



Norwegian Ministry
of Education and Research

Strategy

Panorama

Strategy for cooperation on research and higher education with
Brazil, Canada, China, India, Japan, Russia, South Africa, South Korea and
the USA (2021–2027)



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April 2021

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Preface

The world is undergoing rapid change. We are in the midst of a period of geopolitical upheaval, with increased rivalry between the great powers and pressure being put on the rules-based international order. New countries are also emerging as great powers when it comes to science, technology and higher education. At the same time, we are also seeing forces that seek to put an end to internationalisation and globalisation. This is also a challenge for us.

At the same time, international knowledge cooperation is more important than ever. The COVID-19 pandemic has fully demonstrated just how closely intertwined the world is and how key research-based knowledge is to our shared welfare. The UN Sustainable Development Goals show the way and encourage shared efforts and cooperation on the great challenges facing the world. Education, research and innovation will be crucial in achieving our goals and solving these challenges.

International cooperation is essential for us to further develop as a leading knowledge nation. I want this strategy to contribute towards raising the quality of Norwegian academic communities and increasing our ability to contribute knowledge. The goal is high quality cooperation in areas of particular interest to Norway and Norwegian academic communities.

Knowledge cooperation must be closely tied to the business sector. This will contribute to strengthening Norway's competitiveness and ability to innovate.

This strategy will continue to build on the excellent results of the previous strategy. The six strategic partner countries from the previous strategy remain key partners, but the strategy has also been expanded to include a further three countries. South Korea is a country experiencing rapid developments at the frontiers of science and technology. The USA and Canada have been key partners for the Norwegian knowledge sector for many years. They are also included in this new strategy period.

The Panorama strategy is part of Norwegian science diplomacy. Bilateral knowledge cooperation is important in maintaining dialogue and good diplomatic relations - even when conditions are challenging. At the same time, this requires increased awareness of national inter-

ests, key values and standards for cooperation. Norway supports the Bonn Declaration on Freedom of Scientific Research, an international declaration on academic freedom. The declaration highlights the importance of academic freedom as a basic and guiding principle for international education and research cooperation.

With this strategy, I would like to invite students, researchers, higher education institutions and the business community to continue their efforts in international cooperation to promote new knowledge and increased value creation.

Knowledge and cooperation change everything.



A handwritten signature in blue ink, reading 'Henrik Asheim'.

Henrik Asheim
Minister of Research and Higher Education

1. The purpose of the strategy

The purpose of the strategy is increased quality and relevance in higher education, research and innovation in Norway through internationalisation and cooperation with the business sector. The strategy will clarify the overall priorities for cooperation with the strategic partner countries and will introduce measures aimed at specific challenges.

The Panorama strategy applies to the period 2021-2027. It includes nine countries of strategic importance to the knowledge sector outside of the EU/EEA area – Brazil, Canada, India, Japan, China, Russia, South Africa, South Korea and the USA.

The strategy will underpin and further develop the quality in Norwegian academic communities through cooperation with some of the most important leading knowledge nations in the world in areas of central importance to Norway. The strategy must be viewed as an instrument under the long-term plan for research and higher education and as a part of the follow-up on the White Paper *A world of opportunities — International student mobility in higher education* (Meld. St. 7 (2020-2021)).

High quality international research networks are essential when it comes to solving global challenges. Here, research-based knowledge across fields will be crucial, including social science, legal and humanistic perspectives. These fields are also important in increasing our knowledge of the prioritised partner countries.

The Panorama countries are heterogeneous but common to them all is that they play an important role, globally and regionally. Together, they account for a

large, important part of global knowledge production. The Government has therefore entered into bilateral agreements on research and/or higher education with most of these countries and, through the Panorama strategy, the Government seeks to achieve comprehensive and coordinated follow-up of the cooperation.

The nine countries have different profiles and strengths. The rationale and terms of the cooperation with the countries will therefore vary. The relevance of the countries will also vary between Norwegian institutions and between the individual academic communities. This will be reflected in local strategies and priorities. In a long-term perspective, it is important to take into account changes to the landscape. During the strategy period, we may therefore have varying focus on each of the countries based on needs and external conditions. For example, the inclusion of South Korea will require special attention during the initial strategy period in order to allow the cooperation to develop.

The Panorama countries are also key when it comes to contexts relating to foreign policy and trade policy. A positive interaction between various players both within and outside of the knowledge sector therefore remains important.

Regardless of the rationale that forms the basis for the knowledge cooperation on the Norwegian side, seeing the interlinkages between education, research and innovation will be a central objective of the cooperation. During the coming strategy period, the Government would also like to see increased focus on cooperation with the business sector in the partner countries.



2. Overarching priorities

The Panorama strategy will form part of the follow-up on the Long-term plan for research and higher education (2019-2028) and the White Paper *A world of opportunities – International student mobility in higher education (Meld St.7 (2020-2021))*. The latter is also linked to the ambition that, over time, half of those graduating with a degree in higher education in Norway will have had a study or training period abroad, which was presented in the White Paper *Quality culture in higher education (Meld St. 16 (2016-2017))*. The White Paper *Internationalisation of education in Norway (Meld. St. 14 (2008 – 2009))*, and the strategy for increased cooperation on higher education with North America for the period 2012-2015 (North America Strategy) have also set out political guidelines for international cooperation with the Panorama countries.

The Government expects that the cooperation with the Panorama countries will be based on established principles linked to quality, relevance, reciprocity, long-term perspectives and accountability.

Cooperation is to be based on the following five main priorities:

- **Constructive interaction in higher education, research and innovation cooperation**

The Government wishes to achieve strong links between international higher education, research and innovation cooperations through long-term institutional partnerships.

Links between higher education partnerships and other academic partnerships are important to improve quality in education. Early involvement in international research cooperation also contributes to students learning the value of such and provides them with the opportunity to develop international networks at an early stage of a potential research career. Researchers' international cooperation should be linked to educational activities where possible, for example through mobility, guest lectures, joint supervision and cooperations on the curriculum and study programmes. This safeguards research-based education at the international frontiers of knowledge.

- **Good links to working life and the business sector**

The stimulation of research and innovation in industry contributes to economically profitable and future-oriented businesses. Thus, the Government wants international higher education, research and innovation cooperation to be viewed in the context of business

activities, expertise requirements, development of new technology and innovation initiatives. Increased international experience, knowledge and expertise are key factors for Norwegian competitiveness and economic growth and also provide more indirect advantages in the form of expanded market access and strengthened international trade.

Cooperation with strong academic communities abroad is a fundamental element in strengthening expertise, competitiveness and market access for research-intensive/performing businesses. Increased contact with communities abroad is considered essential when it comes to strengthening Norwegian competitiveness and innovation. Cooperation in higher education, research and innovation can open doors for Norwegian companies when it comes to knowledge environments in the nine strategy countries. In other cases, business cooperation can provide access and opportunities for our educational and research environments.

Several of the partner countries are key markets for products and services for Norwegian businesses with long traditions. In a globalised world, it is crucial that more Norwegians explore and take advantage of cooperation opportunities in other countries. This can take place on several levels, e.g. by companies identifying partners outside of Norwegian borders and students choosing to study in these countries. This generally contributes to a greater breadth in our innovation ability, adaptability, as well as language, cultural and relationship knowledge. Such international networks will be beneficial to Norwegian business in a long-term perspective.

- **Good student mobility**

The Government wishes to strengthen student mobility to and from the Panorama countries. This is supported by the White Paper *A world of opportunities – International student mobility in higher education (Meld St.7 (2020-2021))*.

The main objective of the White Paper is to contribute to a cultural change in the higher education sector so that international mobility becomes an integrated part of all study programmes. The goal is that half of those graduating from a Norwegian higher education institution has had a study or training period abroad. The Government also wants to lay the foundations for increased student mobility as part of a broader institutional cooperation.

Strategic partnerships between Norwegian institutions and academic communities in the partner countries will contribute towards mutual mobility within the context of a broader academic cooperation, in which higher education, research and innovation can be connected in an appropriate manner.

The Government would like more students to choose to study in the Panorama countries, both through exchanges and full degrees. Changes are therefore being made to regulations in the Norwegian State Educational Loan Fund in order to increase mobility to prioritised partner countries. At the same time, it is clear that the potential for Norwegian students to study in the Panorama countries differs greatly, particularly with respect to language. The conditions are already properly in place in Canada, South Africa and the USA. The Government would generally like to see a higher proportion of Norwegian students going to non-English speaking countries than is currently the case, including the non-English speaking Panorama countries.

Climate change also requires the education sector to reduce its carbon footprint. Nevertheless, the Government believes that the value of international student mobility justifies the high priority. A study period abroad may be the most important journey a student makes and the Government would like to emphasise that this must form the basis for the decision to take a full degree or parts of the studies abroad. Research and education are necessary to solve global challenges, including challenges related to climate change, and this requires students and researchers to also be able to meet in person. Nevertheless, it is important to be aware of the journeys you make. The use of technology for virtual meetings and further internationalisation of Norwegian campuses may increase internationalisation without increasing the carbon footprint.

With no tuition fees in higher education, Norway also facilitates incoming mobility for both graduate students and incoming exchange students at Norwegian higher education institutions. The White Paper is looking to cater for more targeted recruitment of international students in Norway. Such recruitment must be based on national needs for expertise and must be clearly aimed at the Panorama countries, amongst others.

- **Good interaction between bilateral and multilateral cooperation**

The Government would like various arenas for international higher education and research cooperation to be viewed in context where possible and to

complement one another in a positive fashion. This also applies to Norwegian participation in multilateral arenas such as UNESCO and OECD.

Good synergy with the EU programmes for education, research and innovation is of particular importance. The Government plans to participate in the research and innovation programme Horizon Europe and the education programme Erasmus+ during the 2021-2027 period. These programmes also allow for third-party participation, i.e. countries that are non-EU members or associated with the programmes, including the Panorama countries. The terms of participation are somewhat different between the two programmes and the status and terms for each country in the programme vary. Academic and geographical guidelines in each announcement will also affect the possibilities.

In the work on the various EU programmes and in European partnerships on research and innovation, the Government will continue to emphasise the importance of strengthening the opportunities for third-party participation. In dialogue with the Panorama countries, the Government will also prioritise initiatives that can help strengthen the bilateral cooperation through multilateral venues.

The Government would like the academic communities in the Panorama cooperation to identify and exploit opportunities for synergies and to consider the correlation between national and European funding mechanisms. This will mutually strengthen national and European cooperation with the Panorama countries and contribute to a broad academic research network.

- **Research-based knowledge to achieve the UN Sustainable Development Goals (2030 Agenda)**

The 2030 Agenda is a global roadmap for sustainable development as adopted by the UN member states in 2015. The sustainable development goals are a universal work plan to safeguard the world's social, economic and environmental sustainability. Sustainability is about meeting the needs of today's population without reducing the opportunity of future generations to meet their needs. The development of new knowledge across national borders is absolutely crucial in order to succeed in this.

The Government hopes that the cooperation with the Panorama countries will contribute research-based knowledge, education and innovation that will promote sustainable solutions. The inclusion of the sustainable development goals in the Panorama strategy opens up

many important topics that coincide with and support Norwegian research communities and interests. Examples of relevant areas include marine research, climate and biodiversity, renewable energy, global health, migration and inequality. Research-based knowledge is crucial when it comes to achieving the sustainable development goals and contributions across a broad

range of academic fields within both applied research and basic research will be of importance. Additionally, the links to innovation to bring about new solutions and the involvement of the business community will increase the possibility of succeeding in achieving the sustainable development goals.

The following principles form the basis for the bilateral cooperation on higher education and research with the Panorama countries from the Norwegian side:

Quality - International cooperation is a key instrument to achieve improved quality in higher education, research and innovation.

Relevance - International cooperation activities will be a natural extension of national priorities and support the plans and strategies of the institutions and academic communities.

Reciprocity - The cooperation must be linked to areas in which partners have common interests and are able to complement and strengthen one another. Equality and anti-discrimination will also be part of the basis for the cooperation.

Long-term perspective - It can take a long time to develop a well-functioning international cooperation. Having the most predictable and stable frameworks possible is crucial in establishing long-term relationships that can form the basis for further cooperation after individual projects or other time-limited activities have been completed.

Accountability - When entering into specific cooperations, consideration should be given to fundamental academic values and national interests, including security interests.



3. Measures

In the work to further develop the cooperation with the Panorama countries, the Research Council of Norway, the Norwegian Directorate for Higher Education and Skills and Innovation Norway have an operational responsibility for contributing to a positive interaction between the education, research and business communities in bilateral cooperation.

The Government seeks to promote targeted bilateral higher education, research and innovation cooperation with the Panorama countries by facilitating:

1. a long-term strengthening of academic interactions between institutions in Norway and the strategy countries
2. more systematic contact and coordination on the Norwegian side, across the various ministries areas of responsibility
3. increased knowledge of and more accessible information about matters that could influence the possibilities of achieving good interaction between higher education, research and business communities

1. *A long-term strengthening of academic interactions between institutions in Norway and the Panorama countries*

- The Government wants to promote the cooperation with the Panorama countries through the use of flexible financial instruments for institutional cooperation and mobility. The Government will therefore continue the two programmes UTFORSK and INTPART, which are aimed in particular at the Panorama cooperation. Both contribute towards the strategy's objectives of linking education and research cooperation, as well as facilitating increased cooperation with the business community.

UTFORSK supports educational activities in cooperation with the Panorama countries. The programme aims to contribute to strengthening higher education to achieve a sustainable future, as well as increased quality and relevance of study programmes. Close interaction between higher education and research, good links to working life and business communities and effective, mutual student mobility are key. The programme is flexible and broadly embraced in the university and university college sector.

INTPART aims to promote long-term institutional cooperation with the Panorama countries, with an emphasis on the overarching objectives of the long-

term plan to develop more academic communities of outstanding quality. The programme aims to contribute to the further development of institutional higher education and research cooperation, networking activities and exchange of knowledge. The programme has been jointly developed by the Research Council of Norway and the Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education. It is financed through earmarked funds from the Norwegian Ministry of Education and Research and funding from other portfolio committees in the Research Council of Norway. The programme is also aimed at research institutes.

- In addition to the two earmarked programmes, the Government also intends to make use of different venues and sources of funding. For example, all of the Research Council of Norway initiatives – programmes, free venues, special initiatives, institutional measures and other forms of support – must incorporate international cooperation. The current research cooperation with the Panorama countries therefore already receives funding from a number of regular programmes.
- The Research Council of Norway has also entered into 'Money Follows Cooperation' agreements with Japan and South Korea. Norwegian researchers can apply for funding if they are part of a cooperation with a main applicant from the country in question that is in accordance with the rules and procedures of the relevant research council. Similarly, researchers from the relevant countries may also apply to the Research Council of Norway together with a Norwegian main applicant. The Government wishes to investigate the possibility of expanding the programme to include more of the partner countries.
- The Research Council of Norway is also working to reprioritise funds from established bilateral initiatives to a generic initiative for Research for global sustainability. The initiative will be a mobilisation scheme for research in global partnerships that will co-fund research using funding from thematic budgets. The initiative will contribute to the cooperation with several of the Panorama countries and prioritised partner countries set down in the Government's development policy.
- Innovation Norway is represented in all Panorama countries with the exception of South Africa and has

local networks and partnerships that Norwegian research institutions and companies can make use of. The areas covered include innovation policy, knowledge of framework conditions and contact with the authorities, knowledge clusters and relevant parties in the countries. There is potential to bring the Panorama countries more closely into the innovation and sustainability cooperations with Norway. The Research Council of Norway and Innovation Norway will cooperate on the mobilisation of this through the EU framework programme Horizon Europe. Additionally, a high amount of business-oriented innovation cooperation with international partners is financed through IN's ordinary instruments, such as innovation contracts and cluster cooperations.

2. More systematic contact and coordination on the Norwegian side, across the various ministries areas of responsibility

- The Government aims to facilitate systematic contact between Norwegian parties for the purpose of more coordinated further development of cooperation within higher education, research, innovation and business communities with the Panorama countries. The Norwegian Ministry of Education and Research will therefore continue its regular forum for key actors at Government and agency level, in which the main participants will be included.

The purpose of the forum is to facilitate effective follow-up of the strategy, among other things through mutual exchange of information and experiences, advice linked to specific issues and the discussion of potential new initiatives and/or priorities that support the objectives of the strategy. Arrangements will also be made for the Ministries Research Committee to be used as a venue for mutual exchange of information between the ministries. The Joint Working Group meetings under the bilateral agreements with the partner countries will also be a venue for mutual participation and coordination.

- The Government will make arrangements to ensure that the Norwegian Directorate for Higher Education and Skills, the Research Council of Norway and Innovation Norway further develop their cooperation on higher education, research and business promotion with the strategy countries. The three organisations will have a shared responsibility for the operationalisation of measures and activities that link higher education, research and innovation,

as well as for assessing which measures and forms of cooperation are most relevant in each country. The operational cooperation can take different forms in different countries and must be adapted for local conditions. The follow-up responsibility for the Panorama strategy will be clarified in the agencies' allocation letters.

The Governments wants the linking of business cooperation and academic cooperation with the Panorama countries to be a focus area. Through its roles, instruments and presence abroad, Innovation Norway will be a key partner in international knowledge work. Not least, long-term presence and established networks with knowledge and business players will constitute an important resource for increased focus on business in knowledge cooperation.

- The Government wants the Norwegian diplomatic and consular service to continue to provide assistance in facilitating more coordinated and longer-term higher education and research cooperations with the Panorama countries. The Ministry of Foreign Affairs will further develop the work on strengthening the diplomatic and consular service's knowledge diplomacy and make the diplomatic and consular service missions even better and more qualified partners for Norwegian players, both at an institutional and at a government level. This includes ongoing work to promote Norway as a leading knowledge nation and to profile Norway as an attractive country in which to study and conduct research.

3. Increased knowledge of and more accessible information about matters that could influence the possibilities of achieving good cooperation within higher education, research and business

- The Government aims to make it easier for Norwegian institutions and academic communities to establish and further develop their interfaces with the strategy countries. This requires a solid knowledge of various factors that influence the opportunities for establishing long-term academic cooperation.

The Government would like the Directorate of Higher Education and Skills, the Research Council of Norway and the knowledge sector's envoys in the countries to follow up on the knowledge base that has been established on these countries in recent years, through studies and analyses linked to e.g.:

- the higher education and research systems in the strategy countries, including adminis-

- trative, legal and practical matters that could make the cooperation challenging
 - other matters that affect the framework conditions for establishing a long-term cooperation within higher education and research with the countries concerned, including cultural, political and economic conditions
 - what other countries are doing to strengthen their relationships with the countries in question within higher education and research
 - the impact of various schemes and instruments that support bilateral cooperation with various countries, based on experiences from Norway and other countries
 - what can be done to facilitate increased outgoing mobility among Norwegian students, researchers, administrative employees, etc.
 - challenges associated with intellectual property rights in the cooperation (intellectual property law issues), including any ethical challenges, as well as legal and political guidelines
- The Government will make it easier for Norwegian students to find information about educational institutions that offer high quality education in the Panorama countries. Proper, adapted information about studies abroad is a central instrument in making good study choices. In the White Paper on student mobility, the Government highlights the need for the various national players responsible for this area to cooperate and coordinate their efforts to a greater degree. Information about study opportunities in Panorama countries will be relevant in such a context.
 - In line with the White Paper on student mobility, the Government wishes to establish a more conscious and strategic policy for the recruiting of international full-time degree students to Norway. The Norwegian Ministry of Education and Research will establish a working group that will look at this dimension.

More targeted recruitment will be based on national expertise requirements and will be clearly aimed at the prioritised countries for cooperation. This will strengthen Norwegian education and research and will benefit society and the business community.

- The Government will make existing knowledge and information about higher education and research cooperation with the strategy countries more accessible to various target groups.

The Norwegian Ministry of Education and Research requests that the Research Council of Norway, the Directorate of Higher Education and Skills and the Norwegian Agency for Quality Assurance in Education use relevant platforms and venues for dissemination of knowledge aimed at various target groups for the purpose of dissemination and exchange of information and knowledge.

- In consultation with the higher education and research sector, the Government will draw up national guidelines for responsible international cooperation in order to support Norwegian academic communities in their work on risk assessment and quality assurance of specific cooperations.

International cooperation is more important than ever and an open research and higher education system that provides everyone with access to knowledge is a goal. At the same time, the world around us requires vigilance and increased awareness of values, standards and basic security. This is in addition to fundamental academic values such as academic freedom and anti-discrimination that all higher education and research cooperations are based on. Preventive security work, including information security, privacy and export controls, will safeguard these values and ensure that Norwegian knowledge is not misused or shared in contravention of our security and defence policy interests.

EXPORT CONTROLS

Export controls mean that certain goods, technology and services cannot be exported from Norway without a license issued by the Ministry of Foreign Affairs. Such controls may also place limitations on the export of sensitive knowledge with military applications to certain countries of concern. Read more about export controls, goods subject to licensing, sanctions and how to apply for a license at: www.eksportkontroll.no

4. Evaluation

The developments in the cooperation within higher education and research with the Panorama countries during the 2021 -2027 period will be evaluated in light of selected indicators. It would be desirable to look at the developments from the previous strategy period and therefore to continue the same parameters.

For higher education cooperations, this will primarily apply to:

- Outgoing degree students (Source: Lånekassen)
- Outgoing exchange students (Source: DBH)
- Incoming exchange and degree students from the strategy countries (Source: DBH)
- Higher education cooperations through Erasmus+ (Source: The Norwegian Directorate for Higher Education and Skills)
- Higher education cooperations through the Directorate for Higher Education and Skills' programmes

Developments in research cooperations with the nine countries will be evaluated based on the following indicators:

- Research cooperations through the Research Council of Norway's programmes/schemes (Source: Research Council of Norway)
- Research cooperations through Horizon Europe (Source: Research Council of Norway)
- Co-publishing (Source: Research Council of Norway and the Nordic Institute for Studies in Innovation, Research and Education)

Qualitative evaluations of the impact of the strategy on Norwegian academic communities and goal attainment in the five areas of the initiative will also be central.



Appendix

UTFORSK and INTPART

UTFORSK supports universities and university colleges in the form of project funding for activities that support the establishment of long-term institutional cooperations with the Panorama countries, with a main emphasis on higher education. This can include funding for the implementation of shared educational activities and shared development of study programmes, combined with student and employee mobility. UTFORSK may also announce project funding aimed at individual countries and may publish joint announcements with parties in the strategy countries when appropriate. UTFORSK now also includes the previous programmes Partnership Programme for North America, the Russia Programme and InternAbroad. www.diku.no

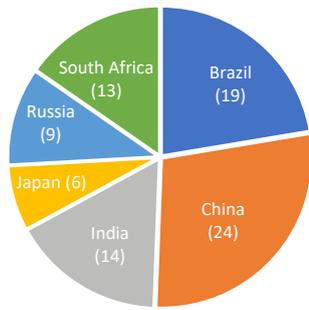
The **INTPART** programme supports institutional higher education and research cooperations, networking activities and exchange of knowledge with the Panorama countries. The scheme is aimed at exceptional national academic communities and there is a requirement for the projects to be closely linked to the academic communities' existing research efforts and institutional strategies. 'Prequalification' is therefore required in the form of allocated peer-reviewed research funding. From and including 2020, the scheme is seeking projects of a longer duration and with greater financial frameworks in order to facilitate long-term, sustainable partnerships. INTPART is managed by the Research Council of Norway and the Norwegian Directorate of Higher Education and Skills. www.forskingsradet.no

Evaluation of the 2016-2020 Panorama strategy

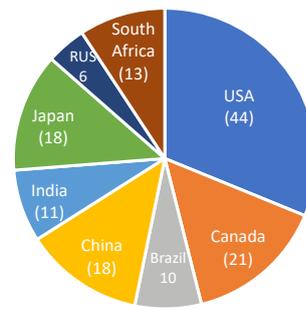
The evaluation shows that there has been strong growth in the cooperation with the strategy countries since 2012, even though it is unclear whether this can be attributed to the strategy as such. However, the evaluation does indicate that the developments would have been different without the strategy and shows that cooperation during the period has largely been based on the strategy's principles concerning quality, reciprocity, long-term perspective and relevance. Not least, the evaluation shows that the economic instruments UTFORSK and INTPART have contributed to achieving the overarching objective of linking education and research more closely in the cooperation with the Panorama countries. The strategy has also had a positive impact on the quality of student mobility through the institutional partnerships. The evaluation shows that further efforts are required in order to strengthen the links with the business communities and EU programmes.

Further information about the evaluation: <https://www.regjeringen.no/no/dokumenter/mot-mer-og-bedre-kunnskapssamarbeid-evaluering-av-panorama-strategien/id2694402/>

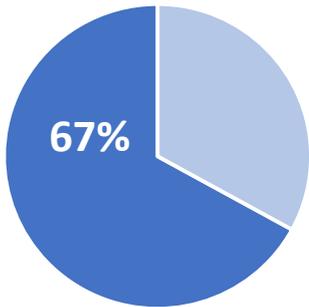
Allocated UTFORSK projects by strategy country 2016-2020



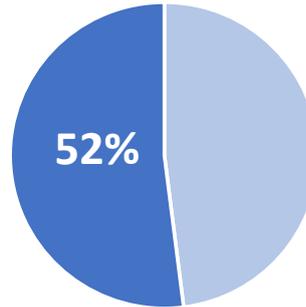
Allocated INTPART projects by strategy country 2016-2020



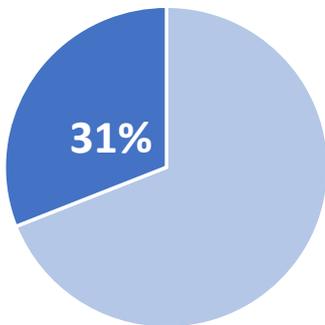
UTFORSK projects with partners from working life 2016-2020



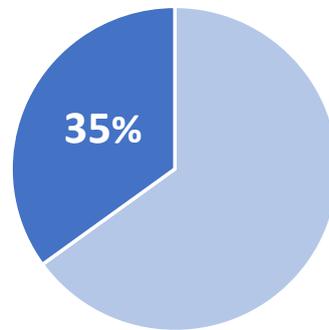
INTPART projects with partners from working life 2016-2020



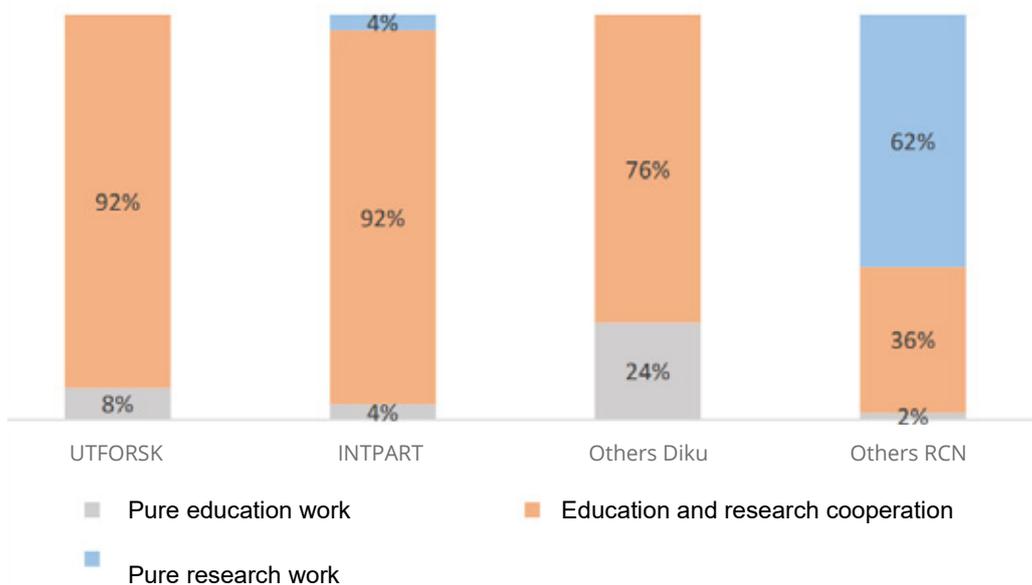
Other Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education projects with links to working life 2016-2020



Other Research Council of Norway projects with links to working life 2016-2020



Projects by programme category and content



UTFORSK

Creating lasting networks within space exploration and education

The University of Oslo cooperates with the Space Research Institute of the Russian Academy of Science to more closely link research and education and provide students with practical experience of ongoing space exploration.

As part of the project, students have had the opportunity to write assignments with supervision from researchers from both countries. The student projects have been linked directly to ongoing research on the part of the partner institutions and were concluded by submitting the results to scientific journals. The students have also had the opportunity to participate in workshops in Moscow and summer school on Svalbard. The project aimed to provide students with practical experience of the field through experiments in order to ensure high quality and realistic experiences from research. Emphasis has also been placed on intercultural expertise and experience through shared supervision and mobility. In the project, the institutions have signed a cooperation agreement that formalises and facilitates more mobility and shared research activities.

The partners in the project are included in a larger project that has established ASTRA (Arctic Space TRaining), a platform for education and research in the field and that involves several Norwegian and Russian institutions. ASTRA provides students with practical training on the use of various research facilities and instruments, including satellites, rockets and instruments.

INTPART

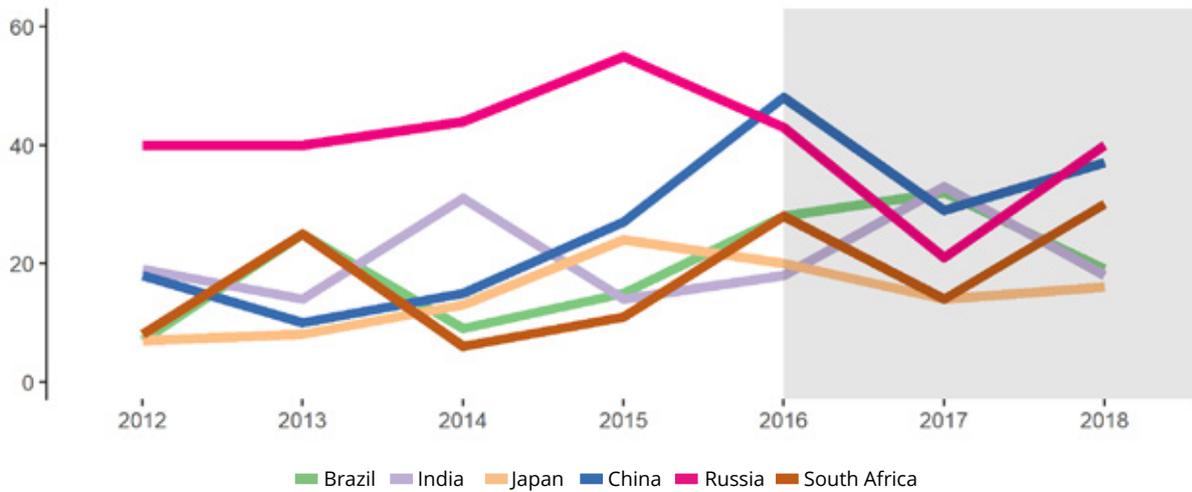
Thermodynamics from nanoscale to operational scale

The Thanos project will generate knowledge in the fundamental academic areas that are needed for producing and developing the materials required for a sustainable future. A further goal is to make this knowledge more accessible to new generations of engineers and researchers through improved education methods.

The project has brought together partners from Norway, South Africa, China and Japan. Despite the cultural differences, the similarities are greater than the differences when it comes to education and research on new materials and better, more sustainable production of materials. New forms of cooperation have been developed during the COVID-19 period. Digital courses have become a matter of course and two Norwegian education courses are arranged between the partners each year, in addition to international seminars and conferences from the Norwegian University of Science and Technology/SINTEF, the University of Tokyo and MINTEK (South Africa). Norway and China are working on a shared research project and cooperate through a Norwegian PhD student. A shared MSc project between Norway and South Africa, in which the student spends one year with each party, has also recently started.

The project is still in its start-up phase and more in-person courses and meetings are planned for the post-COVID period, as well as an exchange of both researchers and MSc students.

Total new projects with the Panorama countries in accordance with the evaluation of Panorama I (all programmes; Research Council of Norway, Directorate of Higher Education and Skills and the EU)



Overview of the Norwegian Ministry of Education and Research MoU/agreements with the countries

Country	Education	Research
Brazil	MoU Higher education (2008)	MoU Research, technology and innovation (2021) MoU Aquaculture research (NFD) (2009) MoU Oil and gas research (OED) (2013)
India	MoU Education (2008), converted to Higher education (2014)	Research and technology agreement (2006)
Japan		Research and technology agreement (2003)
China	MoU Higher education (2008)	Research and technology agreement (2008)
Russia	MoU Higher education (2010)	
South Africa		Research and technology agreement (2002)
South Korea		MoU Research and technology (2019)
USA		Research and technology agreement (2005)

Utgitt av:
Norwegian Ministry of Education and Research

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Publications are also available on:

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Publication number: F-4462 E

Coverphoto: Colourbox

Print: Norwegian Government Security and Service Organisation
4/2021

