

Published by:
Danish Council for Strategic Research
Danish Agency for Science, Technology
and Innovation
Bredgade 40
DK-1260 Copenhagen K
Denmark

Telephone: +45 35 44 62 00
Fax: +45 35 44 62 01

July 2008

This publication can also be downloaded
from the website of the Danish Agency
for Science, Technology and Innovation:
www.dasti.dk
ISBN (Internet): 978-87-920-8193-3

Design: Bysted A/S
Printers: Datagraf A/S
Circulation: 1,500
ISBN: 978-87-920-8194-0

TABLE OF CONTENTS

Foreword 4

Danish Council for Strategic Research 6

Members of the Board 7

Definition of strategic research. 9

The quality concept of the Danish Council for Strategic Research 10

Challenges for strategic research. 12

Presentation of the research areas covered by the programme commissions 14

Members of the individual programme commissions. 23

Further information 27

FOREWORD



Strategic research is conducted within areas of high priority for society, since research drives sustained improvements in welfare and contributes to solving important societal problems

The Danish Council for Strategic Research sees the continued strengthening of strategic research as holding great potential, characterised as it is by the dynamic interaction of research and society at large.

The Danish Council for Strategic Research consists of a Board and a number of programme commissions. The Council was established in 2004. From January 2008, several new members have been appointed to the Board.

The Board performs a number of advisory tasks and is vested with decision-making authority on matters of principle concerning the administration of strategic research. The Board determines the number of programme commissions in existence at any time and the areas for which they are individually responsible. The programme commissions are vested with funding-allocation authority within the research areas determined by the Board, and within the overall frameworks established by the Board.

The Board is responsible for the appointment of members of the programme commissions.

The various research areas assigned to the programme commissions and the names of the commissions tend to reflect the respective areas for which they were made responsible originally, when the Council was established in 2004.

The Danish Council for Strategic Research has decided to review the research areas assigned to the programme commissions and to change the names of the commissions in order to bring them into line with prevailing political priorities and future challenges for strategic research.

This brochure presents the research areas of the programme commissions. The delimitation of these areas is based on information currently possessed by the Board concerning forthcoming funding allocations to strategic research. The basis for the delimitation and naming of the programme commissions has been the societal challenges addressed by strategic research.

The Board places great emphasis on flexibility and will therefore continue to make changes to the number of programme commissions and their respective areas on an ongoing basis, in order to ensure the best possible administration of funds allocated to strategic research in the annual national budgets.

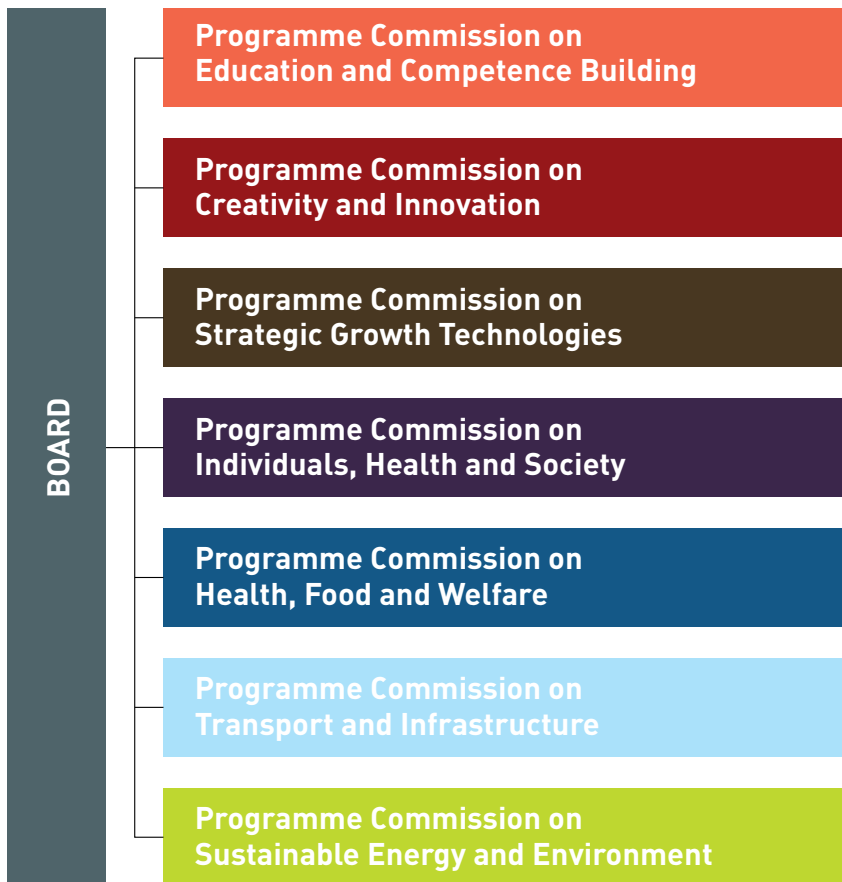
The Board hopes that this brochure will provide an overview of the organisation of the Danish Council for Strategic Research.



Peter Elvekjær

Chair of the Board
Danish Council for Strategic Research

DANISH COUNCIL FOR STRATEGIC RESEARCH



MEMBERS OF THE BOARD



Chair:
Group Senior Vice President
Peter Elvekjær,
Grundfos Management A/S



Vice-chair:
Professor Esther Fihl,
Centre for Comparative Cultural Studies,
Department of Cross-Cultural and Regional
Studies, University of Copenhagen



Frede Blaabjerg, Dean,
The Faculties of Engineering, Science
and Medicine, Aalborg University



Mogens Hørder, Dean,
Faculty of Health Sciences,
University of Southern Denmark



Bjørn Lykke Jensen, Director,
Building Technology Unit,
Danish Technological Institute



Professor Ole Lehmann Madsen,
Department of Computer Science,
University of Aarhus and director of the
Alexandra Institute Ltd.



Børge Obel, Dean,
Aarhus School of Business,
University of Aarhus



Annette Salskov-Iversen,
Vice President,
Chr. Hansen A/S



Svend Erik Sørensen, Vice President
Danish Crown



DEFINITION OF STRATEGIC RESEARCH

The Danish Council for Strategic Research defines strategic research as follows:

.....

1. Strategic research must always take place in a problem-oriented context, not a discipline-oriented context. This entails a shift to problem-driven research.

.....

2. Strategic research often spans 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 according to the context of the applications.

.....

3. Strategic research is often carried out in many research environments (not just at universities) in close collaboration and dialogue among researchers with different scientific backgrounds.

.....

4. Strategic research entails a broader concept of quality with additional success criteria besides classical scientific quality.

.....

THE QUALITY CONCEPT OF THE DANISH COUNCIL FOR STRATEGIC RESEARCH

In Danish Council for Strategic Research, quality in research projects is assessed according to (at least) three criteria of equal importance: the relevance, effect and scientific quality. The Danish Council for Strategic Research supports research that operates in both the short and long terms. The Danish Council for Strategic Research believes that skilled research management which places focus on all three criteria is the best guarantee for a lasting benefit from the investment. The Danish Council for Strategic Research expects research programmes to take a holistic approach. Thus, a given project must be assessed and evaluated based on both the research findings; the economic growth or other 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 research funded by the Danish Council for Strategic Research.

I) Relevance of the research

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 possibilities and has users in the public or private sectors.

The research supports an existing industrial cluster or forms the basis for the establishment of new industrial clusters.

The research supports the growth of small and medium-sized enterprises.

The research contributes to the building of strong research environments at the international level.

The research contributes to research training (PhD and postdoc) of high quality.

The research contributes to international collaboration with strong environments, which can produce synergies for Danish research and thus benefits development and innovation.

The research contributes to economic growth and sustainable development in general.

The research receives public attention.

II) Effect of the research

Effect of the research is assessed on the basis of performance to date and expected performance, taking the following indicators into account:

The research contributes to productivity and quality in the public and private sectors.

The research contributes to an improved knowledge foundation 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 researchers.

The research contributes to increased recruiting of talented researchers from Denmark and abroad.

The research contributes to a general increase in the level of education.

The research stimulates innovation and thus helps increase the number of new knowledge-based businesses.

The research contributes to increased demand for and applications of new knowledge.

III) Scientific quality

The level of the research is assessed on the basis of performance to date and expected performance, taking the following indicators into account:

Number of articles published in international peer reviewed journals.

Number of citations in international peer reviewed journals.

Number of publications.

Number of patents and licensing agreements.

Originality of research, development potential and international positions of strength.

The international reputations of researchers and institutions.

Quality of research management.

Quality of research training (PhD and postdoc).

CHALLENGES FOR STRATEGIC RESEARCH

The strategic research, for which the Danish Council for Strategic Research is responsible, is conducted within politically prioritised and thematically defined areas.

There are in principle no constraints on the thematic delimitation except that the research areas must be sufficiently broad to ensure genuine competition for the funds.

The specific allocation of funds for strategic research is established in the annual National Budgets. The Board then decides which programme commissions are to be responsible for the specific decisions concerning distribution of funds for the research projects, and the Board and the programme commissions confer on the principles for that distribution.

From the perspective of the Danish Council for Strategic Research there are essentially two challenges of significance for sustained advances in society, which strategic research can be instrumental in meeting. These are I) increase in national prosperity, in the sense of sustained economic growth and II) maintenance and development of the welfare society.

I) Increase in national prosperity

The significant driver for ambitions for continued economic growth and competitiveness is that these are prerequisites for the maintenance and further development of the welfare society.

In a globalised world of increasing international competition on both prices and products/services, the demands for renewal including the development of new products and services are still growing. Equally, citizens are calling for increasingly higher standards of quality in welfare services.

This also entails:

- Increasing requirements regarding the training of a highly qualified workforce, including researchers.
- Demand for accelerated development of new products and services.
- Rising demand for collaboration between public and private-sector research.
- Strengthening of international collaboration between research institutions and companies.
- Development and utilisation of employee competences.
- The ability to negotiate other cultures.

These requirements are reinforced by the demographic trend which results in a change in the age composition of the population. That is to say, a larger part of the population will in the future be outside of the total national workforce and the proportion of the population in employment is set to fall considerably.

1) Development of the welfare society

One of the characteristics of the Danish welfare society is that the public sector makes a number of social and health services available to citizens. In addition, Parliament sets a number of parameters for conduct, e.g. in respect of the environment and civil law. These parameters may be in the form of financial subsidies/incentives or in the form of legislative regulation.

The main rationale for establishing these parameters is that public-sector regulation or governance by financial incentives is optimal for society.

The main considerations in setting the parameters for the welfare society are:

- Renewable energy, including regard for compliance with international environmental treaties and regard for the reliability of supply.

- Environment (sustainable development).

- Climate change.

- Stewardship of resources.

- Preventing and curing diseases.

- Consumer protection.

- Valuable foodstuffs.

- Efficient infrastructure, e.g. transport and ICT.

- Increased prosperity makes it natural to also increase demands regarding the extent and quality of public welfare services. This applies especially to the social and health sector.

- Public education system of a high standard.

- Securing a safe society with minimal civic conflict.

Overall, the assessment is that the main challenges in respect of continued increases in prosperity (economic growth) are incorporated in the premise for all the programme commissions, but there are distinct differences in how their respective fields of research contribute to welfare improvements.

PRESENTATION OF THE RESEARCH AREAS COVERED BY THE PROGRAMME COMMISSIONS

All the programme commissions address a number of common challenges:

1. Collaboration between research and industry
2. Training of a highly qualified workforce
3. Public education system of a high standard
4. Efficient research infrastructure

The individual programme commissions also address a number of more specific challenges that can contribute to the development of the welfare society.

The Danish Council for Strategic Research has prepared an overview of the research themes for which the Council is responsible for funding in 2008.

This overview contains a short overall description of each programme commission's research areas based on the specific challenges they address.



Research themes already determined for 2008-2010 *

1. Energy and environment

2. Systematised renewable energy

3. Environmental technology
 - a) Climate

 - b) Water and water supply

 - c) Environmental aspects of livestock production

 - d) Air pollution

 - e) Chemicals hazardous to human health

 - f) Soil contamination

*Note: The Danish Council for Strategic Research website indicates in which years funds are allocated in the National Budget for the various research themes, and the size of the total allocation.

It is a challenge to ensure cost-effective realisation of the overall goals of reliability of supply, environmental protection and a strong competitive position

The Government's long-term goal is to liberate Denmark from dependence on fossil fuels so that our entire energy requirements may in the long term be met by renewable energy sources.

There is a risk that economic growth will result in increasing environmental impacts. Research in (among others) environmental technology contributes to advance environmentally

sustainable development, where economic growth does not result in increasing environmental impacts, and where the focus is placed on a healthy and safe environment. Increase in production and consumption also increases the need for improved efficiency in the use of natural resources and environmentally sound waste management.

Climate change and climate adjustment have very high priority.

The Government's proposal for a climate adjustment strategy also identifies a number of major challenges for research within this field.

Research themes already determined for 2008-2010 *

- 1) Connection between food, health, lifestyle and drug resistance

- 2) Individualised health initiative

- 3) Biological manufacturing

- 4) Food, health and the environment
 - a) Healthy and unhealthy substances

 - c) Combating infections and the spread of resistant microorganisms

 - c) Individualised and gentle methods for treatment and testing

 - d) Technology-supported patient self-care

*Note: The Danish Council for Strategic Research website indicates in which years funds are allocated in the National Budget for the various research themes, and the size of the total allocation.

It is a challenge to provide the population with conditions conducive to a healthy lifestyle, and a high degree of consumer protection.

There is a need, from the perspective of both the manufacturer and consumer, to develop valuable foods.

Consumer aspirations for a healthy lifestyle make demands on the food sector for healthy, safe and appealing food of high quality. At the same time, there are requirements for environmental consideration through sustainable growth in the food sector.

Both for society and individual patients, there is a great potential in the growing focus on patients' individual needs.

Research themes already determined for 2008-2010 *

1. Clinical research

*Note: The Danish Council for Strategic Research website indicates in which years funds are allocated in the National Budget for the various research themes, and the size of the total allocation.

The changed demographic composition of the population presents the health system with a number of challenges. The challenges are to help to ensure that patients can be offered treatments of a high international standards. There is also a challenge in terms of organising the health system in a way that maximises resources spent on treating patients.

There is a need for research in patient-centred research as a basis for assessing the efficacy of interventions.

The extensive structural changes in the health sector also entail an increasing need for health service research

Research themes already determined for 2008-2010 *

1. Interdisciplinary applications of nano-, bio- and IC technologies
2. Nano-, bio- and IC technologies
3. ICT research

*Note: The Danish Council for Strategic Research website indicates in which years funds are allocated in the National Budget for the various research themes, and the size of the total allocation.

The development of new technologies such as ICT, biotechnology and nanotechnology has already made a great impact on social progress. The new technologies and their continued development have been a key driver of economic growth.

But development does not stop here. There are still great potentials for research in these technologies, which also have wide-ranging applications in many areas. This research will therefore continue to be of a great importance for future growth and welfare improvements.

There are great potentials for synergies in the interdisciplinary research which involves aspects from various technologies, e.g. research projects that involve both ICT and biotechnology, or nanotechnology and biotechnology.

The new technologies offer great opportunities, but there are also potential risks in relation to health and environmental impacts.

Both in this and other areas, the health, environmental and ethical consequences of the new technologies can form part of the research

PROGRAMME COMMISSION ON
CREATIVITY AND INNOVATION

Research themes already determined for 2008-2010 *

1. Creativity and Innovation, New Production Forms and the Experience Economy
2. User-Driven Innovation
3. Cultural Understanding

Note: The Danish Council for Strategic Research website indicates in which years funds are allocated in the National Budget for the various research themes, and the size of the total allocation.

One of the main challenges in this field is to stimulate creativity and innovation in private-sector production and service enterprises, in the public sector and generally among citizens.

The ability to systematically think independently and come up with new ideas, new potential solutions and devise new concepts is vital for the capacity of private-sector production and service enterprises to create new products and services, and it is important

for the public sector's capacity to develop improved services.

However, it is also important for the creation of improved conditions for employees and citizens generally.

Another challenge is to contribute to the preservation of a stable society with strong cohesion and social mobility. An understanding and knowledge of cultural identity can contribute to this process.

Research themes already determined for 2008-2010 *

1. Education research
2. Post-vocational degree occupations

*Note: The Danish Council for Strategic Research website indicates in which years funds are allocated in the National Budget for the various research themes, and the size of the total allocation.

Access to a sufficient supply of educated and well-qualified labour is a prerequisite for sustained increases in prosperity and for continued development of the welfare society.

The Government's goal is for 95% of school leavers to complete post-school education and for 50% to receive a higher education (academic or vocational). At the same time, global competition makes high demands regarding the quality of education. Finally, life-long learning is essential: this makes demands on the quality of supplementary training and education.

DANISH COUNCIL FOR STRATEGIC RESEARCH

PROGRAMME COMMISSION ON TRANSPORT AND INFRASTRUCTURE

Research themes already determined for 2008-2009 *

Transport research

*Note: The Danish Council for Strategic Research website indicates in which years funds are allocated in the National Budget for the various research themes, and the size of the total allocation.

In many ways, transport forms the vital nerve of modern society and represents a major economic sector in Denmark. The growth within transport expected in the coming years will result in increasingly busy transport routes and potentially increasing environmental impacts.



MEMBERS OF THE INDIVIDUAL PROGRAMME COMMISSIONS

Every member of a programme commission must be a recognised researcher. The members are appointed by the Board. Each year, the Board decides whether a programme commission is to continue. This decision is made once it is known which programmes will be allocated funding in the National Budget.

PROGRAMME COMMISSION ON SUSTAINABLE ENERGY AND ENVIRONMENT

Chair:

Professor Thomas Højlund Christensen,
Department of Environmental Engineering,
Technical University of Denmark

Members:

Ida Brøker, Head of Department
DHI Water & Environment

Laila Grahl-Madsen, Senior Researcher
IRD Fuel Cells A/S

Professor Jes la Cour Jansen,
Lund University

Christoffer Johansen, Head of Department
Institute of Cancer Epidemiology,
Danish Cancer Society

Preben Jørgensen, Manager
Electrical Systems, Vattenfall A/S

Poul Erik Morthorst, Research Specialist
Risø National Laboratory (Systems Analysis
Dept.), Technical University of Denmark

John K. Pedersen, Head of Department
Institute of Energy Technology,
Aalborg University

Bo Riemann, Director of Research
National Environmental Research Institute
University of Aarhus

PROGRAMME COMMISSION ON HEALTH, FOOD AND WELFARE

Chair:

Erik Bisgaard Madsen, Deputy CEO, Danish Meat Association

Professor Flemming Just,
Institute of Rural Research and Development,
University of Southern Denmark

Members:

Lisbeth Valentin Hansen, Director
DHI Water Environment Health

Professor Elsebeth Lyngé,
Institute of Public Health, Panum Institute
University of Copenhagen

Hans Rask Jensen, Associate Professor
Department of Border Region Studies,
University of Southern Denmark

Jette Nielsen, Senior Researcher,
Head of Section, DTU Aqua

Professor Jørgen Jespersen, MD, chief physi-
cian, Department for Thrombosis Research,
University of Southern Denmark

Professor Allan Vaag, Chief Physician
Steno Diabetes Center

Helena Lindmark Månsson, Head of Nutrition
Research, Swedish Dairy Association

PROGRAMME COMMISSION ON STRATEGIC GROWTH TECHNOLOGIES

Chair:

Professor Lars Mathiassen, Georgia State
University

Professor Joakim Lundeberg,
KTH - The Royal Institute of Technology,
Stockholm

Members:

Søren Damgaard, Head of Department, IBM
A/S

Professor Eva Steiness, Director

Professor François Grey, European Organiza-
tion for Nuclear Research, CERN

Professor Maria Strømme, Uppsala University

PROGRAMME COMMISSION ON CREATIVITY AND INNOVATION

Chair:

Hans Siggaard Jensen, Head of Department Learning Lab Denmark, School of Education, University of Aarhus

Jan Stentoft Arlbjørn, Research Professor
Department of Entrepreneurship and
Relationship Management, University of Southern Denmark

Members:

Elisabeth Flensted-Jensen, Managing Director
Ampio Raadvad

Donatella de Paoli, Associate Professor
Norwegian School of Management

Mette Mønsted, Professor with special responsibilities, Department of Management, Politics and Philosophy, Copenhagen Business School

Professor Bengt Gustav Johannisson,
Scandinavian Institute for Research in Entrepreneurship, School of Management and Economics, Växjö University

Timothy Charles McAloone, Associate Professor, Department of Mechanical Engineering
Technical University of Denmark

PROGRAMME COMMISSION ON EDUCATION AND COMPETENCE BUILDING

Chair:

Professor Sven Erik Nordenbo,
Danish Clearinghouse for Educational
Research, Learning Lab Denmark,
School of Education, University of Aarhus

Marianne Stenius, Rector, Swedish School
of Economics and Business Administration,
Helsinki

Professor Michael Uljens, Vice-Dean
Åbo Akademi University

Members:

Professor Gösta Esping-Andersen,
CPIS Universitat Pompeu Fabra

Professor Kjell G. Salvanes,
Department of Economics, Norwegian School
of Economics and Business Administration

PROGRAMME COMMISSION ON TRANSPORT AND INFRASTRUCTURE

Chair:

Randi Hjorthol, Head of Research
Institute of Transport Economics, Oslo

Professor Jan Damsgaard, Center Director
Center for Applied ICT, Copenhagen Business
School

Members:

Professor Sven Axsäter,
Department of Industrial Management and
Logistics, Lund University

Poul Erik Morthorst, Research Specialist
Risø National Laboratory (Systems Analysis
Dept.), Technical University of Denmark

Professor Jane Summerton,
VTI, Swedish National Road and Transport
Research Institute

PROGRAMME COMMISSION ON NON-IONISING RADIATION

Chair:

Professor Philippe Grandjean, Head of
Research, Environmental Medicine Research
Unit, Institute of Public Health, University
of Southern Denmark

Members:

Professor Olav Breinbjerg,
Technical University of Denmark

Kjell Hansson Mild, Associate Professor
Radiation Physics, Department of Radiation
Sciences, University of Umeå

Professor Jørn Olsen,
Department of Epidemiology and
Social Medicine, University of Aarhus
Dept. of Epidemiology, UCLA,
School of Public Health

PROGRAMME COMMISSION ON INDIVIDUALS, HEALTH AND SOCIETY

Chair:

Professor Olle Ljungqvist, Department of Clinical Science, Intervention and Technology, Karolinska Institutet, Stockholm

Ulla Feldt-Rasmussen, MD, Chief Physician, Head of Department, Department of Medical Endocrinology, Copenhagen University Hospital - Rigshospitalet

Members:

Professor Jakob Kragstrup, Research Unit for General Practice University of Southern Denmark

Mette Bech Risør, Senior Researcher, Research Unit for Functional Disorders - Psychosomatics and CL Psychiatry, Aarhus University Hospital

Professor Dorthe Gyrd-Hansen, Head of Research, National Institute of Public Health, University of Southern Denmark, and Head of Research, Danish Institute for Health Services Research

Dr Torsten Skov, Senior Vice President, Drug Development, Pharmexa A/S

Professor Allan Vaag, Chief Physician Steno Diabetes Center

FURTHER INFORMATION



The Danish Council for Strategic Research is served by a secretariat within the Danish Agency for Science, Technology and Innovation.

The secretariat will be pleased to provide further information concerning the individual programmes and Danish strategic research in general.

Contact

Secretariat of the Danish Council for Strategic Research
The Danish Agency for Science, Technology and Innovation
Bredgade 40
DK-1260 Copenhagen
Denmark

Tel. +45 35 44 62 00
Fax +45 35 44 62 01
dasti@dasti.dk
www.dasti.dk

Information concerning telephone numbers and e-mail addresses for the secretariat's staff is available at the Danish Agency for Science, Technology and Innovation website www.dasti.dk

Secretariat of the Danish Council for Strategic Research
The Danish Agency for Science, Technology and Innovation
Bredgade 40
DK-1260 Copenhagen K
Denmark

Telephone: +45 35 44 62 00
dasti@dasti.dk
www.dasti.dk