



The Research Council
of Norway

Work programme

From 2015

Programme
Polar Research Programme – POLARPROG

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1. Summary

The Polar Research Programme (POLARPROG) is the Research Council of Norway's most important funding instrument for achieving wide-ranging, high-quality Norwegian polar research. POLARPROG will help to fulfil Norway's special responsibility to generate new research-based knowledge in and about the polar regions. Such knowledge is essential both for enhancing our understanding of the climate system and ecosystems, and in the context of policy implementation, responsible resource management and industrial activity.

The Research Council's policy document *Norwegian polar research (2014–2023)* (hereafter referred to as the "polar research policy") provides the framework for the POLARPROG work programme and encompasses a wide variety of disciplines and thematic areas, ranging from the natural sciences and technology to the social sciences and humanities. The geographical scope of the programme corresponds to the geographical scope of the Arctic and Antarctic as defined in the polar research policy.

The activities of POLARPROG are divided into three thematic priority areas:

- **A changing climate and an environment under pressure** is targeted towards enhancing understanding of processes that govern climate and environmental change in the polar regions, and of their impacts on the natural environment and society.
- **Natural resources and industrial activity** is targeted towards developing a basis for sustainable, knowledge-based industrial and social development in the polar regions.
- **Policy and management** is aimed at generating results that promote sustainable, knowledge-based environmental and resource management and policy development.

The POLARPROG encompasses the full spectrum of Norwegian polar research. Cooperation with relevant research programmes and activities within the Research Council will therefore play a crucial role in achieving the objectives of the programme. The subject areas to be given priority by the programme at any given time will be determined in light of ongoing activities in related Research Council programmes, the programme's project portfolio and international research activities. Annual allocations over the national budget with appurtenant allocation letters will set the framework for decisions regarding the programme's funding announcements.

Important overarching priorities for POLARPROG include increasing international cooperation, promoting sharing and use of research infrastructure and data, recruitment of a new generation of polar researchers and dissemination of research results to relevant target groups. The programme primarily targets Norwegian research institutes, universities, university colleges and other research environments, in addition to relevant actors in the private and public sectors. The programme will encompass basic research, applied research and innovation of relevance to the polar regions. Key users of the programme's research findings will include researchers in other fields, the public administration, trade and industry, and the general public.

The POLARPROG is an open-ended programme, with no fixed conclusion date. This work programme will be evaluated underway and revised as needed.

2. Background

2.1 Strategic perspectives

Interest in the Arctic and the Antarctic is growing steadily, both nationally and internationally. Climate change, pollution, increasing accessibility and economic activity are exerting pressure on the polar regions. The changes taking place in the polar regions do not merely affect those regions in isolation, they affect our entire planet. Similarly, pollution stemming from human activity in other parts of the world has an impact on the environment in the polar regions. With its outstanding polar researchers, Norway has the potential to make a significant contribution to the international knowledge effort in the field.

The Norwegian authorities have emphasised the importance of polar research in a number of white papers, reports and strategies.¹ Norway's activities in the Antarctic are regulated under the *Antarctic Treaty* of 1959, and decisions taken in accordance with this. Norway's interests in the Arctic and Antarctic, as well as its national and international obligations, give the country a special responsibility to generate knowledge needed for sound management and industrial development in the polar regions. This is why it is essential for Norway to make its voice heard in international negotiations on, for example, the climate, natural resources and the environment. POLARPROG will help to ensure that Norway is equipped to fulfil this responsibility.

The POLARPROG is a broad-based, long-term research programme designed to develop high-calibre knowledge of national and international importance. The programme will encompass basic research, applied research and innovation activities of relevance to the polar regions. Many activities and programmes at the Research Council conduct research of relevance to the polar regions, especially related to the Arctic. This is obvious, as polar research spans a wide variety of disciplines and thematic areas, ranging from mathematics, the natural sciences and technology to the social sciences and humanities. Coordination will be critical in this context. The POLARPROG also has a special responsibility for Antarctic research.

Polar research questions are often complex, and addressing them will require an integrated, broad-based approach across disciplines and thematic areas. There is a need both for research in specific subject areas and for cross-cutting activities. More research across the social sciences, humanities and natural sciences is needed to find knowledge-based, sustainable solutions for industrial and social development in the polar regions. Furthermore, it is essential to strengthen social sciences and humanities subjects to gain a better understanding of human influence on the climate system and the risk climate change poses for the economic system.

¹ Report No. 30 (2008–2009) to the Storting, Climate for Research; Klimakur 2020 – Tiltak og virkemidler for å nå norske klimamål mot 2020 (Measures and instruments for achieving Norwegian climate targets towards 2020. In Norwegian); Official Norwegian Reports (NOU 2010:10): Adapting to a changing climate; Meld. St. 21 (2011–2012) Norwegian Climate Policy, white paper from the Ministry of the Environment; Meld. St. 18 (2012–2013) Long-term perspectives – knowledge provides opportunity, white paper from the Ministry of Education and Research; Kunnskapsgrunnlag for ny klimasatsing i Forskningsrådet (2012) (State-of-the-art review as a basis for a new climate research initiative at the Research Council. In Norwegian); Meld. St. 7 (2014–2015) Long-term plan for research and higher education 2015–2024; Meld. St. 32 (2014–2015) Norske interesser og politikk i Antarktis (Norway's interests and policy in the Antarctic. In Norwegian).

Important overarching priorities for POLARPROG include increasing international cooperation, promoting sharing and use of research infrastructure and data, recruitment and dissemination of research results to relevant target groups. It will also be important to consider participation in international efforts such as bilateral and multilateral joint calls for proposals, as well as calls under Horizon 2020.

Polar research is carried out by research groups throughout the country, including Svalbard, and encompasses all sectors performing research. POLARPROG primarily targets Norwegian research institutes, universities, university colleges and other research environments, in addition to relevant actors in the private and public sectors.

One of POLARPROG's aims is to generate relevant, applicable knowledge for decision-makers, trade and industry, and the research community. Furthermore, it will be important to disseminate and utilise knowledge and results in the best possible manner and to raise the general level of knowledge about polar research among users and society at large.

2.2 Scientific perspectives

The polar research policy provides an up-to-date overview of the state-of-the-art of polar research and society's future needs for research-based knowledge activities in this field. The policy sets out the underlying principles for the thematic and strategic framework for the objectives of POLARPROG. The programme will work to ensure that activities cover the entire field of polar research in accordance with the policy's guidelines.

Norwegian polar research has undergone a tremendous expansion in recent decades, fuelled in part by Norway's extensive activities in connection with the *International Polar Year* (IPY 2007–2008) and the strong national prioritisation of the High North. Extensive research infrastructure has been established nationally and internationally, and cooperation between researchers in Norway and researchers in other countries has been strengthened. The growing number of centres for research and innovation, and more recently education, addressing polar (mainly Arctic) issues is also important for this development.²

Norway is one of the world's leading polar research nations measured by the number of papers published. This is primarily the result of research on the climate system and marine biology, particularly in Svalbard and the adjacent sea areas. However, there is room for improvement when it comes to the citation frequency of Norwegian scientists. More frequent citation of papers with Norwegian co-authors will help to enhance the global profile of Norwegian researchers. The POLARPROG will work to enable world-leading Norwegian polar researchers to maintain their position. The programme will also take steps to strengthen other relevant research groups.

Research and research cooperation comprise one of the pillars of the cooperation under the Antarctic Treaty. As a signatory to the treaty and as a country with territorial claims in Antarctica, Norway has a responsibility for contributing knowledge needed for sound management of the region. Antarctic research is also vital to understanding global processes

² The Centres of Excellence scheme (SFF), the Centres for Research-based Innovation scheme (SFI), the Centres for Environment-friendly Energy Research scheme (FME), the Nordic Centres of Excellence scheme (NCoE), and the Centres of Excellence in Higher Education scheme (SFU).

linked to e.g. ocean currents, ice, sea level rise and atmospheric conditions. Despite its long history, Norwegian Antarctic research is relatively modest in volume. There is a potential here for Norwegian research groups and individual researchers alike. The POLARPROG will help to strengthen Norwegian Antarctic research by paving the way for increased international cooperation, among other activities.

Research activities in polar regions are resource-intensive and require well-adapted infrastructure. The Research Council's Norwegian Roadmap for Research Infrastructure has been, and will continue to be, a key instrument for funding new, larger-scale, national and international infrastructure projects. Norway has extensive polar research infrastructure in both the Arctic and the Antarctic, and is therefore in an excellent position to take part in national and international research cooperation. The POLARPROG will encourage Norwegian research groups to collaborate nationally and internationally on the maintenance and further expansion of polar research infrastructure.

Open access to data and publications is critical to advancing knowledge production as well as to verifying research results and fostering integrity in research. Infrastructure that facilitates data sharing is essential. The POLARPROG will encourage Norwegian researchers to ensure that their data and findings are accessible and to publish in open-access journals.

3. Objectives of the programme

Primary objective:

The POLARPROG will help to fulfil Norway's special responsibility to generate new research-based knowledge in and about the polar regions.

Scientific secondary objectives:

The POLARPROG will:

- Increase knowledge of processes that govern climate and environmental change in the polar regions and of the impacts of change on the natural environment and society;
- Develop a basis for sound, sustainable and knowledge-based industrial and social development in the polar regions;
- Achieve results that promote knowledge-based, sound and sustainable environmental and resource management and policy development.

Strategic secondary objectives:

The POLARPROG will:

- Promote integrated polar research;
- Promote ground-breaking Norwegian polar research;
- Enhance the international profile and contribution of Norwegian research groups;
- Foster the development of a new generation of polar researchers;
- Make knowledge about the polar regions more readily accessible;
- Increase the use and accessibility of data and research infrastructure;
- Work to ensure that research related to Svalbard is given priority;
- Strengthen Norwegian research in and about the Antarctic;
- Promote world-leading Norwegian polar research in areas of strategic importance.

The POLARPROG will make use of researcher projects, innovation projects and knowledge-building projects to achieve the programme's objectives. Other application types and funding instruments will be employed as needed. Funding may also be provided for network-building activities, for example in connection with scientifically relevant workshops and conferences.

4. Thematic priority areas

The POLARPROG will contribute to important interdisciplinary knowledge about the polar regions and provide a basis for follow-up of the Research Council's polar research policy. The programme must maintain and promote Norwegian polar research of high calibre. The policy document *Norwegian polar research* defines the geographical scope of the Arctic and Antarctic in this context.

The programme defines three secondary objectives as the basis for its scientific priorities. Activities under these objectives will include research within the natural sciences, social sciences and humanities, resource management and policy development, and industrial and social development in the polar regions.

It is vital that Norwegian polar research overall meets the highest environmental standards, thereby minimising the impacts on the unique polar environment. Research activities will follow the guidelines drawn up by Norway's national committees for research ethics.

4.1 A changing climate and an environment under pressure

OBJECTIVE: To increase knowledge of processes that governs climate and environmental change in the polar regions, and their impacts on the natural environment and society.

Knowledge about the climate system is the foundation for understanding both the relationship between natural climate variability and anthropogenic change and the impacts of climate change on nature and society. Basic knowledge about the climate system and its variability in the Arctic and Antarctic is of crucial importance for understanding the global climate system. Knowledge about the impacts of climate change provides the basis for research related to climate change adaptation. Without a thorough understanding of the climate system and climate change, any knowledge about impacts and appropriate adaptation and mitigation measures and measures to reduce emissions will be highly uncertain. Research on the climate system involves a number of scientific disciplines and encompasses the atmosphere, cryosphere, hydrosphere, geosphere and biosphere.

Geophysical and atmospheric processes

Geophysical and atmospheric processes and feedback between them can intensify the impacts of climate change at regional level and may also have impacts on global-scale climate change. Understanding such links requires integrated studies of energy balance, atmospheric circulation and greater insight into sources of climate forcers and pollutants.

The dynamic response of the cryosphere and the links between the cryosphere and the climate, including the impacts of climate changes on glaciers and permafrost thawing, are still not well understood. Improving knowledge will reduce uncertainty, for example in estimates of future climate change and sea level change.

Oceans and seabed

The large sea areas in the Arctic and Antarctic have not been studied and mapped to any great extent. There are gaps in our knowledge of the significance of ocean currents for important physical and biogeochemical processes and of natural variability in the marginal seas of the Arctic Ocean. Declining sea ice cover, higher temperatures and increasing inputs of

freshwater from glaciers are altering the energy balance and ocean-atmosphere interactions. These changes are influencing the thermohaline circulation and this will in turn have feedback effects on the climate and on the marine environment. Accordingly, it is important to gain a better understanding of the physical, chemical and biogeochemical processes in the Southern Ocean.

Ecosystems

Climate change will have impacts on all ecosystem components, including microorganisms, plants and animals, and on species composition in different habitats. Some species will suffer a steep population decline or be lost altogether as a result of rising temperatures in the polar regions, while more temperate species may become established. This will have repercussions throughout the ecological system. More knowledge is needed about species distribution, reproduction, species composition, ecological processes and productivity. It is also vital to generate more knowledge about the adaptive capacity of ecosystems and their resilience to external pressures as a basis for sound ecosystem management.

Pollution

Natural climate variability, anthropogenic climate change, changes in levels of long-range transboundary pollution and increasing human activity, for example industrial activities and tourism, may alter the pollution load at all levels in ecosystems. Important research topics include the transport of pollutants with air and ocean currents and bioaccumulation of pollutants along food chains.

People and cultural heritage

Communities in the polar regions will be affected to varying degrees by climate and environmental change. Knowledge about vulnerability and adaptation to change is therefore essential. Research on history and the cultural heritage plays a key role in building up an understanding of people's past and present, and also of how society is likely to develop in the near future.

Priority research topics for the thematic area "a changing climate and an environment under pressure" are listed below. These must be considered in conjunction with the other thematic priority areas.

Research activities should help to:

- strengthen the application of Earth system science perspectives in the polar regions through studies of the links between the biosphere, geosphere, atmosphere, cryosphere and hydrosphere;
- improve knowledge of the polar climate system and its interactions with the global system;
- improve knowledge of the polar ecosystems and the processes that govern them;
- enhance knowledge about the dispersion, impacts and interactions of long-range transboundary and local pollution in the polar regions;
- enhance knowledge about the impacts of climate change on Arctic communities;
- explore potential scenarios and carrying capacity for the expansion of human activity, particularly in Svalbard;
- improve the basis for cultural heritage management in polar regions.

4.2 Natural resources and industrial activity

OBJECTIVE: To develop a basis for sound, sustainable and knowledge-based industrial and social development in the polar regions.

The increasing accessibility of the polar regions is opening the way for greater use of economic resources and for expanding the tourism industry. In the Arctic, it will also be possible to establish new sea routes. Industrial developments must be based on a sound understanding of the possible impacts on the natural environment and society, and measures to address these challenges. New knowledge and technological development will be needed in a number of areas to ensure that industrial and social development proceeds safely and cost-effectively. Research needs comprise the entire spectrum from basic to applied research. It will also be necessary to identify potential conflicts of interest in cases where a variety of actors and industries will be operating in the same area. Polar research-based innovation can boost value creation in the form of new services and products. The POLARPROG does not encompass all industry-relevant research, but focuses on the particular challenges that arise as a result of natural conditions in polar regions. However, technological innovation is funded through other Research Council programmes, and will not be given priority here.

Activities that may have environmental impacts in the polar regions are mainly associated with the petroleum industry, maritime operations, the use of fish and other biomarine resources, the extraction of mineral resources and tourism.

Petroleum activities

Mapping, exploration and field development in the Arctic may meet obstacles such as cold climate, ice and icing, the polar night, increased risk of disruption of atmospheric communications and navigation, and impacts on vulnerable Arctic ecosystems. The long distances and vast sea areas involved pose significant challenges to Arctic petroleum activities. Greater knowledge about ocean currents, meteorological conditions, ice and ice conditions, and methods for forecasting and dealing with sea ice and icebergs are all needed to develop robust solutions for the entire value chain.

Fisheries and biomarine resources

Marine ecosystems are changing as a result of a combination of rising sea temperature and declining sea ice thickness and extent. The changes are influencing the availability of commercial species in the Arctic and Antarctic. For example, mackerel has now been registered off Svalbard. It is important to lay the foundation for knowledge development that promotes sustainable ecosystem management in this sector.

Maritime operations

The increasing maritime activity in polar waters has highlighted a number of technological challenges, such as the design and construction of vessels, maritime operations and maintaining operations under extreme climatic conditions. Shifting atmospheric conditions affect communication and navigation systems and instrumentation. Other focus areas for research are the ways in which growing maritime traffic may put more pressure on the environment, for example the introduction of new species and pollution.

The development of a reliable forecasting system for weather and climate-related conditions such as atmospheric circulation, ocean currents, ice formation and ice drift will be important for the safety of maritime operations.

Operations in the Arctic must build on a platform of risk-based environmental management. There must also be requirements for robust environmental monitoring systems. Polar research must play a part in developing knowledge and technology that reduce the risk of undesirable incidents and ensure high health, safety, and environmental (HSE) standards.

Priority research topics for the thematic area “natural resources and industrial activity” are listed below. These must be considered in conjunction with the other thematic priority areas.

Research activities should be help to:

- enhance knowledge about environmental impacts and measures to address the challenges posed by new and expanded trade and industrial activity;
- build up research-based knowledge for technological and industrial development in the polar regions;
- improve forecasts by model development for atmosphere, weather and ice conditions.

4.3 Policy and management

OBJECTIVE: To achieve results that promotes knowledge-based, sound and sustainable environmental and resource management, and policy development.

The political and economic importance of the polar regions is increasing steadily. Foreign and security policy analyses are vital to Norway, which has substantial resources and strong interests in polar regions. In addition, climate and environmental change and expanding economic activity may put pressure on established management regimes. Studies of the geopolitical situation, of the effectiveness of established management regimes , and of the general framework for international cooperation in the polar regions will therefore be needed.

Geopolitical issues

More knowledge is needed about circumstances that may increase the level of conflict or undermine cooperation between states in the polar regions. Key questions are whether climate change will result in new or greater conflicts of interest between states, for example on access to natural resources such as petroleum, fish and minerals or to new shipping routes, and to what extent such changes will result in new patterns of alliance or conflict between states.

Issues relating to the law of the sea

Updated knowledge is needed on the extent to which the existing law of the sea can accommodate the changes taking place in the polar regions as a result of temperature changes, ice melt and sea level rise. Greater access to marine resources in the water column and on the seabed entails new challenges relating to environmental protection, preparedness and response and search and rescue, and also to principles for allocation of resources and access to new shipping routes.

Regimes for sustainable environmental and resource management

In both the Arctic and the Antarctic, changes in the distribution of fish stocks may put pressure on established management regimes and systems for allocating resources. Growing interest in the extraction of mineral and petroleum resources also entails management challenges. Research-based knowledge is needed on countries’ approach to established and new cooperation regimes, and on the extent to which these cooperation regimes help to solve problems. This also involves questions relating to the knowledge available to the public

administration and the extent to which the legitimacy of the public administration is recognised by different groups.

It is also important to identify any restrictions or transformation that will be needed and that industries and the public administration will have to take into account in order to prevent undesirable climate and environmental change.

Priority research topics for the thematic area “policy and management” are listed below. These must be considered in conjunction with the other thematic priority areas.

Research activities should help to:

- expand the knowledge base on geopolitical issues;
- improve understanding of issues relating to the law of the sea;
- enhance the knowledge base on regimes for sustainable environmental and resource management.

5. Strategic priorities

Nine strategic secondary objectives have been formulated to ensure that POLARPROG achieves its overall objective. The POLARPROG will work to:

1. *Promote integrated polar research*

Norway has a wide range of interests in the polar regions. The POLARPROG has been charged with managing Norwegian polar research as an integrated whole. Funding announcements and other activities must be considered in conjunction with the programme’s project portfolio, and must be coordinated with other Research Council programmes and relevant international calls for proposals and activities.

2. *Promote ground-breaking Norwegian polar research*

When assessing grant allocations, priority will be given to research questions that can result in innovative and pioneering polar research. These involve boldness in scientific thinking that can help to advance scientific understanding beyond the current state-of-the-art. In certain cases this may increase the risk of the projects not achieving their objectives.

3. *Enhance the international profile and contribution of Norwegian research groups*

Addressing challenges in the polar regions requires wide-ranging international cooperation and a coordinated effort across national boundaries. Norway is home to research groups of high international calibre. The POLARPROG will enhance the international quality and profile of Norwegian research, and Norwegian research groups will play a more active part than before in the global knowledge effort. This will comprise an important component of the programme’s international activities.

4. *Foster the development of a new generation of polar researchers*

The POLARPROG will seek to recruit younger researchers and enable them to act as project or work package managers for projects funded by the Research Council. Steps will also be taken to recruit established researchers from the various disciplines encompassed by polar research. Furthermore, importance will be attached to achieving a satisfactory gender balance in the projects.

The POLARPROG will encourage targeted communication activities to motivate more young people to pursue a career as a polar researcher.

5. *Make knowledge about the polar regions more readily accessible*

Knowledge about the polar regions will be enhanced through greater awareness about the importance of disseminating research results in ways adapted to different target groups. This will increase understanding of the importance of polar research among the public at large and will also ensure that the results are used to a greater extent.

Through publication in recognised international scientific journals, Norway can make its mark as a polar research nation. Increased cooperation with leading international researchers and ground-breaking research are of crucial importance for increasing the citation frequency for Norwegian research.

6. *Increase the use and accessibility of data and research infrastructure*

Efficient data management is the key to integrating activities across national, institutional and disciplinary boundaries. Like research in other fields, polar research is dependent on sound data obtained through observations using both modern and traditional methods of measurement, and also modelled data. Norway has a long tradition of collecting and processing of data and making them readily accessible. The POLARPROG will encourage Norwegian researchers to ensure that their data are accessible and to publish in open-access journals.

The POLARPROG will encourage an adequate degree of temporal and spatial monitoring coverage (observations and models) and processing of the data for use in research and by the public administration and the trade and industry sector. Furthermore, the programme will play a part in improving the use of national research infrastructure in areas in which Norway has special advantages, facilities or needs.

7. *Ensure that research related to Svalbard is given priority*

The use of Svalbard as a research platform is a priority. Norway intends to be a key actor in the development of knowledge in and about Svalbard. The *Svalbard Science Forum* (SSF) and the *Svalbard Integrated Arctic Earth Observing System* (SIOS) are important building blocks for further developing Svalbard as a platform for international research cooperation.

8. *Strengthen Norwegian research in and about the Antarctic*

The will take steps to strengthen Norwegian Antarctic research. This can be done through increased funding and international cooperation. Research Council activities must be seen in the context of national support schemes such as *the Norwegian Antarctic Research Expeditions* (NARE).

9. *Promote world-leading Norwegian polar research in areas of strategic importance*

The POLARPROG will focus on research areas of strategic importance for Norwegian polar research and will also play a part in establishing new strategically important research areas and research groups. It is also important to ensure that strong Norwegian research groups have an opportunity to maintain their position.

6. International cooperation

International cooperation is essential to enhancing quality and capacity in Norwegian polar research and ensuring that Norway has access to international knowledge production. Many questions addressed in the field of polar research are of an international nature, for example in areas such as climate, the environment, the oceans and policy development; thus, the need for international cooperation on polar research is self-evident. International coordination of research infrastructure and data sharing will also be vital for research cooperation.

Norway is one of the world's leading nations in the field of polar research, engaging in wide-ranging international research cooperation with many countries. This has led to high-calibre research in a number of disciplines, as noted in several reports on Norwegian polar research,³ and helps to make Norwegian polar researchers attractive partners in collaboration for researchers in other countries. Norwegian polar researchers must take more active part, and increase their success rate, in international competitive arenas. The POLARPROG will facilitate increased cooperation with leading international research groups as well as with actors in areas of strategic importance to Norway.

The POLARPROG will promote international research cooperation in line with the Norwegian Government's strategy for research and innovation cooperation with the EU⁴ and the Research Council of Norway's strategy on international cooperation, through participation in bilateral, Nordic, European and global collaboration. Key arenas for collaboration will include Horizon 2020 and relevant European Joint Programming Initiatives (JPIs).⁵ The programme will also encourage Norwegian researchers to take on leadership roles in international collaborative projects to a greater extent.

The POLARPROG will facilitate cooperation with priority countries in areas of national interest for Norway in keeping with the principles in the Research Council's roadmaps for bilateral cooperation with priority countries. The most recent white paper on research identifies the US, Russia and Canada as important partners for Arctic research.⁶

Svalbard is an important platform for international research cooperation. The POLARPROG has a special responsibility for strengthening research cooperation between Norwegian and Russian researchers in Svalbard.

The programme seeks to strengthen Norwegian Antarctic research. Increased international cooperation is essential if this ambition is to be realised in a cost-efficient manner. *The Scientific Committee on Antarctic Research (SCAR)* plays a particularly important role in this context as it provides guidelines and a framework for such research.

The programme has a special responsibility for following up the activities of the *European Polar Board (EPB)* and the *International Arctic Science Committee (IASC)*.

³ For example: Bibliometric Study in Support of Norway's Strategy for International Research Collaboration (2014); NIFU rapport 3-2012 (In Norwegian); Norwegian Climate Research: An evaluation (2012).

⁴ Strategy for research and innovation cooperation with the EU: Horizon 2020 and ERA (2014).

⁵ The Research Council of Norway participates in 10 JPIs.

⁶ Meld. St. 18 (2012–2013) Long-term perspectives – knowledge provides opportunity, white paper from the Ministry of Education and Research.

7. Communication and dissemination activities

Communication activities under POLARPROG are designed to make knowledge about the polar regions more accessible and to support the achievement of the objectives set out in this work programme. The programme will promote an open interface towards relevant research groups and users of polar research in Norway. The programme will also pave the way for more and better dissemination from the projects. These measures will increase understanding of polar research results, and this understanding may in turn foster innovation and sustainable industrial development, improve the benefit to society of the research results and inspire new, creative ideas for research projects.

The key target groups for communication activities under POLARPROG are research groups, the business sector, the public administration, decision-makers and the general public.

Communication activities under the programme will:

- Highlight the strategic role of the Research Council in polar research;
- Improve dialogue between the research community and society at large;
- Promote targeted communication on polar issues in cooperation with research groups.

To achieve these objectives, the programme will promote the establishment of meeting places and the use of the media and the Research Council's own dissemination and communication channels. Funding announcements and the like will be used to encourage researchers to disseminate their findings. The programme will also consider making use of Norwegian initiatives such as National Science Week and the Nysgjerrigper Science Knowledge Project for children in primary school.

Communication activities will be carried out in keeping with the Research Council's communication strategy.

8. Budget

The POLARPROG was established in 2011 with allocations from the Ministry of Education and Research over the national budget. It is an open-ended programme. The programme has proven important in the follow-up of the climate agreement in the Storting; Meld. St. 22 (2008–2009) Svalbard, white paper from the Ministry of Justice and Public Security; and the High North strategy.

In 2015, the programme is primarily being funded by the Ministry of Education and Research (NOK 51 million), with some funding from the Ministry of Climate and Environment (NOK 3.2 million). In addition, the programme receives earmarked funding from the Ministry of Foreign Affairs for follow-up of the cooperation agreement on polar research between Norway and the UK. Annual allocations over the national budget with appurtenant allocation letters will provide a basis for decisions regarding the programme's funding announcements.

Funding set aside for administration will be incorporated into the programme's long-term budget. The administration budget will cover mapping of knowledge gaps, synthesis of knowledge, and communication and dissemination activities. The long-term budget will also include funding for Norwegian participation in the *European Polar Board* (EPB) and the *International Arctic Science Committee* (IASC).

9. Coordination with other related instruments at the Research Council

The POLARPROG shares an interface with a number of other programmes, centre schemes, open competitive arenas and other Research Council instruments. This is obvious, as polar research encompasses a wide range of disciplines and thematic areas. One of POLARPROG's important tasks is therefore to maintain a good overview over activities under other Research Council programmes to ensure effective coordination with these.

The POLARPROG shares an interface with the following activities (this list is not exhaustive):

- KLIMAFORSK – Large-scale Programme on Climate Research
- MARINFORSK – Research Programme on Marine Resources and the Environment
- MILJØFORSK – Programme on Environmental Research for a Green Transition
- PETROMAKS 2 – Large-scale Programme for Petroleum Research
- The DEMO 2000 programme – Project-oriented technology development in the petroleum sector
- NORRUSS – Research Programme on Russia and the High North/Arctic
- ROMFORSK – Programme for Space Research
- SAMKUL – Research Programme on the Cultural Conditions Underlying Social Change
- MAROFF – Innovation Programme for Maritime Activities and Offshore Operations
- FRIPRO funding scheme for independent projects
- INFRASTRUKTUR – National Financing Initiative for Research Infrastructure
- SFF – Norwegian Centres of Excellence
- SFI – Centres for Research-based Innovation
- INTPART – International Partnerships for Excellent Education and Research

In addition, there are bilateral programmes to promote research cooperation with China and India respectively, as well as international funding instruments such as European Joint Programming Initiatives (JPIs), the Belmont Forum and the EU Horizon 2020 framework programme.

The POLARPROG will work to promote cooperation and coordination with the above-mentioned activities via joint strategies, funding announcements, dissemination activities, synthesis activities and meeting places.

10. Organisation

Programme board

The POLARPROG board is appointed by and reports to the Research Board of the Division for Energy, Resources and the Environment. The programme board is responsible for achieving the programme's objectives using the specific instruments available. Activities are to be carried out in accordance with the intentions and objectives of the Research Council's overall strategy, the guidelines from the Council's Executive Board and the Research Board of the Division for Energy, Resources and the Environment, this work programme, and the guidelines from the funding ministries. The programme's priorities, research tasks and financial framework will be assessed and adjusted in relation to unplanned changes in the national budget and annual allocation letters from the funding ministries. The programme board's activities shall at all times be in compliance with the overall principles and guidelines for the establishment, operation and conclusion of research programmes as set out by the Research Council. The programme board acts on behalf of the Research Council and reports to the research board via the executive director.

Programme administration

The POLARPROG administration is responsible for carrying out the day-to-day tasks of the programme and consists of a programme coordinator assisted by personnel with scientific and administrative expertise. The programme administration carries out the administrative functions of the programme and facilitates the implementation of the programme board's decisions. The programme administration must stay up-to-date as regards national and international polar research findings and relevant research needs.

Application review process

Funding announcements will be issued in compliance with the Research Council's applicable rules and use the fixed application submission deadlines. Funding announcements will be in keeping with this work programme and the applicable action plans for POLARPROG.

Grant applications will primarily be assessed by international referee panels and/or individual experts, but applications for smaller-scale projects may be assessed by the administration. The composition of the referee panels or selection of individual referees will cover the thematic and scientific range of the grant applications received.

After the grant applications have been assessed, the programme administration will submit a recommendation for projects to be awarded funding to POLARPROG board. The programme board is responsible for final approval of grant allocations based on the recommendation of the administration and its own assessments.



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