council** – Established in 2007 under FP7, the ERC embodies the idea of a competitive funding scheme at the European level, independent of national considerations.

6.2. The limitations in implementing the ERA concept

6.2.1. An undefined in-between

When a common policy for research was proposed, the landscape in Europe was fragmented. The national research systems of the Member States operated in isolation from each other. On the other side of the spectrum, a fully integrated research landscape, similar to that in America, could be imagined.

The ERA concept is based on the idea that an efficiency gain can be obtained if the isolated national research systems become more interoperable, allowing for better flows of knowledge, technology and people between them and creating a more coherent and integrated European system for research. The implementation of ERA aims to reach an optimal situation somewhere between the fully fragmented and the fully integrated situations.

Yet, this optimal 'in-between' has not been agreed between the European institutions, the Member States and the stakeholders. The shape of the European research system resulting from the implementation of the ERA concept remains undefined. This lack of a clear target limits the efficiency of the measures taken at European and national level.

6.2.2. A shared competency

An additional difficulty in the implementation of the ERA concept comes from the fact that research policies are a shared competence between the European, national and, often, regional levels. The introduction of European policies into the field of research

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[153] Commission Recommendation on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers, OJ L 75, 22 March 2005, pp. 67–77.

[154] See the Euraxess website.

[155] More on the Retirement Savings Vehicle for European Research Institutions on RESAVER website.

[156] The ten Joint Programming Initiative (JPIs) launched by the Member States can be added. More information on ERANET, Article 185, JPIs, JTIs and the ERC is available in Horizon 2020 budget and implementation, EPRS, November 2015.

and innovation implies a redefinition of the competences of each of these levels. Moreover, the role of each actor in the research system (ministries, research funding and performing organisations, researchers), in establishing ERA must be clarified.

The Member States often note that the initiatives taken at European level should be aligned with the subsidiarity principle. However, this principle is not translated into a clear consensus and agreement on what tools should be created or what schemes should be funded at the European, national and regional level. As a result, some of the tools described in the section above support the vision of a strong competence at European level and a fully integrated system (ERC, infrastructures), whereas others promote a situation where the national level has a stronger competence (Article 185).

6.2.3. Diverging dimensions

The diversity of the research systems in Europe and the current gap that exists between European countries and regions in terms of research and innovation capacities[157] are two key particularities of the European research landscape. Due to these particularities, new policies and tools can induce diverging impacts on the shape given to the ERA in two specific dimensions:

- **distribution of resources**: concentration in some research centres, regions or countries versus a more homogenous distribution of research and innovation capacities throughout the Union;
- **interaction at European level**: cooperation versus competition between players.

For example, the ERC promotes EU competition and leads to a concentration of resources, whereas the EIT contributes to trans-national and trans-sectoral cooperation. Hence, the different tools created at European level can support simultaneously different – and sometimes incompatible – versions of ERA. The right balance for these dimensions still needs to be established and agreed.

6.2.4. A fragmented 'carrot'

The budget of the framework programme for research represents only a few percent of the European expenditure in research and innovation.[158] Nevertheless, the idea of using the programme as a tool to foster the coordination of the Member States national policies has been used by the Commission intensively since the 1990s, based on the possibilities offered by the European Treaties.

The development of new tools to promote coordination through cooperation (public-public and public-private partnerships or the EIT for example), induced a progressive fragmentation of the framework programme and increased the complexity of its implementation.[159] The present situation is that the leverage effect of the use of the framework programme to trigger coordination of national policies is weak and there is neither the possibility nor the will from the Commission to create new tools using the cooperation programme to trigger coordination.

6.2.5. A useless 'stick'

The Member States are held responsible by the Commission, the Council and the stakeholders for the lack of progress in the implementation of the ERA concept. The

[157] The concept of ERA formulated in a Union of 15 Member States was then developed in a Union of 25 – and now 28 – Member States increasing the impact of the R&I gap on research policies.

[158] In 2013, it represented around €10 billion out of €272 billion – less than 4%.

[159] The current framework programme, Horizon 2020, bears the consequences of this progressive fragmentation and complexification.

use of legislation has been consistently demanded by the European Parliament, some individual Members of the European Parliament and some stakeholders, noting that the use of 'soft' approaches like the OMC has had limited effects. Since the entry into force of the Lisbon Treaty in December 2009, the Commission has had the possibility to propose European legislation to enforce the establishment of the ERA concept.

However, the prospect of European legislation on ERA was excluded in 2012 in the impact assessment of the Commission, based on the fact that one of the co-legislators, the Council, was – and remains – opposed. In his hearing, Commissioner designate Moedas also excluded the use of legislation in the coming years.

Even if the Commission notes in its communications that the use of legislation is always an option, it would imply a clear and agreed target in the implementation of the ERA concept. Indeed, most stakeholders are nowadays reticent about the idea of ERA legislation because, as the objectives are not clear, the content and scope of this potential legislation remain undefined.

6.3. The future of ERA

6.3.1. Broadening the priorities under the ERA concept

Over the years, the scope of the ERA concept has been progressively refocused. Key priorities in 2000, such as the link between science and society, or the regional dimension of ERA, are for example absent from the ERA roadmap. The concept of 'three O's' (Open Science, Open Innovation, Open to the world) proposed by European Commissioner Moedas in June 2015 can also be seen as a reduction of scope and ambitions for ERA.

However, the European research project 'Forward Visions on the ERA – VERA', funded under FP7, advocates[160] a rethinking of the ERA priorities and a broadening of the ERA agenda by reintroducing those lost priorities. The project also suggests adding new priorities, such as synergies between research and innovation and smart R&I evaluation. The results of this project advocate a more ambitious scope, stating[161] that 'ERA is not about harmonising the structures, procedures and policies we have in Europe, but should represent a general broader leap forward in the way we organise research and its embeddedness in society across Europe'.

6.3.2. Defining the optimal situation and designing a European research system

The idea of completing ERA makes no sense as long as the expected result of the implementation of the ERA concept is not clearly defined. Yet, while the concept of creating a European Research Area is shared, the shape of the ERA when implementing this concept remains unclear.

Despite some achievements, the current situation in the Union is still one with 28 national research systems with elements of an additional 29th European system. Intensified discussions are needed between the European institutions, Member States and stakeholders to design a coherent European research system, to define its structure and its governance, and to agree on the common targets that are to be reached in the implementation the ERA concept.

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[160] All the results of the VERA project including the four foresight scenarios developed are presented on the website of the project.

[161] Evolving Dimensions of the European Research and Innovation Landscape, R. Popper et al., Manchester Institute of Innovation Research, January 2015.

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The 'European Research Area' (ERA) is the policy concept at the heart of the common European policy for research. The framing and adoption of ERA in 2000 was the result of a lengthy process started in 1972.

Proposed by the European Commission, the concept has been reshaped by the Council of the European Union in 2008 and influenced by the involvement of stakeholders since 2012. The commitment of the Member States is now at the heart of the process of developing ERA.

More than 40 years after the first steps to establish a common research policy, and 16 years after the formulation of the concept, ERA remains a work in progress, as both a complex concept to define and a challenging one to implement.

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