

Funding of strategic research programmes

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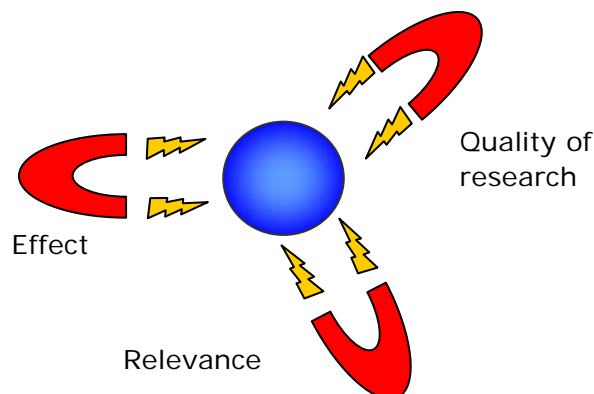
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This memorandum describes the overriding values and general guidelines for the funding of strategic research programmes, which are funded by programme commissions under the Danish Council for Strategic Research (DSF).

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The memorandum was adopted by the Board of DSF in 2006. The Board evaluates and revises the memorandum at least once a year. The most recent version of the memorandum will always be available at the Danish Agency for Science, Technology and Innovation website: www.fi.dk.



1 Introduction

DSF is responsible for, among other things, funding thematically defined and politically prioritised research programmes. To perform this task, the DSF Board appoints programme commissions with independent mandates.

The allocation of DSF's funds takes place in open competition and in accordance with Danish legislation on research etc. as well as with the Danish Finance Act and other applicable administrative legislation, including the EU rules on state aid (*see references*).

The legal basis for the Council for Strategic Research (cf. Executive Order No. 658 of June 19, 2007 of the Danish Act on the Research Advisory System, etc.) is briefly described in the following:

- DSF shall strengthen the research quality, coordination and internationalisation of Danish research.
- DSF shall ensure that the funds are allocated in open competition and according to research-based quality assessment.
- The DSF Board shall not have the competency to grant funding, but shall allocate the strategic programme funds to programme commissions or one of the scientific research councils. The Board shall not have the authority to transfer the grant funding competency to any other bodies than these.
- The Board shall only have directive authority over the programme commissions in general administrative matters.
- DSF shall have the opportunity to support researchers within the current employment structures for researchers and to support PhD students.

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In the publication *Research that counts* from 2004, DSF presented its first vision of what is characterizing strategic research.

2 Values and strategies

The DSF Board sets general guidelines for the allocation of strategic research funds based on the Council's overall values and strategies. The Board has prepared and will regularly draw up more detailed descriptions of specific topics, e.g. on strategic quality, involvement of SMEs and internationalisation of research. Over time, this material will appear as appendices to this memorandum.

The Board has the following overall *values* for carrying out strategic research programmes under the auspices of DSF:

1. When selecting projects, they must be situated in the crossfield between three equivalent criteria: relevance, effect and quality of the research.
2. Strategic programmes must be coordinated, to the greatest extent possible, with the allocation of corresponding funds in the ministries and relevant research councils and foundations.
3. Strategic programme funds must contribute to increased interaction between public and private-sector research, e.g. by rendering the strategic research effort visible to relevant private stakeholders in order to attract co-funding from foundations and businesses.

4. Information about strategic research programmes and projects must be open to the public and there must be regular active dissemination of the programmes' results to possible stakeholders.
5. Strategic programmes and projects must be carried out with a focus on high-quality research management.
6. Strategic research programmes can only have a limited number of instruments available, and the instruments employed must have a timeframe and a scale that demonstrates a focused investment in the given field.
7. It must be ensured that the projects involve, to the greatest extent possible, international collaboration, e.g. with growth countries or in the form of participation in EU or EUREKA projects.
8. It must be ensured that the projects result in increased quality of research and innovation as well as level of utilisation.
9. The interests of the public must be ensured. The programmes must have strong public appeal and interest – among policy-makers and citizens as well as in the media.

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3 DSF's annual plan

It should be emphasised that the following annual plan deals solely with the process relating to the allocation of programme funds that are listed under DSF in this year's Finance Act. The advisory role of the programme commissions is not described in this memorandum.

December	Adoption of the Finance Act
January	Funding letter from DSF's Board to the programme commissions with guidelines and priorities
February	The programme commissions coordinate the scope of the content in the calls for applications with calls within the same scientific fields from ministries and other relevant foundations
March/possibly June	Programme commissions issue calls for expressions of interest or applications. Information meetings, interviews, etc., where relevant
May-June/possibly October-November	Processing of applications with peer review, funding awards and rejections
Q4	Reports from programme commissions to the Board on goals and suggestions for follow-up
Q4	Dialogue between programme commissions and the Board on strategy for the following year's programme funding allocations

4 Instruments

An allocation is the “package” that can be applied for. It is comprised of a number of grant types to which various requirements can be attached, e.g. regarding co-funding, international collaboration and the like.

DSF considers collaboration with growth countries to be of great importance. Thus, all programme commissions should, when drawing up their calls for applications, consider whether or not to maintain a special prioritisation of applications in relation to international collaboration. In this connection, the last three items in section 5 on grant types are particularly relevant.

DSF’s instruments are described in the following.

Centres for strategic research

Centres for strategic research are used as an instrument in areas where there is a need for focused environments of high scientific quality with a high degree of strategic significance and societal/commercial potential. The project funding is awarded in a clearly formulated grant/contract. The centres have research institutions and companies as participants and have a centre core with a management team, PhDs, post-docs and international guest researchers. Most of the core activities are funded entirely by grants.

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In a “shell” around the core, often located at the participating parties, the research will be partially funded by the centre-participating parties. A significant co-funding is expected. It may be paid “in kind” by making equipment, staff, etc. available or as actual co-funding. Within this “shell” the participating researchers may work part-time on the project and part-time for a company or institution.

Research management is considered very important. A prominent head of centre with documented management experience must be appointed. In addition a board or reference group must be established with the participation of one or more persons appointed by DSF as representatives for the participating institutions and companies. The centres must have a long timeframe, perhaps 5-7 years, and a relatively large financial volume, e.g. DKK 5 million annually from DSF and a significant co-funding, depending on the scientific field. In such a centre structure, special focus should be on the potential for *innovation* and *commercialisation*, and intensive and formalised collaboration with the private sector is a requirement.

Strategic networks

Strategic networks must be employed in areas where there is great need for future research, where the research that takes place is geographically spread out and where there is a need to strengthen the formation of networks among existing research environments. Strategic networks are expected to have a good deal of support from the receiving end. By establishing networks, it will be possible to create more powerful research units to enhance collaboration with strong, international research environments. There must be an employed head of the network as well as a reference group or board. A network grant will, thus, fund both research and networking activities, and is expected to span approximately 5 years and to be of a size of DKK 10-20 million. It is expected to have a significant co-funding from the partners in the network.

Minor strategic research initiatives

With innovation and subsequent marketing in mind, there is also a need for funding for minor or small-scale significant strategic initiatives that can promote the development of the interdisciplinary competencies of research institutions and businesses. This would take the form of 3-5-year framework grants for projects with a total budget of at least DKK 10 million. Some co-funding from the partners of the project is expected.

5 Grant types

DSF makes use of several different grant types that can be used and combined for all instruments, but the programme commissions and others can choose to place special emphasis on a specific grant type within an instrument. One example is a centre for strategic research which can be built up around a procured international team. For the different instruments, it is possible to apply for funding for the following:

- Salaries for heads of centres, networks, etc. and key researchers
- Equipment expenses
- Other operating expenses, including technical/administrative salaries
- PhD grants
- Postdoctoral grants
- Combination positions, i.e. salaries/salary subsidies for researchers who are employed for a fixed period of time at two institutions or at an institution and a company
- Support for dialogue between research institutions and the public and private sectors
- Subsidies for expenses relating to collaboration with research environments abroad
- Procurement of research from high-quality research environments abroad that might be moved to Denmark for a period of time
- Guest researchers, e.g. bringing talented Danish researchers home from abroad for part of the year

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6 Calls for applications and assessment

The assessment of project proposals is based on DSF's strategic quality criteria which are described in the appendix: *DSF – Strategic quality*. It is crucial that the programme commissions assess applications according to three equivalent criteria: the relevance, effect and quality of the research.

The programme commissions generally call for applications once or twice a year, so all information about programme funding can be released at the same time, giving DSF a significant public presence.

When utilising instruments of a considerable size and long timeframe, it is important that the programme commissions take great care in selecting the projects/heads of research that are to receive funding. The programme commissions can decide to invite expressions of interest prior to inviting

applications. In the final stage of the selection process, interviews with the applicants might be considered, as is the case in many other European countries.

The programme commissions follow the assessment process described in the guidelines from the Danish Research Coordination Committee (KUF).

7 Programme and project management

To ensure that the announced strategic investments are carried out in an effective and qualified manner, it is important that the programme commissions measure quality in the form of the relevance, effect and quality of research by developing, implementing and following up on specific programmes and projects. They should also employ specific programme and project management tools that promote and focus the strategic investment. For more details, please see the appendix: *DSF – Strategic quality*.

Strategic research programmes are carried out with an emphasis on high-quality research management for both programmes and projects. The programme commissions must have an overview of the situation as well as the courage to make risky investments and stop activities that develop in unacceptable directions.

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The quality of strategic investments should be safeguarded as much as possible through collaboration with the best and most relevant foreign research teams.

All projects in DSF's programmes must have a head of project with extensive power over the participating parties. It will be the responsibility of the head of project to encourage all the parties to work together and share information across disciplinary boundaries and places of employment.

Furthermore, the programme commissions must ensure that relevant follow-up/monitoring of the projects takes place. It is vital that related projects motivate and inspire each other. Projects must be supplemented and revised on a regular basis and possibly shut down or expanded.

The programme commissions must ensure that interested authorities are kept up-to-date on significant preliminary project findings.

8 Dialogue and promotion

The programme commissions are responsible for ensuring, on a regular basis, an appropriate dialogue with relevant stakeholders on the strategic investments.

Promotion

Throughout the term of the programme, there must be regular public information and presentation meetings (entire programmes or coherent parts of programmes), where the project participants present their results.

User workshops

Meetings, seminars and other activities are used prior to, during and after carrying out programmes with a view to bringing people together to prepare a

project proposal for DSF's programmes and to promote results that are useful to public and private-sector businesses.

Open websites

The programme commissions can consider creating a Wiki, i.e. a website where the public can anonymously add ideas and proposals for collaboration in connection with, e.g. calls for project tenders. Another possibility is for stakeholders to advertise for partners for applications to DSF's programmes. This has been tried in connection with the cell phone tower programme. In the case of the call for proposals for Innovation Accelerating Research Platforms (IAFP), all 212 proposals were published on the Agency for Science, Technology and Innovation website. This gave stakeholders access to the proposals, enabling them to learn about their content – perhaps with the aim of using the proposals in other contexts or as a source of inspiration.

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Strategic research programmes

Values	Strategic quality: relevance/effect/quality of research; interactive research process; coordination/interaction; international collaboration; strong management; openness and visibility; focused investments; application of results		
Instruments	Research centres About DKK 25 mil. from DSF Plus co-funding 5-7 years	Networks About DKK 10-20 mil. from DSF Plus co-funding About 5 years	Minor initiatives Projects of at least DKK 10 mil. incl. co-funding 3-5 years
Grant types	Salaries for managers and key researchers; equipment expenses; other operating costs, including technical/administrative salaries; PhD grants; Postdoctoral grants; combination positions; collaboration with foreign research environments; dialogue between research institutions and the public and private sectors; involvement of foreign research environments; guest researchers; patent expenses etc.		
Dialogue	Contact-forming – Selection – Follow-up E.g. via user workshops; open websites; modified/coordinated calls for applications and assessments; programme and project management/mentors and public dialogue/communication about the programme/project.		
Ensuring results	Relevance, effect, quality of research		

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DSF – Strategic quality

DSF shall

- Help create a new research culture and new collaborative interfaces between university, private-sector and government research in order to meet the needs of society as a whole.
- Identify research that focuses on clear-cut problems and that can lead to value-generating innovation for Danish society in order to ensure that Denmark has the necessary knowledge and innovative power in the short and long term.
- Help basic research and traditionally separate fields to merge with strong application perspectives in order to strengthen interaction and dialogue between researchers and other stakeholders.
- Seek out new research trends and launch initiatives that help increase interaction between public and private-sector research.
- Help ensure Denmark's position in the long term as a global frontrunner with regard to welfare, economy and science.
- Help promote alliances between Danish researchers and the best researchers in countries with strong research traditions as well as in the new growth countries.

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DSF shall work to ensure that the Danish research community focuses more on problem-driven research and is given success criteria that correspond to this. It is DSF's mission to support a cultural change and to contribute to innovation in the research system. Not only must the strategic research that DSF supports work with problems, it must also attempt to solve them.

Strategic research (*mode 2 – knowledge production*) can be defined as follows:

1. Strategic research must always take place in a problem-oriented context, not a discipline-oriented context. This entails a shift towards problem-driven research.
2. Strategic research often covers several disciplines/fields and is carried out in a matrix organisation across public and private-sector institutions where disciplines or fields are included as needed within the context of the application areas.
3. Strategic research is often carried out in many research environments (not just at universities) in close collaboration and dialogue between researchers with different scientific backgrounds.
4. Strategic research entails a broader concept of quality with other success criteria besides classic scientific quality.

Quality

Quality in DSF's projects is assessed according to (at least) three equivalent criteria: the relevance, effect and quality of the research. DSF supports research that operates in both the short and long terms. DSF believes that high-quality research management which focuses on all three criteria is the best guarantee for a lasting benefit from the investment. DSF expects research programmes to take a holistic approach. Thus, a given project must be assessed and evaluated based on the research findings, growth or value for society that the research can produce and the ethical and environmental consequences that may be inherent in the actual technology, processes and products.

Building up international collaborations is a key dimension in the research DSF supports.

Relevance of the research

The relevance of the research in relation to society's needs is assessed on the basis of current and expected performance, taking the following indicators into account:

- The research creates application areas and has users in the public and private sectors.
- The research supports an existing industrial cluster or forms the basis for the establishment of new industrial clusters.
- The research supports growth of SMEs.
- The research contributes to building up strong research environments at international level.
- The research contributes to Master and PhD training of high quality.
- The research contributes to international collaboration with strong environments, which can produce synergies for Danish research, benefiting both development and innovation.
- The research contributes to growth and sustainable development in general.
- The research has public appeal.

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Effect of the research

The effect of the research is assessed on the basis of current and expected performance, taking the following indicators into account:

- The research contributes to value creation in the public and private sectors.
- The research contributes to an improved knowledge base for society's decisions and services.
- The research contributes to growth in the level of knowledge in specific research areas.
- The research contributes to an increased number of new research graduates.
- The research contributes to increased recruiting of talented researchers from Denmark and abroad.
- The research contributes to a general increase in level of education.

- The research stimulates innovation and thus helps increase the number of new knowledge-based businesses.
- The research contributes to increased demand and applications for new knowledge.

Quality of research

The quality of research is assessed on the basis of current and expected performance, taking the following indicators into account:

- Number of articles published in international peer-review journals
- Number of citations in international peer-review journals
- Number of publications
- Number of patents and licensing agreements
- Originality of research, development potential and international positions of strength
- The international reputations of research and institutions
- Quality of research management
- Quality of research training

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