

International Cooperation

Strategy for the Research Council of Norway
2010–2020



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2010–2020

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Preface

There are major changes taking place in the international research landscape. The world community must work together to find solutions to global challenges. The European Research and Innovation Area is emerging with its vision of free movement of researchers, knowledge and ideas. While the US still holds its position as the world's leading research nation, new countries and regions, especially in Asia, have been investing resources on a large scale and making great strides in research. Increased international cooperation will facilitate Norway's efforts to address global challenges, enhance quality and capacity in the Norwegian research sector, increase national access to the international knowledge pool, strengthen competitiveness in Norwegian industry and promote Norway as a cutting-edge research and innovation nation in specific areas. The recent government white papers on research and innovation state unequivocally that international collaboration must be expanded. Equally important is to ensure good coordination with national programmes and initiatives.

On 18 November 2010, the Executive Board approved the Research Council's strategy for international cooperation. This strategy sets out the course that the Research Council will follow to achieve greater internationalisation of Norwegian research. But it will only succeed if it is carried out in close collaboration with researchers, institutions, companies and the government ministries. We would like to thank everyone involved for their valuable input in the process leading up to this document.

Oslo, 18 November 2010

Arvid Hallén

Director General

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Preface	1
1 Purpose of the strategy	3
2. Objectives and action points	4
2.1 Changes in the international research landscape	4
2.2 Objectives	5
2.3 Five main action points	5
2.4 Visions for 2020	7
3 Global challenges	7
4 Enhanced quality and greater capacity	9
4.1 Mobility, careers in research and international participation	9
4.2 Infrastructure	10
4.3 Greater emphasis on internationalisation in Research Council funding instruments	11
5 Access to international knowledge production	11
5.1 The vision of a European Research Area	12
5.2 Nordic partnerships	13
5.3 Cooperation with prominent research nations	14
5.4 Key organisations	16
6 Strengthening competitiveness in industry	16
7 Leading research and innovation nation in selected areas	17

1 Purpose of the strategy

The white paper on research (Report to the Storting No. 30 (2008-2009), *Climate for Research*) states that increased international cooperation is required to enhance the quality of Norwegian research, obtain knowledge from other countries, develop the welfare society and increase value creation, as well as to ensure that Norway can contribute its part to expanding the global knowledge pool. The report identifies internationalisation of research as one of the four overarching goals for research policy.

The white paper on innovation (Report to the Storting No. 7 (2008-2009), *An Innovative and Sustainable Norway*) highlights access to expertise from other companies – not least international partners – as well as international research findings and innovation as important drivers behind increased innovation and restructuring in individual companies. The objective is to develop a more knowledge-based industrial sector in Norway, with better capacity for restructuring.

High calibre research and a well-functioning, attractive research and innovation system are essential for success, nationally as well as internationally. The individual researcher's professional networks constitute the platform for concrete collaborative activities. And innovation, too, is increasingly taking place within the global networks between companies and researchers.

A key component of research policy has been, and continues to be, to establish a framework and provide support for international cooperation among researchers. Many research institutions and companies have come far in creating an institutional foundation for this, strengthening and professionalising internal support functions for researchers and entering into agreements with institutions and companies in other countries. The Research Council seeks to work closely with research institutions and companies on strategic efforts to increase internationalisation within research.

The white paper *Climate for Research* states that new demands are being placed on the authorities:

“More and more, however, the foundation for international cooperation is being laid in agreements between countries and institutions, often accompanied by collaborative measures that entail substantial investment of resources and long-term commitments. Participation in international cooperation is thus increasingly a function of decisions taken at the government and institutional levels.”

The white paper assigns the Research Council a variety of tasks in this context.

This document sets out a strategy for the Research Council's efforts to achieve greater internationalisation of Norwegian research. This strategy specifies what the Research Council will do to:

- encourage and support international cooperation among researchers;

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- cooperate with and support the internal international strategies drawn up by institutions and companies;
- help to achieve the internationalisation objectives of the Government and various ministries.

In addition, this document outlines how the Research Council itself will take part in international cooperative efforts.

For the objectives set out here to be achieved, this strategy must be carried out in close cooperation with researchers, institutions, companies and ministries.

2. Objectives and action points

2.1 Changes in the international research landscape

International research collaboration is clearly extending its reach. Increasingly, research activities are being conducted in various types of collaboration across national borders. More and more research institutions and companies are recruiting their staffs from the international labour market. Resources are being invested in research infrastructure and knowledge-driven companies in countries where there are dynamic research groups. The volume of research being funded from international sources and in collaborative efforts among countries is on the rise. It is crucial for Norway to maintain a strong research sector, both as a bearer of its cultural traditions and as part of the foundation for knowledge and expertise in all segments of society.

Cooperation and competition both comprise an integral part of the internationalisation of research. On the one hand, countries are working together to address major social challenges; on the other, they are competing with each other to attract the best researchers and secure international research investments. Researchers and institutions vie to be the leaders within their areas of expertise, but can frequently only achieve this by cooperating with other leading researchers. Competition and cooperation are both driving forces for quality, and quality in turn triggers increased international attention and support. Research groups of high international calibre contribute to the establishment and development of a knowledge-based private sector, promote the establishment of international trade and industry in Norway and facilitate good management.

Norway has participated in the EU framework programmes for research since 1994. Evaluations of this activity show that this has been very advantageous for Norway. Nonetheless, we are facing significant challenges, such as the need to increase and broaden Norwegian participation in this cooperation.

The EU's ambitions and vision with regard to the development of a common European Research Area (ERA) will entail a major expansion of European cooperation. New measures and forms of collaboration are being established independent of the framework programme. The EU has initiated activities relating to major societal challenges in which Norway both can and should take part.

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Participation will give Norway greater access to international knowledge production. Such initiatives are especially important for addressing global and large-scale joint European challenges. In addition, it will be essential to pave the way for Norwegian industry to participate in coming European partnerships for innovation.

Outside Europe the US holds the position of the world's leading research nation, although new countries and regions are emerging as major players. This applies in particular to China and India. In addition to these three countries, Norway gives priority to cooperation with Canada, Russia, Japan, South Africa, Brazil, Chile and Argentina. Bilateral cooperation, Nordic cooperation and other multilateral cooperation are also marked by greater emphasis on binding cooperation at the government level, through joint funding of research. Taking part in common initiatives of this type is complex, and leaves less latitude for national steering. But it makes international knowledge production available to participants on a scale that would otherwise be unobtainable. Participation boosts the competitiveness of Norwegian trade and industry and enhances the quality and capacity of Norwegian research.

Global challenges can only be resolved if we seek the answers together and unite to develop the global knowledge society. This implies greater coordination of research policy and funding between countries.

2.2 Objectives

Achieving increased international cooperation is a key component of the white papers *Climate for Research* and *An Innovative and Sustainable Norway* as well as the Research Council's own long-term strategy *In the Vanguard of Research*. International research cooperation is to:

- help to address global challenges to society;
- enhance the quality and capacity of Norwegian research;
- secure Norway access to international knowledge production;
- boost the competitiveness of Norwegian trade and industry;
- promote Norway as a leading research and innovation nation in selected research areas.

The Research Council will work together with the research community, the private sector and the government ministries to achieve these objectives.

2.3 Five main action points

The Research Council is charged with providing advice on research policy, administering research funding and serving as a meeting place for the research establishment. As a natural consequence of this, the Council plays a key role in the internationalisation of Norwegian research. As a research policy advisor, we are responsible for providing knowledge-based, well founded input regarding

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international participation and the adaptation of national research policy as well as for representing Norway in international research policy bodies. As research funding administrator we must adapt national funding schemes to developments at the international level, seek to establish easy-to-use international funding schemes and serve as a meeting place for the research establishment. We must take action to promote meetings and networks between Norwegian researchers, companies and authorities and their counterparts in other countries.

This strategy sets out five main action points for the Research Council's efforts to realise the objectives for international cooperation:

- *All of the Research Council's activities, -programmes, open competitive arenas, special initiatives, institution-oriented measures and other forms of support- must include clearly-defined objectives and plans for international cooperation.* The level of ambition must be adapted to the objectives for the individual activity, based on the viewpoint stipulated in the white paper on research that all Norwegian research must be seen in an international context. Measures to strengthen international cooperation must reflect the needs of the individual activity. Internationalisation must be incorporated as a natural, integral part of activities under all initiatives.
- *The Research Council will encourage Norwegian participation in joint programmes across national boundaries when this is crucial to addressing common challenges or strengthening Norwegian research and knowledge-based industry.* Active political and financial commitments from the government ministries are essential if Norway is to participate constructively at the international level. The Research Council will provide backing for ministerial efforts and work to ensure that national initiatives are designed to facilitate appropriate distribution of tasks and adequate coordination with international activities. The Research Council will promote broad-based dialogue on the thematic priority areas and organisation of international programme collaboration.
- *The Research Council will develop financial instruments to support the establishment of long-term cooperation between Norwegian institutions and corresponding institutions in other countries.* This will help to promote lasting relationships with successful research institutions in other countries and strengthen Norway's role as a leading research nation in selected areas.
- *The Research Council will refine and strengthen stimulation measures to encourage Norwegian researchers, companies and research institutions to participate more actively in international collaborative and competitive arenas.* The Research Council will offer support to cover a part of the institutions' own financing in international cooperation projects. The Council will seek to strengthen its advisory services vis-à-vis industry and research institutions alike, in order to increase Norwegian participation in international research projects. The Council will work to ensure that Norwegian institutions compete on equal terms with other European institutions.
- *The Research Council will focus greater attention on international cooperation and researcher mobility in its internal grant application review processes.* The Council will encourage Norwegian

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researchers to take part in the international researcher community through research stays abroad and visits by guest researchers to institutions in Norway. Ph.D. candidates with funding from the Research Council should participate in international collaboration, preferably through a stay at an institution abroad. Post-doctoral candidates with funding from the Research Council must be given the opportunity and encouraged to conduct a longer-term research stay abroad.

Special measures to promote international research cooperation will undoubtedly be needed. But the real foundation for success in international research lies in the ability of the Research Council's ordinary funding instruments to sustain an attractive, well-functioning research and innovation system with sound, knowledge-based companies, skilled researchers and first-class infrastructure.

2.4 Visions for 2020

The Research Council will work together with the research establishment, trade and industry and the public administration to realise this strategy for international cooperation. If we achieve our objectives, Norwegian research in 2020 will be characterised by the following:

- Norwegian research and innovation groups will be taking part in world-class research and innovation projects seeking to resolve global and common European challenges.
- Research will be of even higher quality. Norwegian research will be a world leader in selected research areas, and a greater proportion of international companies will be turning to Norwegian researchers for competence and knowledge.
- Through participation in international consortia, trade and industry will have developed new solutions, processes and products, and will have increased its research and innovation competence. This will have enhanced international competitiveness and spawned more knowledge-based industry.
- Norwegian research groups are internationally known for their ability to provide outstanding research infrastructure, and they take active part in international infrastructure cooperation.
- Norway possesses world-class innovative research groups and educates a skilled workforce. As a result, a greater number of international knowledge-driven organisations and companies are establishing their businesses in Norway.

3 Global challenges

In recent decades the attention of the world community has become more focused on the challenges facing humanity as a whole. These same global challenges have been incorporated into the basis for national and international research policy. The white paper *Climate for Research* places research to address global challenges at the top of the Norwegian research-policy agenda. The Government defines *global challenges* as those involving climate, energy, environmental, marine resource and

food security issues in particular, but also mentions issues such as poverty, global health, migration, economic development, democracy-building, human rights and conflict resolution as well.

Much can be achieved through making global challenges a national research priority. But these challenges are global in more than just their thematic focus. They entail an inherent need for nations to work together to solve problems that individual countries cannot solve on their own. Research is also an integral part of the development of a shared international platform of action. International cooperation and coordinated research and innovation activities are thus essential to efforts to resolve global problems.

The EU's comprehensive research and innovation strategy, set out in the *Innovation Union Plan*, stresses the importance of innovation for addressing global challenges. Success is contingent upon commitment on the part of the research sector, industry and other segments of the business sector. It will take participation across the entire spectrum, from basic research via applied research to commercialisation and development of new products and services, if we are to find viable solutions to today's most pressing social and global challenges.

As in all other contexts it is important to seek partnerships with strong research nations. But cooperation must also encompass the emerging economies – which we need to make part of the solution to preclude their becoming part of the problem. And in addition it must encompass the developing countries, who will suffer the most if we fail.

As one of the world's wealthiest countries, Norway has an obligation to contribute to research that benefits poor countries and populations. Partnership with developing countries makes them better equipped to fight poverty and enhances the ability of international society to address global challenges.

The Research Council is working to increase the use of *Open access* publishing. This is important for Norway, for Norwegian research institutions and for the advancement of the global knowledge pool.

The global challenges will gradually come to define more of the parameters for international policies and global markets. Addressing global challenges is a means of adapting the Norwegian research and innovation system to enable it to meet the future in a proactive manner.

The Research Council will

- contribute to international cooperation and support coordinated efforts designed to address global challenges.
- develop research cooperation with emerging economies and help to expand research capacity in development countries by encouraging reciprocal cooperation with good researchers and research groups in these countries.

4 Enhanced quality and greater capacity

The Research Council works actively to improve the quality and increase the capacity of Norwegian research. It is in the very nature of research to seek out the best knowledge and a community of specialists – researchers independent of national boundaries. Cooperation means that each party benefits from the efforts of its partners. International cooperation is thus an important means of enhancing both the quality and the capacity of research activities.

The most important driving force underlying the pursuit of expanded international cooperation is the researcher's own wish to advance in his or her field. But international cooperation comes at a cost – financially, administratively, and personally. Some research institutions and disciplines have traditionally focused less than adequate attention on international cooperation. The Research Council will provide backing for researchers' and institutions' efforts to increase international cooperation, will create a foundation to promote such cooperation and will strengthen requirements relating to internationalisation in areas where this has received too little focus. These measures will apply across the board, from basic to applied activities.

4.1 Mobility, careers in research and international participation

One of the fundamental components of international cooperation is mobility, both during the recruitment phase and afterwards. There are a variety of national and European schemes that provide support for mobility. These must be refined and more widely employed. Mobility should also be incorporated into research projects as an ordinary component. The Research Council takes active part as Norway's representative in European efforts to dismantle barriers to researcher mobility.

Leading groups at the universities and university colleges collaborate extensively internationally, for example in the form of regular researcher exchanges with institutions abroad, co-publication with colleagues in other countries and open international recruitment for research positions. Many of the independent research institutes are active participants in international cooperative efforts and serve as key partners for Norwegian companies wishing to join EU project activities.

Nonetheless, many research institutions still have far to go in their efforts to expand international cooperation. The participation of universities and university colleges in activities under the EU framework programme is somewhat lower than desired. A greater number of institutions and research groups need to take more active part in international organisations for cooperation. Norwegian research institutes are often more limited by financial constraints than their counterparts in other countries. International cooperation is seen as complicated and costly.

The Research Council will

- further develop both general and thematic/discipline-oriented mobility schemes and promote more researcher exchange within the framework of research projects.
- work to make it easier for researchers to move between countries.

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- refine and enhance Project Establishment Support grants for applications for funding under the EU framework programmes and affiliated activities, and will consider support for positioning measures vis-à-vis the EU when a group of Norwegian research institutions and industry works together. These instruments will also be used for promoting other forms of international cooperation.
- create a framework for enabling Norwegian research institutions to meet the funding obligations when they participate in international projects, as well as the extra costs incurred when they take on coordination tasks, thereby ensuring that they are able to compete under the same conditions as other European research institutions.
- provide backing for the institutions' internationalisation efforts to developing long-term partnerships with institutions in priority partner countries.
- work to facilitate participation in international cooperation for researchers, research institutions and trade and industry.

4.2 Infrastructure

In many areas, innovative research is contingent upon access to advanced, high-cost infrastructure. Cooperation on infrastructure makes it possible for Norwegian researchers to participate in research that Norway could not finance on its own. Subject-based evaluations have shown that Norwegian research groups who take advantage of national membership of such collaboration rank high in terms of scientific merit.

Investments in scientific equipment must also take into account industry needs and the national priority areas. Access to advanced research infrastructure is critical to ensuring competitiveness and achieving a positive profile in the international arena. Updated, advanced infrastructure is vital to research-based innovation and is often a must for attracting top researchers from other countries.

The white paper on Research assigns the Research Council responsibility for drawing up a national roadmap for investment in research infrastructure. This roadmap presents the national and international large-scale infrastructure projects in which the Research Council recommends that Norway should invest in the near future. The development of national nodes in distributed international research infrastructure is growing more important. *The European Strategy Forum on Research Infrastructure* (ESFRI) entails a higher degree of specialisation and task distribution between countries, and will have an impact on national investments in infrastructure.

The Research Council will

- support Norwegian participation in international research organisations with advanced research infrastructure.
- work to obtain partial financing for research facilities in Norway from stakeholders abroad.

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- work together with research groups to gain greater insight into existing infrastructure both within and outside of Europe, as well as assess whether formalised affiliations should be established with such international research infrastructures and to utilise follow-up research allocations related to such international research infrastructures.

4.3 Greater emphasis on internationalisation in Research Council funding instruments

The Research Council is Norway's national competitive arena within research. The criteria on which the competitions are based are a determining factor in how the sector evolves. When assessing grant proposals, projects that feature the best level of international cooperation and projects from the groups that are best positioned internationally will be given priority over other projects, assuming that all else is equal. All of the programmes and activities under the Research Council must include clearly defined objectives and plans relating to internationalisation. The level of ambition must be adapted to the objectives of the relevant activity.

Within the discipline-oriented or thematic-based activities, internationalisation objectives are to be followed up through the funding announcements. In the open competitive arenas internationalisation activities may be strengthened by means of supplementary allocations for internationalisation measures in projects that have already been selected on the basis of their scientific merit or overall calibre as innovation projects.

Ph.D. candidates with funding from the Research Council should participate in international collaboration, preferably through a stay at an institution abroad. Post-doctoral candidates with funding from the Research Council must be given the opportunity and encouraged to conduct a longer-term research stay abroad. Schemes for achieving this must be adjusted to encourage more women candidates to choose to conduct research stays abroad.

For many years the Research Council has supported international cooperation by means of targeted, nationally-funded cooperation programmes and various forms of financial collaboration with other countries. In all of the Research Council's activities, consideration is to be given to coordinated and joint funding announcements, for example under ERA-NET activities, as a means of increasing international cooperation.

5 Access to international knowledge production

International research cooperation provides access to global knowledge production and will make it possible to incorporate results from the international research front into activities in Norway.

European cooperation comprises the primary arena for international cooperation and is a main priority for Norwegian research. Nonetheless, it is important to strengthen bilateral cooperation with leading research nations outside of Europe and to forge ties with emerging research nations as well.

5.1 The vision of a European Research Area

Norway has participated in the EU framework programmes for research since 1994, with highly beneficial results. It is estimated that the combined budget of the projects in which Norwegian researchers are taking part is five times higher than the amount of the Norwegian membership dues, and that the total funding pot from which Norwegian researchers can seek grants exceeds the Norwegian contribution 50 times over. Participation in EU research vastly expands Norway's access to international knowledge production.

Norwegian participation in the framework programmes has been dominated by a relatively small number of outstanding Norwegian institutions and companies. The Research Council believes there is much to be gained from activities to enable more Norwegian institutions and companies to take part in EU cooperation. Norwegian research environments, especially at the universities, must put greater effort into obtaining more support from the new European Research Council (ERC). The Research Council will seek to increase participation in EU research using the measures described in the previous chapter.

The development of the common European Research Area (ERA) first appeared on the EU agenda in 2000. In 2008 the vision for the ERA was adopted. This entails the establishment of a *fifth freedom* in Europe by 2020 –freedom of knowledge, entailing free movement of researchers, knowledge and ideas across national borders. Achieving this will require harmonisation of regulations, coordination of national research policy and expanded cooperation between EU Member States. The “variable geometry” principle is brought into play, i.e. each country itself will choose the activities it wishes to take part in, fund and influence.

A variety of activities and funding forms affiliated with but not directly under the auspices of the EU framework programmes have emerged in recent years. These include Joint Technology Initiatives, ERA-Nets, Article 185 Initiatives and more. At the outset of the Eighth Framework Programme for Research, the Joint Programming Initiatives (JPI) are emerging as a dynamic force in the European research landscape. These are large-scale joint programmes across national boundaries that are directed towards major global or common European challenges, such as climate change, food security, health, the ageing population, etc. Norway is active in many of the EU-affiliated activities and several of the JPIs, and was successful in achieving the launch of the Joint Programming Initiative on Healthy and Productive Seas and Oceans (JPI Oceans).

Cooperative schemes such as these will probably become more widespread in the years to come, and will entail the involvement of authorities and research-funding bodies in the various countries. Participation in joint programmes confers ownership and expands influence, but it also means that more of the national allocations will be deployed in international competitive arenas. Norwegian participation and success in joint programmes will mean that new forms of cooperation and financial coordination among the ministries must be devised.

A fundamental condition for channelling Norwegian research funds to diverse schemes for joint financing with other countries is that the activities will generate value added for Norwegian research

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or trade and industry, or help in some way to address common challenges. The Research Council will take active steps to ensure that the mechanisms in the joint programmes are in alignment with Norway's reasons for participating. If the aim is primarily to strengthen a given segment of Norwegian research through international cooperation, then funding of Norwegian participation may be the best answer. If the aim is to help to solve a pressing problem, then real common pot might be the right course to take. It may be the case that national funding instruments are reduced or restructured in areas in which Norway takes part in joint European programmes.

There will still be areas in which it will be in the nation's interests to focus on national research programmes. Examples in this context are petroleum research, polar research, aspects of welfare research and other sector-based research that is significant for enhancing the knowledge base for Norwegian policy and upholding national knowledge levels.

The Research Council will

- on the basis of a broad-based dialogue with research, trade and industry and society at large, provide input to the government ministries regarding participation in joint programmes where this will generate value added for Norwegian research or industry, or help to address global or common European challenges.
- involve the research community, research institutions and companies as strategic partners in the development of Joint Programming Initiatives.
- work to achieve constructive task distribution and fruitful coordination between joint programmes and nationally funded activities.
- work to ensure that these joint programmes are effectively administered on Norway's part, with clearly-defined deliverables to society and open contacts between research and industry.

5.2 Nordic partnerships

Efforts should be made to strengthen Nordic research collaboration, especially in areas where such cooperation will help to obtain a "critical mass", address common Nordic challenges and lead to useful task distribution. Shared use of costly infrastructure and collective Nordic use of biobanks and databases is of particular relevance, for example within the fields of health and welfare. The Nordic Centres of Excellence are an important tool for creating synergies between outstanding national research groups, increasing international appeal and enhancing international recruitment.

For many Norwegian research groups, Nordic cooperation has been important for achieving broader European cooperation. Working together as a region gives the Nordic countries greater weight in cooperative efforts with countries within and outside of Europe. This is important not only for promoting Norwegian research but also for strengthening Nordic perspectives in European and

international research collaboration. Areas in which this is especially important include marine research, research in the Arctic and northern areas, and welfare research.

5.3 Cooperation with prominent research nations

Norway has signed bilateral research agreements with many non-European countries, of which the following are considered to be of special national priority: US, Canada, Japan, China, Russia, India, South Africa, Brazil, Argentina and Chile. There is large potential for expanding cooperation with these countries.

The Research Council will focus its further efforts on the following:

- **USA:** Broad-based cooperation within many disciplines and subject areas, related both to basic research and innovation. Objectives are enhancing research quality, addressing global challenges and promoting integration into well-functioning systems for research-based innovation.
- **Canada:** Cooperation in a wide array of disciplines and subject areas where we share common interests. Objectives are enhancing research quality and collaboration within important areas
- **China:** Broad-based cooperation within many disciplines and subject areas, related both to basic research and innovation. Objectives are enhancing research quality, addressing global challenges, participating in the development of Chinese markets for products and service as well as systems for research and research-based innovation.
- **Japan:** Cooperation within selected disciplines and subject areas in which the two countries have shared interests. Objective is to enhance research quality.
- **India:** Cooperation in selected disciplines and subject areas in which the two countries have shared interests. Objectives are enhancing research quality, addressing global challenges participating in the development of Indian markets for products and services as well as systems for research and research-based innovation.
- **Russia:** Cooperation within selected disciplines and subject areas in which the two countries have shared interests. Objectives are enhancing research quality, increasing geopolitical cooperation in the northern areas to address global challenges and promoting cooperation between neighbouring countries on resource management and trade and industry.
- **South Africa:** Cooperation within selected disciplines and subject areas in which the two countries have shared interests. Objectives are enhancing research quality, addressing global challenges and strengthening dialogue with Norway's most important point of contact for research in Africa.

- **Brazil:** Cooperation within selected disciplines and subject areas in which the two countries have shared interests. Objectives are addressing global challenges, participating in the development of Brazilian markets for products and services as well as systems for research and research-based innovation.
- **Chile:** Cooperation on aquaculture research, in which the two countries have shared interests.
- **Argentina:** Cooperation on climate research, in which the two countries have shared interests.

Within certain disciplines and thematic areas there may be good scientific or business reasons to focus on cooperation with countries and regions other than those given national priority. The general measures described in Chapter 4 will facilitate international activities with countries other than those above. The same applied to measures to promote partnerships with developing countries described in Chapter 3.

International research cooperation will as a general rule be integrated into the discipline-based and thematic activities of the Research Council. It has been necessary to establish cooperation programmes targeted towards specific countries, such as China (the CHINOR programme), India (the INDNOR programme, and South Africa (the South Africa-Norway Programme for Research Cooperation). These programmes have provided the extra momentum needed to encourage research cooperation in the introductory phases.

Similar types of programmes may be appropriate in a transitional period in relation to other countries. When possible, coordinated or joint funding announcements with research-funding organisations in the partner country should be drawn up. The EEA Grant funding scheme represents a new arena in which research groups and the Research Council can establish partnerships with new EU Member States. It will also be necessary to provide allocations that are not tied to subject fields or thematic areas to ensure adequate visibility, coordination and flexibility vis-à-vis the authorities and research systems of the partner countries.

The Research Council will

- define in clear terms the scientific and thematically-oriented ambitions for strengthening cooperation with the priority partner countries.
- create a framework for researcher exchanges with priority partner countries, and support networking measures/organise workshops to promote specific cooperation activities.
- work together with research-funding organisations in the partner countries to issue coordinated or joint funding announcements.
- work to develop a detailed knowledge base on the priority partner countries.

5.4 Key organisations

The Research Council participates in a number of international organisations in addition to EU cooperation. Many of these play an important role in the designation of the global research agenda, the development of the ERA and the activities taking place internationally in research and innovation:

- CERN European Organization for Nuclear Research
- COST European Cooperation in Science and Technology
- EMBL European Molecular Biology Laboratory
- EISCAT European Incoherent SCATter
- ESA European Space Agency
- ESF European Science Foundation
- EUREKA Europe-wide Network for Market-oriented Industrial R&D
- OECD Organisation for Economic Co-operation and Development
- TAFTIE European Network of Innovation Agencies
- IARC International Agency for Cancer Research
- Global organisations within Global Change research

Participation in organisations of this type give Norwegian researchers and companies access to valuable networks as well as especially costly, advanced research infrastructure, thereby enabling them to take part in high-quality research activities that it would not be possible to finance with national funding alone. International participation of this kind also provides the Research Council with access to evaluations, analyses and studies of best practice and foresight methodology.

6 Strengthening competitiveness in industry

The Research Council will work to encourage companies to establish relevant international networks. Participation in international consortia enhances the ability of Norwegian industry to collaborate with international specialist environments, customers and suppliers.

The EU's new research and innovation initiative, the *Innovation Union*, fuses European research and innovation policy together. Tomorrow's solutions will be developed in collaboration between research and industry. The Research Council will therefore work to increase participation in international joint programmes of relevance for trade and industry, including Joint Technology Initiatives, Eurostars and Joint Programming Initiatives. Moreover, the Research Council will encourage industry to seek a role in bilateral research projects with non-European countries.

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Participation in international collaborative projects is time-consuming and costly. The Research Council will strengthen stimulation measures that help to reduce the risks for companies that participate at the international level.

Stimulation measures may also comprise better advisory and guidance services in connection with grant applications, and information about the international cooperation opportunities available for industry. It is crucial that the Research Council enlarges its role as advisor and seeks more in-depth knowledge of the international research landscape. This will enable the Council to better determine which instruments will be appropriate for Norwegian companies in need of support for participation in international cooperation.

Certain segments of Norwegian trade and industry are already active in the international competitive arena, and many of the larger companies have research departments or research partners in other countries. Norway also has dynamic research groups that can service companies from outside of Norway and whose activities are dependent on such cooperation.

The Research Council will

- work to enable Norwegian trade and industry to take part in international programmes targeted towards the industrial sector.
- increase awareness of the value added of international cooperation for trade and industry and map out the sector's need for international know-how and knowledge exchange.
- establish a framework that promotes foreign commissions to, and foreign investments in, Norwegian research and knowledge-based companies.
- work actively to achieve harmonisation of IPR rules and their implementation.

7 Leading research and innovation nation in selected areas

Norway has given priority to research on climate, the environment, energy, food, oceans, health and welfare as well as ICT, biotechnology, nanotechnology and new materials. These are all areas in which Norway has certain natural advantages or has acquired special expertise. International research cooperation is an excellent means for presenting Norway as a reliable partner in national priority areas, for enhancing the position of Norwegian companies and for profiling Norway as a knowledge nation.

Strategies for the national priority areas are developed on the basis of broad-based dialogue with the research sector, trade and industry and society at large. These efforts also provide a framework for identifying distinct areas in which Norway should aspire to become a leading player in Europe and globally.

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Norway needs outstanding knowledge communities that can attract highly capable researchers and gain a reputation as valued partners for Norwegian and international industry. Infrastructure has played an important role for Norway, in providing access to international research cooperation and drawing attention to Norway's value as a host country, for example within upper atmosphere research at the EISCAT facility, environmental and polar research on Svalbard and nuclear technology and safety at the Halden Reactor Project.

In a small country like Norway, research groups in the same fields have to work together to succeed internationally. The various schemes for Centres of Excellence (SFF), Centres for Research-based Innovation (SFI) and Centres for Environment-friendly Energy Research (FME) all comprise instruments by which the Research Council, through targeted funding, has built up expert scientific groups and expanded the potential for innovation and value creation. Scientists from other countries comprise a high proportion of the staffs at all of these centres.

The independent research institutes have played an important role in the international cooperation activities of companies, and there is additional potential for these institutes to market their expertise to companies and government administrators in other countries as well.

The Research Council will

- work to increase the ability of companies and research institutions to seek international partners.
- cooperate with the Norwegian diplomatic missions and Innovation Norway to give Norwegian research and infrastructure a higher profile abroad.
- actively use the SFF, SFI and FME centres to front Norway's position as a leading knowledge and innovation nation internationally.
- increase cooperation with research institutions and companies to generate "national teams" that take part in international activities, both within the EU and vis-à-vis priority partner countries.
- design financial instruments to support the establishment of long-term cooperation between Norwegian institutions and corresponding institutions in other countries.



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