



Research expands frontiers

Strategy for
the Research Council of Norway

*Research
expands frontiers
Generating
greater insight,
enhanced opportunity,
innovative solutions*

 The Research Council of Norway

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Preface

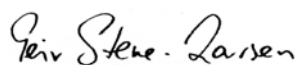
The primary aim of the Research Council of Norway is to promote top-quality research in response to the needs of society. This strategy document focuses primarily on areas in which a need to chart out a new course is seen in relation to the existing situation.

This strategy is designed to extend from the present to 2010. It will be operationalised organisationally through long-term budget planning, actions plans and annual working programmes.

A detailed presentation of the current status in relation to the established performance targets is available in an electronic attachment to the strategy document published on the Research Council's website. Performance information will be updated regularly, and performance targets will be further defined during the course of 2004.

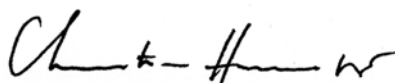
This strategy document describes the actions that the Research Council will take to fulfil the objectives set out in the Norwegian Government's existing research policy. The Research Council also serves as an advisory body in the formulation of national research policy. In this context, the strategy will be supplemented by the Council's annual budget proposal as well as the submission of various types of input, e.g. in connection with the preparation of a new government white paper on research policy, recommendations for Norwegian views on the EU Seventh Framework Programme for research, and specific proposals in relation to government innovation policy.

The Research Council strategy will be implemented in cooperation with the various participants in the research system, all of whom have participated in its development and design. The Research Council would like to extend its thanks for the many valuable perspectives and viewpoints that have emerged during these efforts.



Geir Stene-Larsen

Chairman of the Programme Committee



Christian Hambro

Director General

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Vision Statement

► Research expands frontiers

Generating greater insight, enhanced opportunity, innovative solutions

Research is intended to expand the boundaries of what we know, understand and can achieve. Research adds cultural resonance to society and creates a viable framework for sustainable development, welfare and wealth creation. At the same time, Norway as a prosperous country is morally obligated to contribute to the global pool of knowledge.

Research is part of Norwegian culture. It is enriching in and of itself, and it is vital to promoting scientific and knowledge-related development. Research may also be motivated by the need for practical applications and justified by expectations relating to concrete results. The Research Council seeks to incorporate the widest possible range of motivations for research activity into its efforts, and to adapt its objectives, instruments and working methods accordingly.

International society is faced with enormous challenges, and the nations of the world are growing increasingly dependent on one another. Research has a crucial role to play in fulfilling global tasks as well as in creating value in Norway. Research shall contribute to enlarging the framework for new opportunities and lead to new solutions that may, in turn, enhance the pace of innovation and increase productivity.

To fully realise the vision of the future, the quality of Norwegian research must be enhanced and the overall investment in research activity must be increased.

Mission Statement

► The Research Council will work to increase the value of society's investment in research activity

The Research Council will work within a strategic framework to promote top-quality research in all disciplines, and will in particular strive to support research that is beneficial to industry, to the public sector and to society at large.

The Research Council will encourage constructive interaction and seek to introduce an appropriate organisational framework within the research and innovation system. The establishment of research priorities that focus on activities across traditional disciplinary and sectoral dividing lines as well as activities to enhance the internationalisation of Norwegian research both comprise important tasks for the Council.

The Research Council has a comprehensive, three-tiered system of boards with representation from all components of Norwegian society. This provides the Council with unique insight into emerging research needs, enables it to place research activities in a broad perspective, and makes it possible to assess many different issues in relation to one another when drawing up research strategies.

This broad representation, combined with open channels of external communication, will ensure that the Research Council is able to effectively balance all the important considerations in its decision-making processes

The roles of the Research Council

The Research Council has three principal tasks:

- To serve as an advisory body on research strategy issues
- To finance research
- To create meeting places and networking opportunities for relevant players from research, trade and industry and the public sector.

The Research Council serves as a driving force in launching initiatives in areas that are essential to knowledge development and value creation. The Council's input is designed to enhance cooperation and task-sharing within the research and innovation system.

The Research Council's funding efforts are directed towards enhancing the quality of research, increasing the utilisation of research results, and ensuring that research leads to innovation within the industrial and public sectors alike. For the most part, funding is awarded on the basis of national, merit-based competition. Some of the instruments employed have been devised as a means of promoting disciplinary and scientific development and strengthening research institutions. Other instruments comprise target-based initiatives to boost competence and augment the knowledge base in specifically defined areas that have a direct bearing on industrial development, policy formulation or improved public administration. In addition to these traditional funding instruments, the Research Council is also responsible for administering *SkatteFUNN*, the tax deduction scheme for trade and industry.

The Research Council is to serve as a hub for the various actors in the research system. This provides a good basis both for identifying potential areas of priority and for planning the implementation of existing initiatives. It also establishes the Research Council as an arena for discussions both within the research system and with the users and the public at large with regard to choices of direction as well as important ethical challenges in the world of research.

The Research Council collaborates at the national and international levels. The EU comprises an important platform for the development of new, large-scale research initiatives, and is assuming an increasingly important function in the debate on the role of research in society and industrial development.

Strategic priorities

In keeping with the principles set out in the most recent government white paper on research, the Research Council gives priority to basic research in all disciplines as well as to the four stipulated target areas: marine research, medicine and public health, ICT, and research in the interface between environmental and energy issues. Additional priority areas include petroleum, materials and biotechnology research.

In response to the priorities outlined in the current government report on research policy, the Research Council has launched a variety of initiatives. These include the establishment of 13 Centres of Excellence and seven large-scale research programmes that encompass basic research, industry-oriented research and research for policy development and public administration in priority areas. The Research Council funds independent initiatives in social science and humanities research, which also comprise an important element of several of the large-scale programmes.

As part of the effort to realise the stated research policy objectives for the period leading up to 2010, the Research Council has defined six strategic goals for its activities. The associated performance targets indicate what the Research Council hopes to achieve, and the actions listed under each goal specify how the Research Council plans to ensure a successful outcome.

Goal: Enhanced quality in research

The Research Council shall seek to ensure that Norwegian research activity meets the same quality standards as the other Nordic countries.

Long-term, basic research constitutes the foundation for the development of knowledge within society. In some areas, such as marine biology and petroleum geology, the Norwegian research community possesses cutting-edge expertise that helps to set the standards for international research activity.

Various evaluations carried out in recent years have concluded that high-quality groups of researchers are found within virtually all fields of Norwegian research. However, despite the many outstanding individuals, the research communities within many of the science and technology disciplines remain weak in an international perspective because they are so small. The overall impression gives cause for concern. Compared to their Nordic counterparts, Norwegian researchers on average publish fewer articles and their articles are cited somewhat less frequently. Successfully bringing the standard of Norwegian research activity up to the level of the other Nordic countries will require increased investment, the design and implementation of effective instruments for developing the research sector, greater focus on quality aspects of research and better research management.

Industry-based research and much of the activity in applied research are not primarily aimed at scientific publication. In these areas, the crucial factor is the degree to which research leads to innovation or is useful in some other manner. In certain fields, for example petroleum technology, aquaculture and aluminium production, Norway is considered to be a leading knowledge nation. Methods for documenting quality and achievement in this sphere of national research activity need to be further developed.

Performance targets

By 2010:

- ▶ Norwegian researchers will reach the same level as the other Nordic countries in regard to scientific publication and citation frequency
- ▶ Evaluations and other performance indicators will show that both the extent and the quality of Norwegian research activity have increased
- ▶ The Norwegian research community will be a world leader in international research in priority areas such as marine and petroleum-related fields

Actions in relation to advisory functions

- ▶ Strengthen schemes for merit-based competition in research
- ▶ Increase volume of long-term basic research
- ▶ Increase access to scientific equipment and improve equipment utilisation measures
- ▶ Establish better task-sharing and cooperation between groups of researchers
- ▶ Refine methods for measuring R&D quality – particularly with regard to applied and industrial research

Actions in relation to funding

- ▶ Invest more in the highest quality research environments than is currently the case
- ▶ Promote better management of research through the allocation of strategic research funding
- ▶ Support scientific innovation by making it easier for researchers to utilise expertise across disciplinary dividing lines
- ▶ Establish schemes to encourage top foreign researchers in priority areas to come to Norway

Actions in relation to the role as a meeting place

- ▶ Further expand networks for scientific development
- ▶ Strengthen links between basic and applied research
- ▶ Promote cooperation with international research groups and R&D institutions

Goal: Increased research for innovation

The Research Council shall seek to promote research that strengthens Norway's innovative capacity and competitiveness

Societies based on a knowledge-driven economy are dependent on innovation to maintain a high level of social goods and benefits. Although innovation encompasses far more than research, research is an absolutely crucial component of innovation – directly as well as indirectly. Research spawns new knowledge and unique forms of competence. This lays the foundation for new products, services and processes that have a high knowledge content, that are difficult to duplicate and that may create a framework for permanently enhanced competitiveness. Norwegian industry is in the forefront in terms of knowledge in a number of areas. Nonetheless, Norway's scores are low in relation to countries it cooperates and competes with, both with regard to industrial investment in R&D and with regard to innovation-related indicators. Therefore, it is important to enhance the volume, quality and relevance of industry-oriented research – within enterprises and research institutions alike.

The various challenges relating to innovation must be viewed in conjunction with one another: there is a need for more research and innovation in existing industry; for growth in new knowledge-intensive industries; for increased commercialisation of research results; and for a strengthened public sector as a source of – and an environment for – innovation. Larger-scale, targeted research initiatives will be needed as a platform for tomorrow's industry if Norway is to enhance its innovative capacity. This must be predicated upon a better flow of knowledge and greater interaction between industry, knowledge institutions and the public authorities. Increased cooperation between industry and research institutions is especially important in this context. Studies show that more risk capital is needed to realise the potential of the research being performed.

Performance targets

By 2010:

- ▶ There will be a greater volume of research performed by trade and industry, which will bring Norwegian innovative capacity up to the level of other Nordic countries
- ▶ The Norwegian research communities will be among the foremost in the world in areas designated to be of key importance to industrial development
- ▶ The value of research institutions as partners for innovative companies will be greater than is the case today
- ▶ The research communities will represent more interesting partners for cooperation with public service providers, and R&D will be incorporated into public procurement strategies

Actions in relation to advisory functions

- ▶ Increase allocations to industrial research
- ▶ Increase allocations for innovation measures
- ▶ Strengthen research in areas designated to be of key importance for industrial development in Norway
- ▶ Provide input on research strategies for innovation to the public sector

Actions in relation to funding

- ▶ Further develop “user-directed” research and other schemes that encourage enterprises to invest more in research
- ▶ Coordinate the industrial policy instruments employed by Innovation Norway and the Research Council
- ▶ Develop instruments that promote greater cooperation and a better flow of knowledge between research institutions and trade and industry
- ▶ Assess new measures for research-based innovation, such as the introduction of centres of excellence in innovation
- ▶ Increase the number of doctorates in areas where this will be beneficial to industry

Actions in relation to the role as a meeting place

- ▶ Compile a shared knowledge base regarding challenges and instruments in the innovation sphere
- ▶ Improve cooperation and the flow of knowledge between research institutions, trade and industry and the public sector

Goal: Expanded dialogue between research and society

The Research Council shall seek to enhance the role of research in the context of social development and quality of life

An open dialogue between the research community and the public is necessary in order to ensure responsible research in keeping with the ethical norms of society. It is also required to ensure development of research activity in areas of significance to society at large. As a result of the broad-based representation of user interests and research communities within the Research Council, the organisation is uniquely equipped to identify and follow up research initiatives in areas that are critical in a social development perspective.

Norway is committed to participating in research that fosters sustainable global development, and every effort should be made to support research activities seeking to cultivate economic, political and social development in less affluent countries. Research generates the knowledge base needed to assess the ramifications of the different choices faced by policy-makers and public administrators. The practical value of research becomes clearly evident in the emergence of new policies and changes in government administration practices. Norwegian researchers are already making important contributions in these areas, affording Norway a national advantage that should be given further focus.

One of the challenges facing the Research Council is how to involve policy-makers, other stakeholders and the general public in the discussion regarding the role of research in society. Information about research and researcher participation in the public debate can help to bolster understanding of, interest in and support for research activity. This will in turn lead to greater knowledge and creativity within society.

Performance targets

By 2010:

- ▶ Research in areas of special importance to society will be substantially strengthened
- ▶ Norwegian research will help to provide a knowledge base for forward-looking policies and an innovative public sector in key areas
- ▶ The forums for dialogue between researchers and society will be expanded to ensure that research activity is in conformance with overriding ethical norms

Actions in relation to advisory functions

- ▶ Submit proposals for new, large-scale initiatives aimed at resolving social challenges
- ▶ Strengthen investment in research to enhance sectoral policy and administrative practice within ministerial spheres of responsibility
- ▶ Submit proposals for special allocations to intensify research cooperation aimed at promoting positive development in less affluent countries

Actions in relation to funding

- ▶ Implement research initiatives in areas of crucial importance to society
- ▶ Initiate and support national measures for dissemination of research to the public
- ▶ Stipulate requirements regarding user-adapted dissemination activities for projects financed by the Research Council

Actions in relation to the role as a meeting place

- ▶ Enhance cooperation with educational institutions, professional organisations and the media as information channels and forums for debate with regard to the role of research in the development of society
- ▶ Integrate key stakeholders to a greater extent into the research programme planning process
- ▶ Identify success factors that lead to the utilisation of research in government ministries and the public administration

Goal: Increased internationalisation of Norwegian research

The Research Council shall seek to ensure greater internationalisation of research carried out in enterprises and research institutions

Researchers are growing more and more dependent on cooperation with leading circles in their own and related fields across national borders. Such cooperation has become crucial to the development of the research community. At the same time, international research cooperation adds to society's cumulative knowledge pool.

Research policy has become more internationally oriented, and is increasingly influenced by worldwide networks of researchers, companies and policy-makers. This has been prompted not least by the establishment of the European Research Area (ERA) under the auspices of the EU. If Norwegian researchers are to help set the international agenda for research, they need to participate at the international level. Cooperation with research groups in other countries is also essential for keeping pace with developments on the research front, for bringing new insights home to Norwegian enterprises and knowledge communities, and for helping to enhance the overall quality of Norwegian research activities.

Norwegian research must be of superior quality if research groups are to be perceived as attractive partners in an international context. Thus, Norwegian research activities must incorporate and utilise findings from other countries and, at the same time, help to expand global knowledge. It is critical to stimulate increased foreign investment in Norwegian research and to encourage a greater number of foreign researchers to come to Norway to work.

Performance targets

By 2010:

- ▶ A substantially greater number of foreign researchers will be working at Norwegian research institutions and companies
- ▶ Foreign funding of Norwegian research will have increased considerably
- ▶ The level of cooperation between Norwegian and leading international research institutions will be markedly higher than today
- ▶ The Research Council will take more active part in the shaping of the ERA and the implementation of the EU Action Plan to boost research efforts in Europe

Actions in relation to advisory functions

- ▶ Enhance participation in international organisations for the formulation of research policy
- ▶ Provide input and guidance to the research community in connection with its activities under the auspices of the EU Framework Programmes
- ▶ Increase allocations for bilateral agreements with key research countries

Actions in relation to funding

- ▶ Stipulate requirements that promote international participation by research institutions
- ▶ Increase co-financing schemes for EU projects
- ▶ Open research programmes to participation by foreign researchers when appropriate
- ▶ Work to enhance Norway's reputation as an attractive host country for foreign researchers and a profitable region for foreign investment in research
- ▶ Support cooperation between Norwegian and foreign companies

Actions in relation to the role as a meeting place

- ▶ Expand cooperation between research institutions in Norway and other countries by promoting network building and participating actively in the effort to shape the ERA and the EU Seventh Framework Programme
- ▶ Enhance the Nordic Research and Innovation Area (NORIA)
- ▶ Collaborate with Innovation Norway to increase efforts to bring knowledge and research resources from other countries to Norway

Goal: **Do more to foster talent**

The Research Council shall seek to encourage talented young people to pursue careers in research

The Storting (Norwegian national assembly) has approved a considerable rise in the number of researcher recruitment positions – primarily through direct funding of researcher training programmes at institutions of higher education. However, a big challenge lies in ensuring that a greater proportion of candidates exhibiting outstanding research skills decide to become researchers.

The Research Council will work to make research more accessible and interesting to children and young people. The Council will also work to encourage a greater number of candidates who complete researcher training programmes to pursue careers in research. The proportion of women candidates who choose to continue in research is currently too low. It is important in this context to create a better framework for the transition from researcher training to an employment platform. Improvements in research management will also be vital to fostering and retaining talent. Greater researcher mobility between companies, research institutes and institutions of higher education would enhance the versatility of research activities and create better opportunities for outstanding candidates than is currently the case.

In Norway, the resources underlying each R&D full-time equivalent are small compared with other countries. This implies that researchers here have to spend more of their time on tasks not related to research than their counterparts abroad. Less than optimal working conditions may diminish the appeal of a career in research, and pose an obstacle to recruitment.

Performance targets

By 2010:

- ▶ The number of post-doctorate positions will have risen substantially, and the percentage of women employed as researchers will be considerably higher
- ▶ A much higher proportion of researchers will have the opportunity to move between enterprises, research institutions and public administration during their careers
- ▶ The resources per R&D full-time equivalent will have increased to equal the OECD average

Actions in relation to advisory functions

- ▶ Enhance the appeal of the Norwegian research community by improving conditions for research

Actions in relation to funding

- ▶ Introduce clearly-defined career paths using schemes that may be adapted to academic and individual needs
- ▶ Create a specific career path framework for women researchers
- ▶ Encourage the research community and private enterprise to implement more active recruitment measures
- ▶ Promote improved research management to recruit and foster new talent
- ▶ Encourage fellowship-holders to study in research communities abroad
- ▶ Fund Adjunct Professor positions for researchers from the industrial sector and research institutes, and offer grants for researcher visits in private enterprises

Actions in relation to the role as a meeting place

- ▶ Launch activities and measures for children and young people to demonstrate that research represents a challenging, exciting career path

Internal goal: **An improved Research Council**

The strategic priorities listed above indicate what the Research Council plans to do to increase the value of research in society. The Research Council cannot succeed in these efforts without the implicit confidence of all the relevant parties. Everyone involved in the research establishment is best served by a Research Council that not only documents and achieves good results, but that also works in a manner to which its users can relate. Our organisational objectives are designed to support our strategic goals and to realise the other targets outlined in this strategy. In addition, they will contribute to the development of the organisation as a whole, including those aspects that are not directly related to the funding of research.

According to its organisational objectives, the Research Council shall be:

- Accessible:** seeking a broad dialogue with society and ensuring legitimacy by maintaining openness in all key processes and decisions
- Transparent:** helping to create a strategic framework with clearly-defined input and priorities
- Integrated:** keeping its focus on cohesiveness and coordination in research and research policy
- Service-minded:** serving owners and users in a professional, reliable manner that is tailored to their individual needs
- Efficient:** exemplifying an organisation characterised by cooperation and pragmatic administrative procedures
- Competent:** representing a highly-regarded workplace known for its superior expertise and ongoing learning
- An important arena:** providing a hub for cooperation between research, industry and public administration within and across disciplines, sectors and type of research activity

The Research Council is well on its way to achieving these objectives. In the short term, highest priority will be given to:

- ▶ Establishing the profile and direction of the restructured Research Council by devising a new strategy and action plans, by carrying out long-term budget planning and by providing detailed input to the new government white paper on research.
- ▶ Simplifying and standardising application procedures by introducing fully electronic application submission and processing, harmonising administrative routines and providing standardised, easily accessible information to all applicants well in advance of grant application deadlines. Other important efforts include activities to ensure open channels of communication vis-à-vis applicants, streamlined application processing, and impartiality in decision-making and funding awards.
- ▶ Promoting greater interaction with the public authorities, research institutions, trade and industrial organisations and Innovation Norway, and establishing constructive forums for forward-looking dialogues in relation to strategy development, budgetary processes and the identification and launching of research programmes.

In the months to come, new measures will be devised to facilitate organisational development within the Research Council, making us even better equipped to achieve our goals towards the year 2010.

Key Figures for Norwegian Research 2002

Total R&D expenditure (NOK billion)	25.5
Increase in R&D expenditure 1999 - 2002 (NOK billion)	5.2
Percentage of R&D expenditure funded by industry	52
R&D personnel	46,000
R&D full-time equivalent (FTE)	27,000
Percentage of R&D FTE in industry	46
R&D expenditure as a percentage of GDP	1.67
OECD average: R&D expenditure as a percentage GDP	2.33

Source: Statistics Norway/The Norwegian Institute for Studies in Research and Higher Education (NIFU)

Key Figures for the Research Council of Norway

Total budget (NOK billion, 2003)	4.3
Funding to research institutes (NOK billion, 2003)	1.5
Funding to institutions of higher education (NOK billion, 2003)	1.7
Funding to private enterprises (NOK billion, 2003)	0.5
Funding to others (NOK billion, 2003)	0.6
Percentage of overall R&D funding (2002)	15
Percentage of public funding for research (2004)	30
Number of project proposals (2003)	5,518
Grant approval percentage (2003)	34
Total number of employees (2003)	324

Source: The Research Council of Norway

Abbreviations:

GDP	Gross Domestic Product
OECD	Organisation for Economic Co-operation and Development
R&D	Research and Development
FTE	R&D workforce in full-time equivalent
ICT	Information and communications technology
ERA	European Research Area
NORIA	Nordic Research and Innovation Area

