

A large red circle is centered on the right side of the image. The background is a solid blue color with a subtle wood grain texture. The red circle is a solid, vibrant red.

## **Danish Council for Research Policy**

Contribution to the debate on a future  
European research policy



In this publication, the Danish Council for Research Policy presents its contribution to the debate on a future European research policy and the preparation of EU's Seventh Framework Programme for Research and Technological Development.

In January 2004, the Danish Council for Research Policy decided to initiate a debate on the preparation of the Seventh Framework Programme. On 9 March, the Council held a dialogue meeting with key stakeholders, and the Council subsequently initiated a hearing of universities, government research institutes, research councils and interest organisations in order to obtain their assessments and proposals for the framework programme. The feedback (Danish only) received by the Council is found at [www.vtu.dk](http://www.vtu.dk) (councils, boards and committees). A background note supplementing this publication is found at [www.vtu.dk](http://www.vtu.dk) (councils, boards and committees).

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## Preface

One of the tasks of the Danish Council for Research Policy is to give general advice on the interaction between Danish and international research activities. Research cooperation within the European Union (EU) is constantly increasing in both scope and significance. Ensuring maximum benefit from the European cooperation within the area of research and technological development is a huge research political challenge.

EU's Seventh Framework Programme for Research and Technological Development (FP7) is to be implemented in 2007. The present Sixth Framework Programme (FP6) provides the foundation for the next programme. FP6 has only been operational for 18 months; however, the framework programme, its objectives and instruments are objects of a continuous debate. The Danish Council for Research Policy wants to contribute to this debate and give advice to the Minister for Science, Technology and Innovation, the Government and the Danish Parliament on key issues related to the preparations of the framework programme negotiations, in Denmark as well as in the EU. The Council also would like to encourage research institutions, companies and organisations to participate actively in the discussions and preparation of FP7.

This March, the Council initiated a broad hearing of research institutions, interest organisations and government departments. The many responses received by the Council constitute an important basis of the Council's own considerations and recommendations in this publication. The Council would like to thank everybody who has contributed with recommendations and suggestions.

The Council's assessments and recommendations are intended to initiate a broad and constructive debate in Denmark, a debate which in the next few years will help to establish a seventh framework programme with rich opportunities and challenges for Danish research entities in both the private and the public sectors.

Copenhagen, 28 May 2004



Bruno Hansen  
Chairman



## Strengthened European research cooperation

Denmark will have to focus on research as an important foundation for education, production and service in both the public and private sectors. The ambition of creating a strong knowledge-based society enjoys widespread support in Denmark.

According to the Danish Council for Research Policy, essential objectives of the future European research policy are:

- to strengthen the basis of the European Research Area (ERA);
- to contribute to the integration and strengthening of research activities in Europe; and
- to increase the benefit to society through increased focus on commercial utilisation of research in Europe, etc.

A strong European research cooperation is imperative to the strengthening of Europe's competitiveness. It is essential that Europe is capable of developing a model for research cooperation based on European principles and possibilities.

The Council finds that European research cooperation in several areas needs to be strengthened in the coming years. In addition to a continuous development of research cooperation within thematic priorities, there is a need for an increased emphasis on application and utilisation of research for the benefit of society, and basic research in particular needs to be boosted. Research cooperation must be simplified administratively, and the various instruments must be used in a more flexible way. A significant increase in the joint European resources for research and development must be ensured.

The framework programme must be based on elements that together support the objectives of the programme. The Council recommends that six elements or axes be central in the next framework programme:

- Promotion of European partnerships within thematic priorities
- Promotion of technological development through partnerships between companies, especially small and medium-sized enterprises, and public research institutions
- A specific emphasis on basic research
- Strengthening career opportunities, recruitment, education and mobility for researchers
- Development of research infrastructures
- Support to and coordination of EU and national policies

Together, these six axes will be able to accommodate activities that will contribute to the realisation of the general objectives of the framework programme. The axes must be closely related. Typically, activities related to recruitment of researchers, infrastructures and technological development may be part of several axes.

## Recommendations

The future European research policy and the Seventh Framework Programme must focus on the following areas:

- The targeted *research cooperation in thematic priorities must be adapted to the current challenges for Europe*, and emphasis must be put on *promotion of interdisciplinary, integrated activities*.
- Increased emphasis must be put on the *enhancement of society's application and utilisation of research*, including for technological development and increased activities in trade and industry, particularly in the small and medium-sized enterprises.
- A *specific emphasis must be put on basic research* as a supplementary element in the European research policy in order to promote excellence in European research.
- Efforts must be increased *to strengthen recruitment, education and mobility* and to *create more attractive career opportunities* for researchers in Europe.
- *Access to research infrastructures must be improved* for European researchers, and great emphasis must be put on cooperation on the establishment of the necessary infrastructures.
- The framework programme should stimulate coordination and joint activities at the national and regional levels with a view to *developing a joint knowledge base for development of policies*.
- *Administrative simplification* of the framework programme must be ensured, and the instruments of the programme must be used in a more flexible way.
- A significant *increase in the joint European resources for research and development* must be realised to ensure fulfilment of the objectives of the framework programme.



## A significant increase in the joint European resources for research and development

Increasing research efforts is a joint European goal. The ambitions of the Lisbon process and the Barcelona objective must be maintained. This requires allocation of significant resources for research and development activities. Bringing about an increase in private and public research in the coming years is first of all a national task. Accordingly, Denmark should seek to obtain total research activities corresponding to at least 3 per cent of the gross domestic product by 2010.

All over the world, focus on research and innovation as crucial driving forces for development of society has increased. The political debate in Europe clearly shows that research and development activities play an important role in the national strategies for development of prosperity and welfare. The debate also reveals that the ambitions in connection with the European research cooperation are increasing. If the objectives are to be met, which will have a significant impact on society and trade and industry in Europe, the resources of FP7 should be much larger, probably double that of FP6.

### Recommendations

A significant increase in the joint European resources for research and development must be realised to ensure fulfilment of the objectives of the framework programme.

- Denmark should seek to obtain total research activities corresponding to at least 3 per cent of the gross domestic product by 2010.
- Denmark should insist on a considerable increase in the resources set aside for FP7 compared with FP6. A doubling of the total budget will have a significant positive impact on society and trade and industry in Europe.



## Promotion of European research cooperation within thematic priorities

The thematic priorities of the framework programme must reflect issues considered vital to the welfare and prosperity of the population in Europe in both the short and the long term. Welfare is to be understood in a broad sense as the term implies elements related to the quality of life of the individual citizen, including health, work and environment.

FP6 includes seven thematic priorities:

- Life sciences, genomics and biotechnology for health
- Information society technologies
- Nanotechnologies and nanosciences, knowledge-based multifunctional materials and new production processes and devices
- Aeronautics and space
- Food quality and safety
- Sustainable development, global change and ecosystems
- Citizens and governance in a knowledge-based society

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The Council finds that these themes should be adjusted in FP7 to reflect the current challenges in the research activities within the thematic priorities. The thematic areas must be based on the principle that the design of projects and networks are to be determined by the current issues. The research themes must be problem driven, not technology or discipline driven.

According to the Council, certain guiding principles and elements for the adjustment of the thematic priorities should be laid down at this time. In the hearing responses, the Council has received a number of specific recommendations concerning changes and additions to the thematic priorities in FP6. In the background note to this publication the Council outlines its considerations concerning such adjustments.

The Council expects that the more specific activities within each theme will be developed in a process during which the Ministry of Science, Technology and Innovation will help to achieve a broad, scientific dialogue among all parties.

Initiating research in the area between the thematic priorities must be possible, e.g. special initiatives as a response related to acute problems arising in Europe.

It is important that the European Commission take action to coordinate all the initiatives, i.e. both between the thematic priorities and between these themes and other activities within the framework programme.

## Recommendations

The targeted research cooperation in thematic priorities must be adapted to the current challenges for Europe, and emphasis must be put on promotion of interdisciplinary, integrated activities.

- The thematic priorities in the framework programme must be adjusted so that current challenges are reflected in the research activities.
- The European Commission should ensure that the research activities within the thematic priorities are coordinated.



## Increased emphasis on society's application and utilisation of research

To a wide extent, cooperation between companies and public research institutions has taken place within the framework programmes. Especially within the thematic priorities, several projects and networks are carried out with the participation of partners from the public and private sectors. These forms of cooperation must be further improved in FP7. In addition, it would be desirable to develop forms of cooperation where efforts are made to identify problems within specific areas that can only be solved by involving a wide circle of stakeholders. This may take place by setting up "technology platforms" within areas with a recognised European need, problem or challenge.

From a Danish point of view, relevant areas for setting up technology platforms could be food production, biotechnology – pharmaceuticals, environment technology, future energy supply, construction, healthcare and treatment.

The Council has not undertaken a thorough assessment of potential themes for technology platforms. In dialogue with Danish stakeholders, the Ministry of Science, Technology and Innovation must seek to uncover the possibilities of developing the basis of technology platforms within areas of particular importance to Denmark.

## Recommendations

Increased emphasis must be put on the enhancement of society's application and utilisation of research, including for technological development and increased activities in trade and industry, particularly in the small and medium-sized enterprises.

- Steps should be taken to establish technology platforms within areas of particular importance to Europe's development.
- Promotion and support of one-to-one partnerships between one company and one university across borders should be made possible.
- Relatively more resources should be spent on projects suitable for participation of small and medium-sized companies.



## A specific emphasis on basic research in order to promote excellence in European research

According to the European Commission, basic research has been given a low priority in the European research system. On the basis of this recognition, an initiative to create a European Research Council (ERC) has been taken. In Denmark, the proposal for setting up a European research council for basic research within all research areas is widely supported.

The Council finds that increased efforts within basic research in Europe will have a major impact on knowledge accumulation and will help to improve the growth basis of European research. This will also make Europe attractive to researchers at the highest international level. A strengthening of basic research is also to be seen as a tool in connection with higher education, including education of researchers and recruitment for research in Europe.

In addition to these general considerations, there are a number of issues concerning the organisation and working methods of a European research council, which must be considered more specifically. In the future debate on ERC, discussing whether the council's way of working must comprise mechanisms to limit the number of applications is absolutely necessary. Such mechanisms might include pre-qualification/call for expressions of interest, requirements concerning project size or thematic limitations.

The interaction between ERC and the national research councils and foundations should be based on pragmatic cooperation. One expedient way of dividing tasks between the national level and the European level could be achieved if the national research councils supported the new and/or smaller initiatives, and the European council supported larger initiatives which are "unique" in the individual country and which might therefore benefit from a European participation/interaction.

### Recommendations

A specific emphasis must be put on basic research as a supplementary element in the European research policy in order to promote excellence in European research.

- Within FP7, significant support for basic research must be given by setting up a European basic research council/foundation.
- A European research council is to support basic research based on the excellence, quality and originality of the research and the applicants. Quality assessments must take place on the basis of peer-review, also by involving expertise from outside Europe.



## Strengthening of career opportunities, recruitment, education and mobility for researchers

Making it more attractive to become and be a researcher in Europe is a huge challenge. We must make more young people choose a researcher career, make more young people finish formal researcher training, and ensure that we can offer interesting challenges and competitive working conditions in Denmark and Europe.

New generations of researchers must be influenced by joint European values in relation to research and in relation to the importance of research for the development of society. FP7 will have to contribute to ensure that doing research in Europe becomes attractive and that excellence and getting merits are in focus and are appreciated.

In all contexts, FP7 must assist in ensuring that researchers can develop their careers across national borders, across research institutions and across the public and private sectors. This is such an important challenge that defining a joint European strategy for stimulation and organisation of careers for researchers in Europe should be considered.

As part of the efforts to increase the mobility of researchers and other academic resources, the transparency of the education systems of the various countries, including the education system for researchers, should be improved.

Supporting the setting up of more joint European education courses for researchers is recommended. At the same time, special efforts must be made to ensure high quality in the researcher education courses offered, e.g. by requiring that researcher education activities take place in connection with highly qualified and comprehensive research environments such as schools for researchers or similar.

### Recommendations

Efforts must be increased to strengthen recruitment, education and mobility and to create more attractive career opportunities for researchers in Europe.

- In all activities under FP7, education for researchers must be incorporated. All research projects must include an element of education.
- Greater emphasis must be put on mobility of researchers.
- Supporting the setting up of more joint European researcher education courses is recommended.
- Special efforts must be made to ensure high quality in the education courses offered, e.g. by requiring that education activities take place in connection with highly qualified and comprehensive research environments such as schools for researchers or similar.



## Development of research infrastructures

Within FP6, researchers' access to research infrastructures (e.g. large technical installations, laboratories, special equipment, databases, biologic material, etc.) in other EU countries is improved. Such activities should be continued under FP7; however, developing more expedient forms of cooperation on the establishment of the necessary infrastructures must be greatly emphasised. This also applies to establishment of decision-making processes that can match the US and Japan in terms of efficiency and rapidity.

Examples of infrastructures considered particularly important to Denmark are systems for synchrotron radiation, neutron sources, linear collider and experimental propagation houses. The Council will point out that further assessment of initiatives to promote Danish interests as regards infrastructures will require close cooperation between the Ministry of Science, Technology and Innovation, the involved research institutions and the research councils.

### Recommendation

Access to research infrastructures must be improved for European researchers, and great emphasis must be put on cooperation on the establishment of the necessary infrastructures.



## Support to and coordination of EU and Member State policies

The idea of a European research area comprises an ambition to stimulate and support coordination and joint activities at the national and regional levels with a view to developing a joint knowledge base for development of policies. Such activities should continue to receive support under FP7.

Under FP6, a number of ERA-NETs have been established with the purpose of creating networks between parties from different countries. These networks are to form the basis of coordination and development of joint activities in the long run. An important aspect of the networks is the fact that they can react quickly and efficiently to new opportunities and needs within research and innovation.

The Council finds that FP7 should include activities corresponding to FP6's ERA-NET. At present the Council is not able to indicate special Danish areas of interest in connection with networks; however, the Council stresses that the networks may in many contexts be suitable for developing cooperation and coordination with EU's new Member States.

### Recommendations

The framework programme should stimulate coordination and joint activities at the national and regional levels with a view to developing a joint knowledge base for development of policies.

- ERA-NETs are to be used as incubators for development of future initiatives in areas in which Europe has a leading position or in which a basis for utilising research and technologies can be created.



## Instruments in FP7

In general, greater flexibility in the application of the instruments in the framework programme is called for. FP7 must provide flexibility as regards the instruments to be used within the various focus areas. The purpose of an activity must always determine the type and form of the instruments. The nature and potential of the research activity must determine the choice of instruments in relation to the necessary and adequate critical mass for the activity.

This means that within one thematic priority it may be expedient to put the main emphasis on integrated projects with many participants, whereas a relatively high share of projects with fewer participants may be more appropriate in another area. Similarly, the programme must offer flexibility as regards choice of instruments depending on the research or activity area in question. Within one area of activity it may be most suitable to establish networks, whereas in another area the activity should be based on projects. The number of participants in projects and networks must not be decisive, and it must be possible to support networks and projects with both many and few participating parties.

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The Council recommends that integrated projects and networks of excellence be continued as instruments, but that flexibility be introduced as regards the number of participating parties. A specific limit for the number of participating parties should not be laid down.

FP7 is to be aimed at strengthening the research activities of enterprises, in particular the small and medium-sized companies, and their cooperation with public research institutions. Relatively more resources should be spent on projects suitable for participation of small and medium-sized companies.

FP7 should motivate small and medium-sized companies to cooperate directly with the best research entities without considering the national borders in Europe. This would, for instance, be relevant in connection with business-oriented education of researchers, cf. the Danish Industrial PhD Initiative. Promotion and support of one-to-one partnerships between one company and one university across borders should be made possible.

The administrative burden of the framework programme participants should be minimised. At the same time, the high scientific quality requirements must be

## Recommendations

Administrative simplification of the framework programme must be ensured, and the instruments of the programme must be used in a more flexible way.

- The number of participants in projects and networks must not be decisive, and it must be possible to support networks and projects with both many and few participating parties.
- Choice of instruments and the specific adjustment of the size of a project or network must depend on a specific assessment of the purpose and potential of the activity and of the nature of the research task. A specific distribution of the resources to be spent on the various instruments should not be laid down, as allocation of resources should take place after open competition identifying the projects or networks that best fulfil the objective of the activity.
- Greater emphasis must be put on user-friendliness in connection with application procedures and processing of grants. If appropriate, a two-step quality assessment should be used: First a pre-qualification and then an actual application round.
- The scientific assessment of applications must be based on open criteria and transparent processes.
- The documentation requirements of applications should be differentiated depending on the purpose, organisation and budgetary frame of the activities applied for. Local handling of grants for projects and networks and flexibility in the administration of the framework programme should be improved.
- The European Commission should consider the introduction of a kind of authorisation to research entities and companies as a general guarantee of the entity's or company's administrative seriousness and ability to handle grants.
- Cooperation with countries outside Europe should be strengthened, in particular as regards education and mobility for researchers.



maintained, and the quality assessments must be based on open criteria and transparent processes. Within many activities under the framework programme, using a two-step quality assessment will be an advantage: First a pre-qualification and then an actual application round among the qualified applicants. This will reduce many applicants' scientific and administrative costs for preparing comprehensive applications with only minor chances of being accepted.

Increased differentiation as regards the formal documentation requirements of the applications depending on the purpose, organisation and budgetary frame of the activities covered by the applications should be considered. The documentation requirements of an application should be reasonable considering what the applicant actually applies for. The European Commission should implement simplifications as regards the documentation needed for each application. After a first scrutiny of applications, the European Commission should assign a kind of authorisation to research entities and companies. This authorisation should subsequently be considered a general guarantee of the entity's or company's administrative seriousness and ability to handle grants.

The framework programme currently comprises more than 30 countries. On certain terms, the programme is open to third countries. The Council would like this possibility to be extended in FP7, and emphasis must be put on the mutual benefits of such cooperation. Especially with regard to recruitment, education and mobility for researchers, there are exciting perspectives in focusing on countries like Russia, India, China and Brazil.

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## About the Danish Council for Research Policy

The Danish Council for Research Policy advises the Minister for Science, Technology and Innovation on issues concerning research policy. The Parliament and other ministers may also ask the Council's advice. Advice may be given upon request or on the Council's own initiative.

The tasks of the Council include giving general advice on Danish and international research policy for the benefit of society including advice on:

- The framework of research
- Appropriations for research
- Major national and international research initiatives
- Development of national research strategies
- Denmark's role and position in international research cooperation
- Education and recruitment of researchers