Forskningsrådet

Evaluation of Life Sciences 2022-2024

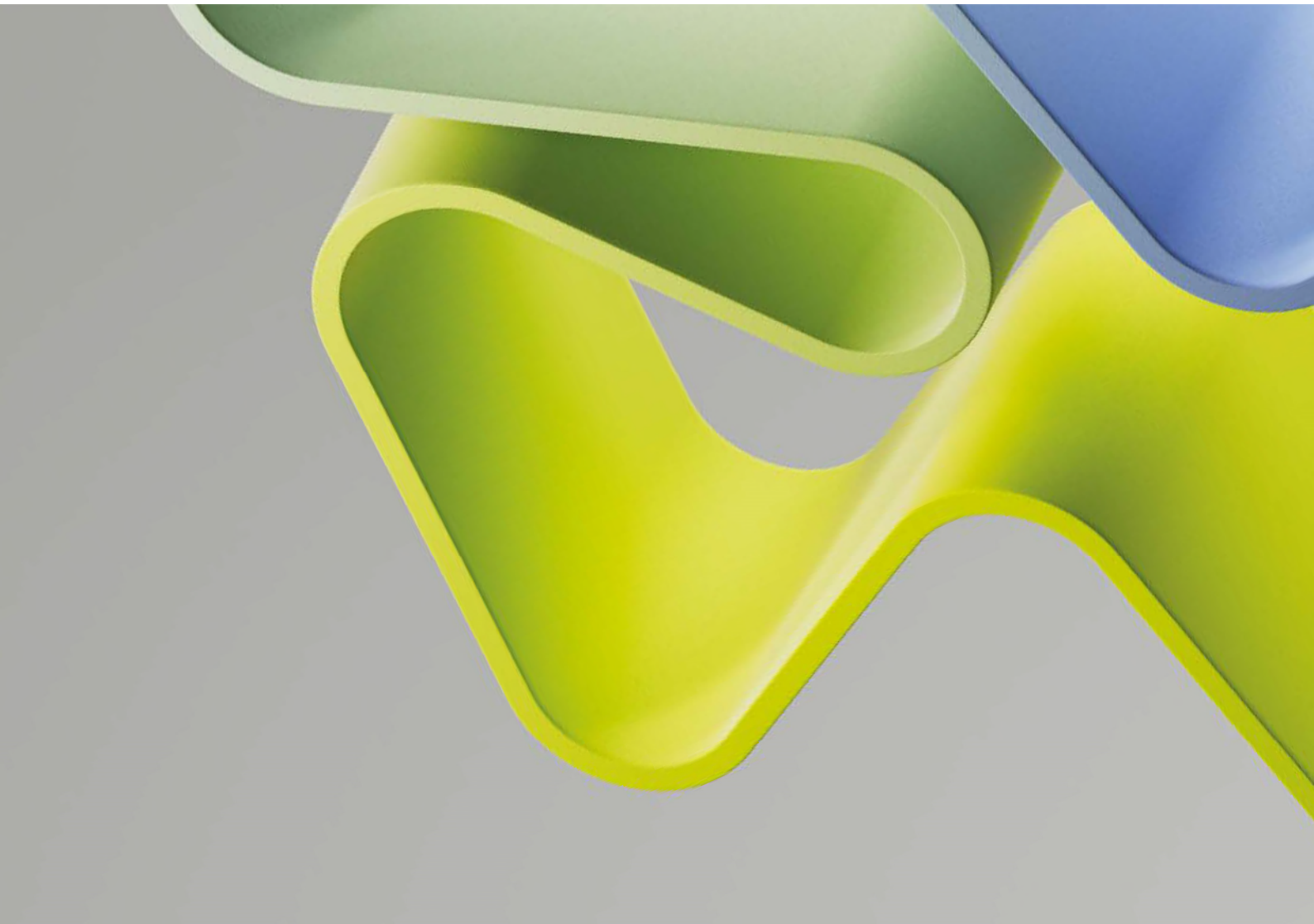
Evaluation of Biosciences 2022-2023

Evaluation report

Faculty of Biosciences Fisheries and Economics (BFE)

University of Tromsø (UiT)

December 2023



Contents

Statement from Evaluation Committee 2

This report is from Evaluation Committee 2 which evaluated the following administrative units representing the higher education sector in the Evaluation of Biosciences 2022-2023:

- Faculty of Bioscience (BIOVIT), Norwegian University of Life Sciences (NMBU)
- Faculty of Chemistry, Biotechnology and Food Science (KBM), NMBU
- Faculty of Biosciences and Aquaculture (FBA), Nord University (Nord)
- Department of Biotechnology and Food Science (IBT), Norwegian University of Science and Technology (NTNU)
- Computational Biology Administrative unit (CBU), University of Bergen (UiB)
- Department of biological sciences (BIO), UiB
- Department of Biosciences (IBV), University of Oslo (UiO)
- Department of Chemistry, Bioscience and Environmental Engineering, University of Stavanger (UiS)
- Faculty of Biosciences, Fisheries and Economics (BFE), University of Tromsø – The Arctic University of Norway (UiT)

The conclusions and recommendations in this report are based on information from the administrative units (self-assessment), digital meetings with representatives from the administrative units, bibliometric analysis and personnel statistics from the Nordic Institute for Studies of Innovation, Research, and Education (NIFU) and Statistics Norway (SSB), and selected data from Studiebarometeret and the National Teacher Survey (Norwegian Agency for Quality Assurance in Education [NOKUT]). The digital interviews took place in Autumn 2023.

This report is the consensus view from committee 2. All members of the committee have agreed with the assessments, conclusions and recommendations presented here.

Evaluation committee 2 consisted of the following members:

Professor/Dean
Ivo Sbalzarini (chair),
TUD Dresden University of Technology
& Max Planck Institute of Molecular
Cell Biology and Genetics

Professor
Caroline Austin,
Newcastle University

Professor/Pro-Dean
Ade Whitehouse,
University of Leeds

Professor/Deputy Dean
Lena Mäler,
Stockholm University

EM. Professor/Director
Nico P.E. Vermeulen,
Vrije Universiteit Amsterdam

EM. Professor/Director
Lene Lange,
Technical University Denmark

Adjunct Professor, dr.
Pikka Jokelainen,
Statens Serum Institut

Dr Anoushka Davé, Principal Consultant, Technopolis Group, was the committee secretary.

Oslo, December 2023

Profile of the administrative unit

The Faculty of Biosciences, Fisheries and Economics (BFE) reported a total of 359 employees for 2021, out of which 113 were Category I professors, associate professors or assistant professors; 18 were Category II professors, associate professors or lecturers; 48 were researchers or postdocs; 74 were PhD fellows; 55 were engineers or technicians and 51 were administrative staff. Women comprised a minority (41%) of professors, associate professors and assistant professors, but a majority (64%) of PhD fellows.

Six research groups from BFE were included in the evaluation: Arctic Marine System Ecology, Northern Populations and Ecosystems, Microorganisms and Plants, Arctic Chronobiology and Physiology, Freshwater Ecology and Parasitology, and the Norwegian College of Fishery Science.

The BFE strategy aims to develop knowledge and competence on sustainability, especially in the Northern regions including the Arctic, underpinning the UN sustainable development goals. This is also reflected in the submitted terms of references. There is also strategic room for basic research that is not necessarily directly Arctic-related. Thematic priorities are the effects of climate change on biological diversity and ecosystems, physiological adaptation both at the individual and population levels, renewal energy from bio-products, fishing gear technology, marine resources for feed and food, competitive businesses and innovation and sustainable use of biological resources (management models including adaptive management and integrated monitoring, value creation in fisheries, aquaculture, and bioprospecting). BFE consists of cross-disciplinary research groups. Strategic priorities are, for example, to develop/strengthen research within algae scale-up technology (Finnfjord AS), marine bioprospecting, long-term monitoring of aquatic and terrestrial organisms, and eDNA research. Internal strategic priorities are to create new research groups based on academic and societal needs.

As a higher education institution (HEI), BFE strives to follow the four overall goals for HEIs that receive public funding: high quality in research and education; research and education for welfare, value creation and innovation; access to education; and efficiency, diversity, and solidity of the higher education sector and research system. In relation to this, in its self-assessment, BFE states that the sectoral goals with respect to knowledge, as laid down in the Governmental Developmental Agreement (2011-–2021/2022) with UiT are: (i) UiT shall be a leading institution within research and education focused on the Arctic environment, (ii) UiT will develop a research environment at national and international levels within the themes of energy, climate, society and environment and sustainable use of resources, and (iii) Increase the quality of education.

Based on its self-assessment, in the future BFE will take advantage of a dedicated and competent staff, attractive studies in fisheries, aquaculture and aquamedicine education (the latter is one of only two in Norway), and a rather high level of external funding as well as increased networking and external collaboration.

Overall assessment

The evaluation committee's overall assessment considering the Terms of Reference provided by the Unit is that the Faculty of Biosciences, Fisheries and Economics of the University of Tromsø (UiT-BFE) has been successful in delivering university-level research outputs for increased understanding of biological, ecological and environmental systems, impacting sustainable development of the Arctic. UiT BFE has, based on research skills and competences, been successful in establishing and conducting research-based study programmes within Arctic biology. Furthermore, UiT BFE has delivered research results and research-based innovation of relevance for institutional, sectorial, and societal sustainable development.

UiT BFE is striving to change the research culture to increase its international visibility in order to be better placed for attracting more talent (students, PhD and postdoc candidates) as well as attracting experienced staff, more high-level Arctic-relevant collaborations and a higher level of funding for continued strengthening of the research and study programmes.

UiT BFE acknowledges recruitment to be a major challenge, requiring the UiT BFE management team's full attention, also in the years to come. However, strategic planning and actions seem to be in place.

The committee finds that updated, state-of-the-art infrastructure for carrying out research in Arctic biology and related topics is essential and critical. Its importance is growing with the rising climate change and biodiversity loss.

In conclusion, we express a wish for UiT BFE to develop further, with a sense of urgency to deliver even more insightful knowledge, technologies, innovations and solutions to contribute to climate change mitigation, to stopping biodiversity loss and to develop sustainable livelihoods in the Arctic.

Recommendations

The evaluation committee wishes to extend the following recommendations to the administrative unit, which are constructive suggestions from an outside view on the basis of the information available to the committee and considering the aspects on which recommendations were requested in the terms of reference.

The committee recommends UiT BFE to:

- Give priority to and ensure funding for maintaining and developing the infrastructures needed for Artic biology research.
- Ensure funding for new types of visiting professorships, strategically thought through in order to strengthen international visibility, networks, and attractiveness.
- Deliver even more insightful knowledge, technologies, innovations and solutions to enable UiT BFE to become a leading contributor to climate change mitigation, to stopping biodiversity loss, and to developing sustainable livelihoods in the Arctic.
- Be more proactive in joining international research consortia and enrich them with an Arctic perspective. This could also alleviate some of the strong current focus on individual grants.
- Take more advantage of cross-disciplinary collaboration opportunities with other UiT administrative units, for example in bioinformatics, computation, and artificial intelligence (AI). This could also help gender balance in the BSc programmes.
- Develop and implement a strategy for identifying and actively nominating staff for international awards in order to increase visibility.
- Establish an international Scientific Advisory Board and make good use of it when developing research strategies as well as when seeking advice on individual projects (“friendly reviewers”).
- Continue paying attention to issues of diversity and gender balance.

1. Strategy, resources and organisation of research

Becoming the "Arctic University" of Norway created a strong focal point of attraction, however, the issue and challenge of not always being able to attract the most qualified people remains.

Arctic research infrastructure at the level found in UiT BFE is rare globally. UiT BFE's Arctic research infrastructure is a strong asset for Norway as a whole.

UiT BFE has a very generous system for sabbaticals (1 year every 4 years). Seen in the light of UiT being the world's northernmost university, and the globally collaborative nature of research at BFE, this is a sound and clever decision. It is recommended that this is continued and encouraged.

Most PhD graduates do not stay after graduation, and that is on purpose. They are encouraged to go abroad, but some come back. Most leave and get their postdoc funding elsewhere. A strategy to recruit the best former graduates back to BFE after they have gained external postdoc experience should be considered. They could then also be mentored to win prestigious grants, such as European Research Council (ERC) Starting Grants.

1.1 Research Strategy

UiT BFE research focuses on effects and feedback between climate change, other human activities and biological diversity and eco-systems as well as sustainable use and management of marine resources and areas. UiT BFE strives to be a leader in Arctic-relevant areas: (1) Energy, climate society and environment, including biodiversity; (2) Technology; (3) Health, welfare and quality of life; (4) Synergy between economy, innovation, and nature; and (5) Sustainable use of natural resources, including ecosystem-based management. To be highlighted is their very innovative research and highly reputed skills and competences in, e.g., Arctic chronobiology, for which they are internationally known and recognised.

The administrative unit has a research strategy for ensuring quality: The evaluation committee wants to highlight the excellent sabbatical system of UiT BFE, which is of importance for research quality, international collaboration and networks, and recruitment. The self-assessment reports a dedicated and competent staff, attractive BSc and MSc study programmes and a multidisciplinary research environment. However, the self-assessment also reports that talent recruitment is a (growing) issue and potential obstacle.

The remote position of UiT as well as the long and dark winters notwithstanding, other strategic steps are planned for. For example, UiT BFE management strives to move towards improving the research culture and strengthening capacity for winning competitive grants, thereby increasing the publication rate and strengthening international collaboration, not only for strengthening BFE in education, research and innovation, but also compensating for higher costs and fewer international students.

1.2 Organisation of research

The UiT BFE administrative unit has the following research groups: Arctic Chronobiology and Physiology; Arctic and Marine Biology; Arctic Marine Systems Biology; Microorganisms and Plants; Norwegian College of Fishery Science; and Northern Population and Ecosystems.

The UiT BFE management team aims to and is working to create and harvest synergy by stimulating more cross-disciplinary research between and across the six research groups. Similarly, efficient use of the Arctic research infrastructure also requires close collaboration between the research groups. Furthermore, the administrative unit is interested in possibly developing closer collaboration with other parts of UiT, which clearly is to be encouraged.

Serious recruitment issues were identified. However, actions have been taken by the administrative unit, by encouraging staff to strive for developing international-level research and research leadership in all of the research groups. UiT BFE adheres to an open, transparent, and inclusive management culture. Time is right now for bottom-up involvement, stimulated by the UiT BFE management team's attention and leadership.

The next strategic step clearly is to build an even stronger research strategy and action plan. Success could possibly be built on, particularly benefiting from their Arctic and marine biology work, as this research topic is international in focus and will grow in the years to come.

1.3 Research funding

35% of the administrative unit's budget comes from external funding, of which EU funding makes up 51 million NOK. The average competitive funding (external plus university internal competitive funding) was close to half of total research group budgets (varying between the six research groups). The UiT BFE administrative unit received 54% competitive funding on average in 2017-2021. This is very good in international comparison, but not outstanding. Notably, the self-assessment reports that fewer resources have been received after UiT reorganisation. It is not clear if this is a general UiT trend or due to giving a lower priority to biology. It should be addressed though.

UiT BFE management has taken initiatives for all research groups to contribute to the high level of external funding. For this, experienced reviewers were used. UiT BFE management encourages staff to participate in professional networks and organisations, Research Council of Norway (RCN), and EU review panels, and to be active in outreach activities. This is very good and should be continued.

The success of this strategy is becoming visible, for example in UiT BFE winning its first European Research Council (ERC) Starting Grant last year. More ERC applications will be submitted in the coming years. Local funding is available to bridge ERC funding, providing very good incentives and security.

The introduction of a new visiting professorship system could also be considered. Notably, success rates are good when the invited professors are highly reputed internationally recruited professors. For example, BFE could consider a visiting professorship that lasts e.g., for 2 years, where the visiting professor comes for six months (e.g. in the summer period) in two consecutive years. Postdocs or PhD students from UiT could then follow the visiting professor to their home university for the two winter periods. All parts of such an arrangement could be covered by the same grant, and this could be developed into a talent pipeline for future recruitment.

1.4 Use of infrastructures

UiT BFE has an impressive track record of using research infrastructures.

A unique asset for UiT BFE is the strong Arctic infrastructures, including specialised research vessels, environmental DNA (eDNA) facility and climate laboratories as well as an animal facility. With more and more interest in Arctic research internationally, the UiT infrastructure for Arctic research is a strong attraction, providing a competitive edge but also an essential and critical basis to carry out Arctic-relevant biological research, innovation, and education. Notably, UiT BFE uses this asset as a strong card for recruiting experienced talent. This is very good.

Other infrastructures that the administrative unit uses or is actively involved in include:

- Svalbard Integrated Arctic Earth Observing System (SIOS)
- Climate-ecological Observatory for Arctic Tundra (COAT), the terrestrial ecosystem part of SIOS. This is a comprehensive, long-term ecological research programme led by UiT BFE. COAT documents terrestrial ecosystem changes, resulting from rapid climate change in the Norwegian Arctic, contributing to adaptation and mitigation actions by society
- Arctic ABC Development, an Observatory under ice led by NTNU but with UiT BFE as a co-leader
- FUGE (Functional genetics research) Infrastructure platform for Mass Spectrometry for which UiT is also the host university
- European Molecular Biology Laboratory/ European Molecular Biology Conference (EMBL/EMBC) infrastructure, with a focus on understanding the molecular basis of life in the context of a changing environment, such as loss of Arctic biodiversity. More broadly, UiT BFE researchers use this infrastructure for genetics, biotechnology, microbiology and environmental research
- ELIXIR, a bioinformatics platform continuously being used by different UiT BFE research groups
- National network of Advanced Proteomics Infrastructure (NAPI, at UiO)
- LoVe (Lofoten-Vesterålen Cables Observatory)

1.5 National and international collaboration

Increased national and international collaboration is driven by the fact that Arctic research is international in focus due to its importance from the climate change perspective. Arctic research infrastructure at the level found in UiT BFE is rare. UiT BFE Arctic research infrastructure is a strong asset for Norway as a whole.

Visiting professorships, of the type proposed above, could be considered for building more and stronger international collaborations including also international exchange of both experienced staff and students, PhD candidates and postdocs.

Promotion of job opportunities at UiT BFE could be intensified at Arctic research conferences and circumpolar meetings.

The committee notes the very positive and proactive efforts towards changing the research culture at UiT BFE to gain more international visibility and to be better placed for international collaboration, recruitment, and potentially leveraging more international funding.

A large share of the UiT BFE national and international collaboration happens directly under or alongside activities using the Arctic research infrastructures, national as well as international (see Section 1.4 above).

1.6 Research staff

The research conditions provided for the staff are good. Only one person has 100% time allocated to teaching, while everyone else has at least 50% of their time available for research. The research environment is international with 50% of all staff from abroad. This is outstanding given the specialisation and geographic location of the administrative unit.

UiT BFE has a very generous system of sabbaticals (1 year every 4 years). Seen in the light of UiT being the world's northernmost university, this is a sound and clever decision. We recommend it be continued and encouraged.

State-of-the-art supervision and mentoring systems for PhD candidates and postdocs are in place. All PhD candidates have three supervisors, which ensures good mentoring. This is outstanding in international comparison and constitutes a clear strength of the administrative unit.

UiT receives 20-50 applicants per PhD position. This is a good response but lower than what is typical in Norway and of course also dependent on quality of talent and relevance of background. UiT BFE has many PhD positions, but relatively few postdocs. 80% of all PhD candidates are internationally recruited, which is outstanding. Notably, very few Norwegians apply. This could be addressed by better positioning the Arctic as being of topical relevance and at the forefront of the climate change research that is urgently needed.

Most PhD graduates do not stay after graduation, and that is on purpose. They are encouraged to go abroad, but some come back. Most leave and get their postdoc funding elsewhere. A strategy for recruiting the best PhD graduates back to BFE after they have gained external postdoc experience should be considered. They could then also be mentored to win prestigious grants, such as ERC Starting Grants.

The committee notes the very positive and proactive UiT BFE efforts towards changing the research culture to gain more international visibility, and to be better placed for international networks, collaboration and funding. The administrative unit's management is aware of and acknowledges the challenges and is getting everyone on board with this. Their strategy is to hire early career staff when openings arise due to staff retirements. This is a very good strategy, which could be complemented with the suggested visiting professors programme at the more senior levels.

2. Research production, quality and integrity

The Faculty of Biosciences, Fisheries and Economics of the University of Tromsø (UiT-BFE) has been successful in delivering research outputs for increased understanding of climate change and the overall biological, ecological, and environmental systems, impacting sustainable development of the Arctic. This is evidenced in the reports from the expert panels on the six research groups submitted for evaluation. UiT-BFE's geographical location in the Arctic places it in an excellent position to be at the forefront in terms of research on the effect of climate change.

According to the NIFU report, the number of publications from the administrative unit has significantly increased since 2018 to >400 in 2021. Productivity is uniform across age groups and genders. The number of author shares having remained more or less constant during the same time period could be an indication of the research at the administrative unit becoming increasingly collaborative and interdisciplinary. This is confirmed by the increasing fraction of external co-authors. In 2021, 79% of the publications had international co-authors, 50% had national ones. The visibility of the administrative unit's publications is good, but not outstanding in international comparison, with around 10% of papers in the top 10% most cited ones, almost constantly over time.

The evaluation summaries and performance scores of the expert panels who evaluated the research groups individually are reproduced below after a spelling and language check.

2.1 Research quality and integrity

Arctic Chronobiology and Physiology (ACP) research group – overall assessment by expert panel 4b

The Arctic Chronobiology and Physiology (ACP) group of Faculty of Biosciences, Fisheries and Economics (BFE), University of Tromsø has high potential: the research environment is unique, attractive and evolving, and extremely well placed to conduct impactful research and to make important societal contributions.

The scores across the dimensions are balanced and reflect a balanced overall performance and contributions of the group.

This well-organised group has an upwards trajectory with a strong strategy in place. The group delivers unique and important biological advancements. The aim to establish a Centre of Excellence is clear, ambitious, and achievable. A supporting capacity-building project, the Arctic Seasonal Timekeeping Initiative, was established in 2021.

There are several strong examples and a lot of potential for high-quality, high-impact research that can have wide scientific and societal impact. The impact of this research area should be seen and assessed from a longer-term perspective and considering the need to inform decisions to adapt to global changes.

Some diversity aspects are not optimal yet, but the group is still small. The leadership has focus on mentoring and collaborations. There is major value in training scientists in this unique research environment.

Ultimately this will likely be a uniquely placed outstanding group.

Arctic Marine System Ecology (AMSE) research group – overall assessment by expert panel 2

The Arctic Marine System Ecology (AMSE) Group of the Arctic University of Norway (UiT) is a very strong research group in arctic marine ecology. The focus is on the biodiversity, structure, function and dynamics of marine ecosystems and food webs in boreal and ice- covered Arctic waters. It also aims to characterise the response of ecosystems to anthropogenic and natural stressors.

AMSE is a relatively large group with a wide portfolio of collaboration. Furthermore, AMSE has a critical role in undertaking research and teaching about the Arctic. This is a very active group, contributing to a considerable number of large projects. The group produces communication at a high level with a large number of peer-reviewed articles of very high quality, books, portals and in teaching and outreach to a large public. The group is very involved in student mentoring. It also shows very good activity around advising.

AMSE collaborates widely with other institutes and university departments, but societal partners are limited, or their role is not developed in the self-assessment. Basically, user involvement is a less well-developed aspect of the delivery of AMSE based on the information provided. The self-assessment presents minimal examples of industry or NGOs being involved in project inception and development. AMSE is involved with the International Council for the Exploration of the Sea (ICES) as an end-user of the science. This will mean that there is societal input. That said, and as already indicated, it is difficult to assess the true contribution of any societal partner. There is very little evidence of direct discussions with industry or social groups. Much of the work done by AMSE is collaborative, but with other institutes and university departments.

Freshwater Ecology and Parasitology (FEP) research group – overall assessment by expert panel 1

The group's environment was deemed to be adequate for supporting the production of excellent research, but with potential for strengthening this by strategically positioning themselves more within an international context and developing a clearer staffing plan. The group plays an important role in freshwater ecosystem research and has a considerable role in producing outputs that are internationally recognised, with a small number of higher ranked outputs. The group's contribution to societal development in Norway was considered to be on par with other groups in the field, with some examples of partner involvement in the research process. Local examples of societal impact were noted, with the potential for an improved strategy to develop the societal relevance of the group's research further.

Microorganisms and Plants (MP) research group – overall assessment by expert panel 4a

The key research focus of the Microorganisms and Plants group is to provide solutions relevant to challenges in Norway that are related to energy, climate, society and environment. More specifically these are causes and effect of changes in climate and environment, enabling conventional and renewable energy production, and exploitation of extractable resources. It is noted to be work that is important for the institution and enables scientific visibility for the group. Regarding benchmarking of the group, the self-assessment report mentions that work has met standards for The Arctic University of Norway, but there is a lack of detail regarding how this has been achieved.

The host organisation was found to be very strong in supporting the production of excellent research and the scientific quality was found to be outstanding in terms of originality, significance and rigour. While research funding and publications in particular are at a level that is highly internationally competitive, the societal impact of the group needs to be further developed. The group can contribute across large areas of science related to societal issues but does not seem to fully meet this ambition at the present time.

The self-assessment document was not always well-structured in terms of the relevant evidence that was required or being provided in each section.

Northern Populations and Ecosystems (NPE) research group – overall assessment by expert panel 1

The NPE is an excellent, strong research group that has used national funding to create a world-class resource to track complex ecosystem dynamics in one of the most threatened biomes in the world. The Group knows the global value of its long-term ecosystem monitoring programme. It uses the extraordinary resources it has available in the Climate Ecological Observatory for the Arctic Tundra (COAT) long-term ecological monitoring programme to produce world-leading ecological research that addresses fundamental questions in theoretical ecology and complex dynamics with broad scientific relevance and appeal while also producing actionable information with direct relevance for local environmental managers.

Norwegian College of Fishery Science (NCFS) – overall assessment by expert panel 2

Based on the information provided the panel finds the NCSF a well-structured research group, with qualified and adequate human resources and a good research infrastructure support. A diverse funding portfolio that includes competitive and internal funds provides appropriate support for the development of the main scientific areas of the research group in the scope of sustainable exploitation of marine resources in the Arctic. The research group evolved from a research strategy focused on sustainable fisheries and aquaculture into more diversified topics of interest, including biotechnological tools and to a more collaborative framework, including multidisciplinary collaborations within the Arctic University of Norway and with other external institutions. However, all these collaborations are not very detailed, and it is difficult to understand the adequacy of the structure adopted by the research group, with the dispersion in small teams, which seem to duplicate the same type of functions. The research strategy based on collaborations and multidisciplinarity and supported by a diversified funding portfolio has provided some good scientific results that are mirrored in some publications of high scientific impact.

The research group addresses important research topics for Norway and the Arctic, such as seafood, fisheries and aquaculture, including the social aspects of the management of these resources. The research group's societal impact is clearly shown by the results of the applied research and by their involvement in international policy organisations. The involvement of societal partners in the research process is less evident in the information provided in the self-assessment as it seems to be based on a one-to-one relationship, through participation in committees and industry clusters.

2.2. Open Science

The research results of UiT BFE are published in peer-reviewed journals, preferably in open access journals.

The percentage of publications published as Gold open access has strongly fluctuated with an overall sideways trend over the period under evaluation (2016: 24.1%; 2017: 45.9%; 2018: 35.1%; 2019: 40.3%; 2020: 48%; and 2021: 45.2%). The interest in publishing open access is strong, but money allocated for publication under the different projects is fluctuating and, most importantly, the fees for publishing Gold open access have increased significantly during this period. This is an issue that should be observed, and the administrative unit should make use of self-archiving and Green open access options to ensure all of its work is freely available to the public. This has been done very successfully since 2018, ensuring <10% closed-access publications since 2019 (4% in 2021). This is very good.

The administrative unit follows the Open Science Policy of UiT as well as the RCN strategy on Open Science.

The data handling in UiT BFE is conducted in compliance with FAIR principles (Findable, Accessible, Interoperable, and Reusable) and following UiT's Open Data Policy.

3. Diversity and equality

Based on the interview and written information, the UiT BFE research environment gave the impression of being open-minded and tolerant, giving room for all types of talent to develop and contribute on equal terms, across gender and nationalities.

Further, based on direct questions during the interview, we were happy to hear that it seems like UiT BFE has been able to recruit talent from a wide spectrum of backgrounds, not just with regard to nationalities but also with regard to coming both from academic and non-academic backgrounds.

The most important diversity and equality issues that are relevant to highlight are:

- The low ratio of female full professors
- The relatively low proportion of male students joining the UiT BFE study programmes

Based on this we recommend BFE to:

- Be alert when identifying and describing the topic where new positions will be announced; and similarly, be alert with regard to describing the skills, competence and experience required, making the new positions attractive for all genders to apply for; and ensuring that the recruitment committee are balanced in composition and approach, equally welcoming a diversity of applicants.
- Start taking an inclusive diversity approach when formulating new study programmes in order to assure that such study programmes will be attractive for all genders. In order to avoid the number of males among the newly recruited and enrolled UiT BFE students going down even further, consider introducing additional interdisciplinary topics.

4. Relevance to institutional and sectorial purposes

As a HEI, BFE strives to follow the four overall goals for HEIs that receive public funding (as indicated in the profile of the administrative unit). In relation to this, in its self-assessment, BFE states that the sectoral goals with respect to knowledge, as laid down in the Governmental Developmental Agreement (2011- 2021/2022) with UiT are (1) UiT shall be a leading institution within research and education focussed on the Arctic environment, (2) UiT will develop a research environment at national and international levels within the themes of energy, climate, society and environment and sustainable use of resources, and (3) Increase the quality of education.

When evaluating the administrative unit, we were happy to conclude that this administrative unit delivers very satisfactorily to the expectations:

- UiT BFE is the leading university within the field of research addressing Arctic biology, environment and use of the natural resources in the Arctic; and similarly, UiT BFE has

developed and is conducting educational study programmes within areas of relevance for this area.

- UiT BFE has developed a research environment living up to national and international standards within climate, emissions, society and sustainable use of natural resources.
- UiT BFE is focussing on continued updating and development of study programmes, including on the new challenges, knowledge, technologies and opportunities.

In order to ensure that UiT BFE will continue to develop research, innovation and education even further, we have made a set of recommendations (see above).

5. Relevance to society

UiT BFE has a strong portfolio of research results, technologies and innovations which could be of direct benefit for society.

A third of all UiT invention disclosures come from BIO, mostly focusing on fish health. Some of these innovations have progressed to generate bases for new, successful spinouts. Seen from both national and international perspectives, UiT BFE has a very good track record of going from research results to innovation, new technologies and new value-added products.

Innovation is positioned under the UiT Technology Transfer Office (TTO) and not integrated under BFE. During the interviews we were happy to learn that this system functions well. There is a good dialogue from both sides with BFE staff knowing about innovation, patenting and commercialisation and the UiT TTO knowing about the spectrum of BFE technical disciplines. This is a very good basis for successful transfer and commercialisation.

Comments on impact case 1 – The Finnfjord project

A project run between 2013 and 2021 where UiT BEF partnered with Finnfjord, a ferrosilicon smelter plant. The goals were to (1) use carbon dioxide produced by melting and released as emission as carbon source for microalgae production and using cooling (sea)water as cultivation media and (2) exploit microalgae (low light, low temperature) for producing feed in the form of algal biomass, which is rich in protein and EPA (Omega-3 fatty acids).

This project resulted in 20 scientific peer-reviewed articles in the area of microalgae, cultivation and products in the period 2011-2021, and one Disclosure of Inventions (DOFI) that UiT has taken over the rights for.

The research results are impressive as evaluated by the number of peer-reviewed publications in an area with very big application potential.

Comments on impact case 2 – Marbio: An analytical platform for natural products drug discovery at UiT

Developed by the Norway College of Fishery Science, the Marbio analytical platform has been very successful in the discovery of a high number of new biologically active metabolites (plus a smaller number of new proteins and enzymes), all found for the first time in the marine areas around the northern part of Norway.

From the start the focus was on the discovery of pharmaceutical drug candidates among the many new metabolites discovered on the Marbio analytical platform. This gave a high hit rate but not the highest score with regard to further development, as Norway does not have big pharma industry and only few start-ups in this area. However, recently more start-ups are coming up and there is also a broadening of interests in pursuing discoveries of relevance for the food and feed area.

Comments on impact case 3 – Arctic Seasonal Ice Zone Ecology

BFE research has provided critical knowledge regarding the varying roles of Arctic Sea ice for biological production, diversity and life cycles, which is needed for ecosystem-based management. This is globally a very important case. It will be important to develop this research further as Norway could have a big role to play globally with UiT-BFE at its centre.

Comments on impact case 4 – Climate-ecological Observatory for Arctic Tundra (COAT)

COAT documents ecosystem changes, including rapid climate change in Norwegian Arctic. Its aims are to aid society to act adequately by (1) hosting national research infrastructure and generating open access ecosystem data, (2) providing a framework of ecosystem state assessments and management strategies, and (3) conducting research and developing interventions for protecting biodiversity through ecosystem services in the Norwegian Arctic.

COAT is very important for documenting terrestrial ecosystem changes resulting from rapid climate change in the Norwegian Arctic and contributing to adaptation and mitigation actions by society.

Comments on impact case 5 – Knowledge and tools for quality and food safety of Vaccinium berries

Conducted betweeen 2012 and 2021, this work concerned berries that are economically, nutritionally and traditionally important. It was great to see that areas of importance for local livelihood, nutrition and health are also being looked into for innovation and possibly commercialisation.

Appendices

List of research groups

Institution	Administrative unit	Research group
University of Tromsø (UiT)	Faculty of Biosciences, Fisheries and Economics (BFE)	*Arctic Chronobiology and Physiology (ACP)*
		Arctic Marine System Ecology (AMSE)
		Freshwater Ecology and Parasitology Group (FEP)
		Microorganisms and Plants (MP)
		Norwegian College of Fishery Science (NCFS)
		Northern Populations and Ecosystems (NPE)

Methods and limitations

Methods

The evaluation is based on documentary evidence and online interviews with the representatives of Administrative unit.

The documentary inputs to the evaluation were:

- Evaluation Protocol Evaluation of life sciences in Norway 2022-2023
- Administrative unit´s Terms of Reference
- Administrative unit's self-assessment report
- Administrative unit's impact cases
- Administrative unit's research groups evaluation reports
- Panel reports from the Expert panels
- Bibliometric data (*NIFU Nordic Institute for Studies of innovation, research and education*)
- Personnel data (*Statistics Norway (SSB)*)
- Funding data – The Research Council´s contribution to biosciences research (*RCN*)
- Extract from the Survey for academic staff and the Student Survey (*Norwegian Agency for Quality Assurance in Education (NOKUT)*)

After the document review, the Committee met and conducted an initial assessment against the assessment criteria and defined questions for the interview with the Administrative unit. The Committee shared the interview questions with the Administrative unit three weeks before the interview.

The Committee interviewed the Administrative unit in an hour-long virtual meeting to validate the Committee's understanding and refine perceptions as well as fill any gaps in understanding and evidence. The Administrative unit answered the Committee's questions including any follow-up questions.

After the online interview, the Committee held a meeting to review the initial assessment in light of the interview and draft a report based on their assessment of the Administrative unit against the assessment criteria.

A one-page profile of the Administrative unit was drafted based on information from the self-assessment. The Administrative unit had the opportunities to fact-check this profile. Thereafter, the profile was included in the final draft of the report.

The final draft was reviewed by committee members and any comments were addressed. After a final copy-edit, the final report was approved by the Committee.

Limitations

The Committee judged the information received through documentary inputs and the interview with the Administrative unit sufficient to complete the evaluation.

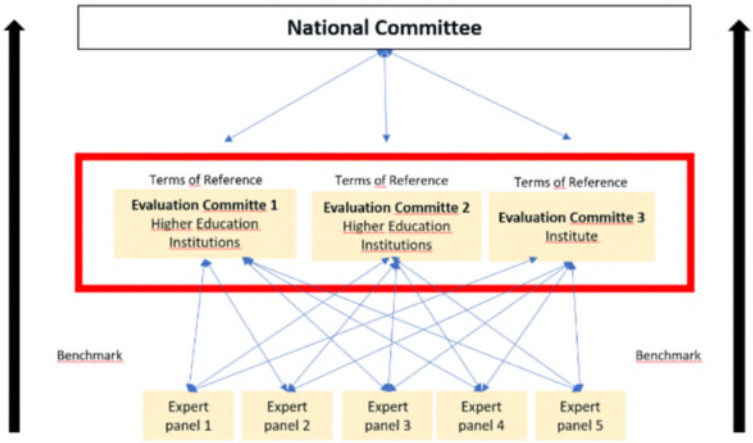
Evaluation of Biosciences 2022-2023

By evaluating Norwegian research and higher education we aim to enhance the quality, relevance, and efficiency. In accordance with the statutes of the Research Council of Norway (RCN), the RCN evaluates Norwegian professional environments to create a solid and up-to-date knowledge base about Norwegian research and higher education in an international perspective.

The evaluation of life sciences is conducted in 2022 - 2024. The evaluation of biosciences takes place in 2022 - 2023, and the evaluation of medicine and health is carried out in 2023-2024. The primary aim of the evaluation of life sciences is to reveal and confirm the quality and the relevance of research performed at Norwegian Higher Education Institutions (HEIs), the institute sector and the health trusts. The evaluation shall result in recommendations to the institutions, the RCN and the ministries.

Evaluation of biosciences (EVALBIOVIT) 2022-2023
The evaluation of biosciences includes twenty-two administrative units (e.g., faculty, department, institution) which are assessed by evaluation committees according to sectorial affiliation and/or other relevant similarities between the units. The administrative units enrolled their research groups (97) to five expert panels organised by research subjects or themes and assessed across institutions and sectors.

Organisation of evaluation of biosciences research 2022 - 2023



The institutions have been allowed to adapt the evaluation mandate (Terms of Reference) to their own strategic goals. This is to ensure that the results of the evaluation will be useful for the institution's own strategic development. The administrative unit together with the research group(s) selects an appropriate benchmark for each of the research group(s).

The Research Council of Norway has commissioned an external evaluation secretariat at Technopolis Group for the implementation of the evaluation process.

Each institution/administrative unit is responsible for following up the recommendations that apply to their own institution/administrative unit. The Research Council will use the results from the evaluation in the development of funding instruments and as a basis for advice to the Government.

The web page for the evaluation of biosciences 2022-2023:
https://www.forskningsradet.no/en/analysis-numbers/evaluations/subject-theme/biosciences/

Til innmeldte administrative enheter til
fagevaluering av biovitenskap (EVALBIOVIT)

Vår saksbehandler/tlf.	**Vår ref.**	**Oslo,**
Hilde D.G. Nielsen/4092 2260	21/10653	21.04.2022
	Deres ref.	

Fagevaluering av biovitenskap (EVALBIOVIT) 2022 – 2023

Vi viser til invitasjonsbrev om å delta i fagevaluering av biovitenskap (EVALBIOVIT) datert 11.11.2021 og til informasjonsmøte med innmeldte administrative enheter 15.12.2021.

Porteføljestyret for livsvitenskap vedtok evalueringsprotokollen for fagevaluering av biovitenskap 05.04.2022 (vedlegg 1). Protokollen beskriver roller, prosesser og ansvarsfordeling i evalueringsarbeidet og er i tråd med forslaget til nytt nasjonalt rammeverk for evaluering av forskning og høyere utdanning utarbeidet i regi av Kunnskapsdepartementet.

Forskningsrådet har mottatt innmelding av 37 administrative enheter til EVALBIOVIT. Disse vil bli fordelt på sektorspesifikke evalueringskomitéer: 1-2 evalueringskomité/er for administrative enheter som tilhører instituttsektoren og 1-2 evalueringskomité/er for administrative enheter som tilhører UH-sektor. Universitetsmuseene vil bli evaluert samlet i én evalueringskomité for UH-sektor.
Det skal i tillegg opprettes internasjonale fagekspertpaneler etter faglig eller tematisk likhet på tvers av sektorer. Ekspertpanelene skal evaluere forskergruppene som de administrative enhetene melder inn. Evalueringskomitéene og ekspertpanelene skal vurdere de innsamlede dataene og gi anbefalinger til den enkelte institusjon, til Forskningsrådet og til departementene.

Tilpasning av mandat (vedlegg 1)

Forskningsrådet ber med dette administrative enheter om å tilpasse mandatet (vedlegg 1) til de lokale forhold ved egen institusjon. Tilpasningen gjøres ved å fylle inn de åpne punktene i malen (Appendix A). Utfylt skjema sendes på epost til evalbiovit@forskningsradet.no *innen 30. september 2022.*

Innmelding av forskergrupper (vedlegg 2a og 2b)

Forskningsrådet ber administrative enheter om å melde inn forskergrupper i tråd med forskergruppedefinisjonen beskrevet i kapittel 1.2 i evalueringsprotokollen. Det bes også om at forskergruppene innplasseres i den tentative fagpanelinndelingen for EVALBIOVIT (vedlegg 2a). Utfylt regneark (vedlegg 2b) sendes til evalbiovit@forskningsradet.no *innen 31. mai 2022.*

Forskningsrådet vil ferdigstille panelstruktur og avgjøre den endelige fordelingen av forskergruppene på fagpaneler *etter* at alle forskergrupper er meldt inn.

Norges forskningsråd/
The Research Council of Norway
Drammensveien 288
Postboks 564
NO–1327 Lysaker

Telefon +47 22 03 70 00
post@forskningsradet.no
www.forskningsradet.no
Org.nr. 970141669

Invitasjon til å foreslå eksperter (vedlegg 3a og 3b)

Forskningsrådet inviterer administrative enheter til å spille inn forslag til eksperter som kan inngå i evalueringskomitéene og i ekspertpanelene (vedlegg 3a). Hver evalueringskomité skal bestå av 7-9 komitémedlemmer. Hvert ekspertpanel skal bestå av 5-7 eksperter. Utfylt regneark (vedlegg 3b, fane 1 og fane 2) sendes til evalbiovit@forskningsradet.no *innen 31. mai 2022.*

Forskningsrådet v/porteføljestyret for livsvitenskap vil oppnevne leder og medlemmer til evalueringskomitéene og til ekspertpanelene.

Data og datainnsamling

Forskningsrådet har nå ute et oppdrag for analyse av data om personal og forskningsproduksjon. Analysen skal i hovedsak baseres på data i DBH, NIFUs forskerpersonaleregister og Cristin. Analysene vil inkludere indikatorer som skal brukes for evaluering av alle institusjoner.

Videre vil institusjonene få et ansvar for innsamling av data til en egenevaluering som skal inngå i vurderingsgrunnlaget for evalueringskomiteene. For å sikre at evalueringen blir nyttig for forskningsinstitusjonenes utvikling, vil Forskningsrådet også invitere institusjonene til å delta i utvelgelse av relevante evalueringsdata og indikatorer som kan danne grunnlag for vurdering opp mot institusjonens egne strategiske mål og sektormål. På bakgrunn av dette har Forskningsrådet en forventning om at institusjonene som deltar i evalueringen stiller med nødvendige ressurser gjennom hele evalueringsprosessen.

Forskningsrådet har, etter en anbudskonkurranse om sekretariatstjenester, inngått en avtale med Technopolis Group som skal bistå Forskningsrådets administrasjon i arbeidet med EVALBIOVIT. Sekretariatet skal blant annet koordinere datainnsamlingen fra institusjonene og systematisere det innsamlede materialet for vurdering i ekspertpaneler og evalueringskomitéer.

Endring av administrativ enhet

For noen få tilfeller kan det være behov for å gjøre noen endringer i forhold til den administrative enheten[1] som allerede er innmeldt til EVALBIOVIT. For eksempel kan et fakultet som ble meldt inn samlet til EVALBIOVIT i desember 2021 finne det mer hensiktsmessig å heller melde inn fakultetets institutter som egne administrative enheter. Hvis man ønsker å endre på den administrative enheten må dette meldes Forskningsrådets administrasjon så fort som mulig, men ikke senere enn 31.05.2022. Melding om endring sendes på epost til: evalbiovit@forskningsradet.no.

Informasjonsmøte 9. mai 2022 og nettside for EVALBIOVIT

Forskningsrådet arrangerer 09.05.2022 kl. 12.00-12.45 et informasjonsmøte for alle som deltar i EVALBIOVIT. Møtet vil foregå digitalt (Zoom). Vi vil i møtet bl.a. gå gjennom evalueringsprotokollen samt at det vil være mulig å stille spørsmål. Påmelding til evalbiovit@forskningsradet.no *innen 07.05.2022.*

Forskningsrådet har opprette en egen nettside hvor informasjon om EVALBIOVIT vil bli publisert fortløpende. Lenke til nettsiden finner dere her: https://www.forskningsradet.no/statistikk-evalueringer/biovitenskap-2022-2023/.

[1] Med administrativ enhet menes en organisatorisk enhet på nivå 2 eller 3 i organisasjonsstrukturen til DBH for UH sektor eller NIFUs organisasjonsregister for institutt- og helsesektoren.

Spørsmål som gjelder fagevalueringen kan sendes på epost til evalbiovit@forskningsradet.no eller ved å kontakte Hilde Dorthea Grindvik Nielsen på epost hgn@forskningsradet.no /mobil 40 92 22 60.

Med vennlig hilsen
Norges forskningsråd

Ole Johan Borge
avdelingsdirektør
Avdeling for helseforskning og helseinnovasjon

Hilde G. Nielsen
spesialrådgiver
Avdeling for helseforskning og helseinnovasjon

Vedlegg
1. Evalueringsprotokoll for fagevaluering av biovitenskap 2022-2023
2a. Tentativ fagpanelinndeling for evaluering av forskergrupper
2b. Skjema for innmelding av forskergrupper
3a. Invitasjon til å foreslå eksperter og informasjon om evalueringskomitéer og ekspertpaneler
3b. Skjema for å foreslå eksperter til evalueringskomitéer og ekspertpaneler

The Research Council of Norway

Evaluation of life sciences in Norway 2022-2023

LIVSEVAL protocol version 1.0

By decision of the Portfolio board for life sciences April 5., 2022

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The report can be downloaded at
www.forskningsradet.no/publikasjoner

Oslo, 5 April 2022

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1 Introduction

Research assessments based on this protocol serve different aims and have different target groups. The primary aim of the evaluation of life sciences is to reveal and confirm the quality and the relevance of research performed at Norwegian Higher Education Institutions (HEIs), and by the institute sector and regional health authorities and health trusts. These institutions will hereafter be collectively referred to as Research Performing Organisations (RPOs). The assessments should serve a formative purpose by contributing to the development of research quality and relevance at these institutions and at the national level.

1.1 Evaluation units

The assessment will comprise a number of *administrative units* submitted for evaluation by the host institution. By assessing these administrative units in light of the goals and strategies set for them by their host institution, it will be possible to learn more about how public funding is used at the institution(s) to facilitate high-quality research and how this research contributes to society. The administrative units will be assessed by evaluation committees according to sectoral affiliation and/or other relevant similarities between the units.

The administrative units will be invited to submit data on their *research groups* to be assessed by expert panels organised by research subject or theme. See Chapter 3 for details on organisation.

Administrative unit	An administrative unit is any part of an RPO that is recognised as a formal (administrative) unit of that RPO, with a designated budget, strategic goals and dedicated management. It may, for instance, be a university faculty or department, a department of an independent research institute or a hospital.
Research group	Designates groups of researchers within the administrative units that fulfil the minimum requirements set out in section 1.2. Research groups are identified and submitted for evaluation by the administrative unit, which may decide to consider itself a single research group.

1.2 Minimum requirements for research groups

1) The research group must be sufficiently large in size, i.e. at least five persons in full-time positions with research obligations. This merely indicates the minimum number, and larger units are preferable. In exceptional cases, the minimum number may include PhD students, postdoctoral fellows and/or non-tenured researchers. *In all cases, a research group must include at least three full-time tenured staff*. Adjunct professors, technical staff and other relevant personnel may be listed as group members but may not be included in the minimum number.

2) The research group subject to assessment must have been established for at least three years. Groups of more recent date may be accepted if they have come into existence as a consequence of major organisational changes within their host institution.
3) The research group should be known as such both within and outside the institution (e.g. have a separate website). It should be able to document common activities and results in the form of co-publications, research databases and infrastructure, software, or shared responsibilities for delivering education, health services or research-based solutions to designated markets.
4) In its self-assessment, the administrative unit should propose a suitable benchmark for the research group. The benchmark will be considered by the expert panels as a reference in their assessment of the performance of the group. The benchmark can be grounded in both academic and extra-academic standards and targets, depending on the purpose of the group and its host institution.

1.3 The evaluation in a nutshell

The assessment concerns:

- research that the administrative unit and its research groups have conducted in the previous 10 years
- the research strategy that the administrative units under evaluation intend to pursue going forward
- the capacity and quality of research in life sciences at the national level

The Research Council of Norway (RCN) will:

- provide a template for the Terms of Reference[1] for the assessment of RPOs and a national-level assessment in life sciences
- appoint members to evaluation committees and expert panels
- provide secretarial services
- commission reports on research personnel and publications based on data in national registries
- take responsibility for following up assessments and recommendations at the national level.

RPOs conducting research in life sciences are expected to take part in the evaluation. The board of each RPO under evaluation is responsible for tailoring the assessment to its own strategies and specific needs and for following them up within their own institution. Each participating RPO will carry out the following steps:

1) Identify the administrative unit(s) to be included as the main unit(s) of assessment
2) Specify the Terms of Reference by including information on specific tasks and/or strategic goals of relevance to the administrative unit(s)

[1] The terms of reference (ToR) document defines all aspects of how the evaluation committees and expert panels will conduct the [research area] evaluation. It defines the objectives and the scope of the evaluation, outlines the responsibilities of the involved parties, and provides a description of the resources available to carry out the evaluation.

3) The administrative unit will, in turn, be invited to register a set of research groups that fulfil the minimum criteria specified above (see section 1.2). The administrative unit may decide to consider itself a single research group.
4) For each research group, the administrative unit should select an appropriate benchmark in consultation with the group in question. This benchmark can be a reference to an academic level of performance or to the group's contributions to other institutional or sectoral purposes (see section 2.4). The benchmark will be used as a reference in the assessment of the unit by the expert panel.
5) The administrative units subject to assessment must provide information about each of their research groups, and about the administrative unit as a whole, by preparing self-assessments and by providing additional documentation in support of the self-assessment.

1.4 Target groups

- Administrative units represented by institutional management and boards
- Research groups represented by researchers and research group leaders
- Research funders
- Government

The evaluation will result in recommendations to the institutions, the RCN and the ministries. The results of the evaluation will also be disseminated for the benefit of potential students, users of research and society at large.

This protocol is intended for all participants in the evaluation. It provides the information required to organise and carry out the research assessments. Questions about the interpretation or implementation of the protocol should be addressed to the RCN.

2 Assessment criteria

The administrative units are to be assessed on the basis of five assessment criteria. The five criteria are applied in accordance with international standards. Finally, the evaluation committee passes judgement on the administrative units as a whole in qualitative terms. In this overall assessment, the committee should relate the assessment of the specific tasks to the strategic goals that the administrative unit has set for itself in the Terms of Reference.

When assessing administrative units, the committees will build on a separate assessment by expert panels of the research groups within the administrative units. See Chapter 3 'Evaluation process and organisation' for a description of the division of tasks.

2.1 Strategy, resources and organisation

The evaluation committee assesses the framework conditions for research in terms of funding, personnel, recruitment and research infrastructure in relation to the strategic aims set for the administrative unit. The administrative unit should address at least the following five specific aspects in its self-assessment: 1) funding sources, 2) national and international cooperation, 3) cross-sector and interdisciplinary cooperation, 4) research careers and mobility, and 5) Open Science. These five aspects relate to how the unit organises and actually performs its research, its composition in terms of leadership and personnel, and how the unit is run on a day-to-day basis.

To contribute to understanding what the administrative unit can or should change to improve its ability to perform, the evaluation committee is invited to focus on factors that may affect performance.

Further, the evaluation committee assesses the extent to which the administrative unit's goals for the future remain scientifically and societally relevant. It is also assessed whether its aims and strategy, as well as the foresight of its leadership and its overall management, are optimal in relation to attaining these goals. Finally, it is assessed whether the plans and resources are adequate to implement this strategy.

2.2 Research production, quality and integrity

The evaluation committee assesses the profile and quality of the administrative unit's research and the contribution the research makes to the body of scholarly knowledge and the knowledge base for other relevant sectors of society. The committee also assesses the scale of the unit's research results (scholarly publications, research infrastructure developed by the unit, and other contributions to the field) and its contribution to Open Science (early knowledge and sharing of data and other relevant digital objects, as well as science communication and collaboration with societal partners, where appropriate).

The evaluation committee considers the administrative unit's policy for research integrity and how violations of such integrity are prevented. It is interested in how the unit deals with research data, data management, confidentiality (GDPR) and integrity, and the extent to which independent and critical pursuit of research is made possible within the unit. Research integrity relates to both the scientific integrity of conducted research and the professional integrity of researchers.

2.3 Diversity and equality

The evaluation committee considers the diversity of the administrative unit, including gender equality. The presence of differences can be a powerful incentive for creativity and talent development in a diverse administrative unit. Diversity is not an end in itself in that regard, but a tool for bringing together different perspectives and opinions.

The evaluation committee considers the strategy and practices of the administrative unit to prevent discrimination on the grounds of gender, age, disability, ethnicity, religion, sexual orientation or other personal characteristics.

2.4 Relevance to institutional and sectoral purposes

The evaluation committee compares the relevance of the administrative unit's activities and results to the specific aspects detailed in the Terms of Reference for each institution and to the relevant sectoral goals (see below).

Higher Education Institutions

There are 36 Higher Education Institutions in Norway that receive public funding from the Ministry for Education and Research. Twenty-one of the 36 institutions are owned by the ministry, whereas the last 15 are privately owned. The HEIs are regulated under the Act relating to universities and university colleges of 1 August 2005.

The purposes of Norwegian HEIs are defined as follows in the Act relating to universities and university colleges[2]

- provide higher education at a high international level;
- conduct research and academic and artistic development work at a high international level;
- disseminate knowledge of the institution's activities and promote an understanding of the principle of academic freedom and application of scientific and artistic methods and results in the teaching of students, in the institution's own general activity as well as in public administration, in cultural life and in business and industry.

In line with these purposes, the Ministry for Research and Education has defined four overall goals for HEIs that receive public funding. These goals have been applied since 2015:

1) High quality in research and education
2) Research and education for welfare, value creation and innovation
3) Access to education (esp. capacity in health and teacher education)
4) Efficiency, diversity and solidity of the higher education sector and research system

The committee is invited to assess to what extent the research activities and results of each administrative unit have contributed to sectoral purposes as defined above. In particular, the committee is invited to take the share of resources spent on education at the administrative units into account and to assess the relevance and contributions of research to education, focusing on the master's and PhD levels. This assessment should be distinguished from an

[2] https://lovdata.no/dokument/NLE/lov/2005-04-01-15?q=universities

assessment of the quality of education in itself, and it is limited to the role of research in fostering high-quality education.

Research institutes (the institute sector)

Norway's large institute sector reflects a practical orientation of state R&D funding that has long historical roots. The Government's strategy for the institute sector[3] applies to the 33 independent research institutes that receive public basic funding through the RCN, in addition to 12 institutes outside the public basic funding system.

The institute sector plays an important and specific role in attaining the overall goal of the national research system, i.e. to increase competitiveness and innovation power to address major societal challenges. The research institutes' contributions to achieving these objectives should therefore form the basis for the evaluation. The main purpose of the sector is to conduct independent applied research for present and future use in the private and public sector. However, some institutes primarily focus on developing a research platform for public policy decisions, others on fulfilling their public responsibilities.

The institutes should:

- maintain a sound academic level, documented through scientific publications in recognised journals
- obtain competitive national and/or international research funding grants
- conduct contract research for private and/or public clients
- demonstrate robustness by having a reasonable number of researchers allocated to each research field

The committee is invited to assess the extent to which the research activities and results of each administrative unit contribute to sectoral purposes and overall goals as defined above. In particular, the committee is invited to assess the level of collaboration between the administrative unit(s) and partners in their own or other sectors.

The hospital sector

There are four regional health authorities (RHFs) in Norway. They are responsible for the specialist health service in their respective regions. The RHFs are regulated through the Health Enterprises Act of 15 June 2001 and are bound by requirements that apply to specialist and other health services, the Health Personnel Act and the Patient Rights Act. Under each of the regional health authorities, there are several health trusts (HFs), which can consist of one or more hospitals. A health trust (HF) is wholly owned by an RHF.

Research is one of the four main tasks of hospital trusts.[4] The three other mains tasks are to ensure good treatment, education and training of patients and relatives. Research is important if the health service is to keep abreast of stay up-to-date with medical developments and carry out critical assessments of established and new diagnostic methods,

[3] Strategy for a holistic institute policy (Kunnskapsdepartementet 2020)

[4] Cf. the Specialist Health Services Act § 3-8 and the Health Enterprises Act §§ 1 and 2

treatment options and technology, and work on quality development and patient safety while caring for and guiding patients.

The committee is invited to assess the extent to which the research activities and results of each administrative unit have contributed to sectoral purposes as described above. The assessment does not include an evaluation of the health services performed by the services.

2.5 Relevance to society

The committee assesses the quality, scale and relevance of contributions targeting specific economic, social or cultural target groups, of advisory reports on policy, of contributions to public debates, and so on. The documentation provided as the basis for the assessment of societal relevance should make it possible to assess relevance to various sectors of society (i.e. business, the public sector, non-governmental organisations and civil society).

When relevant, the administrative units will be asked to link their contributions to national and international goals set for research, including the Norwegian Long-term Plan for Research and Higher Education and the UN Sustainable Development Goals. Sector-specific objectives, e.g. those described in the Development Agreements for the HEIs and other national guidelines for the different sectors, will be assessed as part of criterion 2.4.

The committee is also invited to assess the societal impact of research based on case studies submitted by the administrative units and/or other relevant data presented to the committee. Academic impact will be assessed as part of criterion 2.2.

3 Evaluation process and organisation

The RCN will organise the assessment process as follows:

- Commission a professional secretariat to support the assessment process in the committees and panels, as well as the production of self-assessments within each RPO
- Commission reports on research personnel and publications within life sciences based on data in national registries
- Appoint one or more evaluation committees for the assessment of administrative units.
- Divide the administrative units between the appointed evaluation committees according to sectoral affiliation and/or other relevant similarities between the units.
- Appoint a number of expert panels for the assessment of research groups submitted by the administrative units.
- Divide research groups between expert panels according to similarity of research subjects or themes.
- Task the chairs of the evaluation committees with producing a national-level report building on the assessments of administrative units and a national-level assessments produced by the expert panels.

Committee members and members of the expert panels will be international, have sufficient competence and be able, as a body, to pass judgement based on all relevant assessment criteria. The RCN will facilitate the connection between the assessment levels of panels and committees by appointing committee members as panel chairs.

3.1 Division of tasks between the committee and panel levels

The expert panels will assess research groups across institutions and sectors, focusing on the first two criteria specified in Chapter 2: 'Strategy, resources and organisation' and 'Research production and quality' The assessments from the expert panels will also be used as part of the evidence base for a report on Norwegian research within life sciences (see section 3.3).

The evaluation committees will assess the administrative units based on all the criteria specified in Chapter 2. The assessment of research groups delivered by the expert panels will be a part of the evidence base for the committees' assessments of administrative units. See figure 1 below.

The evaluation committee has sole responsibility for the assessments and any recommendations in the report. The evaluation committee reaches a judgement on the research based on the administrative units and research groups' self-assessments provided by the RPOs, any additional documents provided by the RCN, and interviews with representatives of the administrative units. The additional documents will include a standardised analysis of research personnel and publications provided by the RCN.

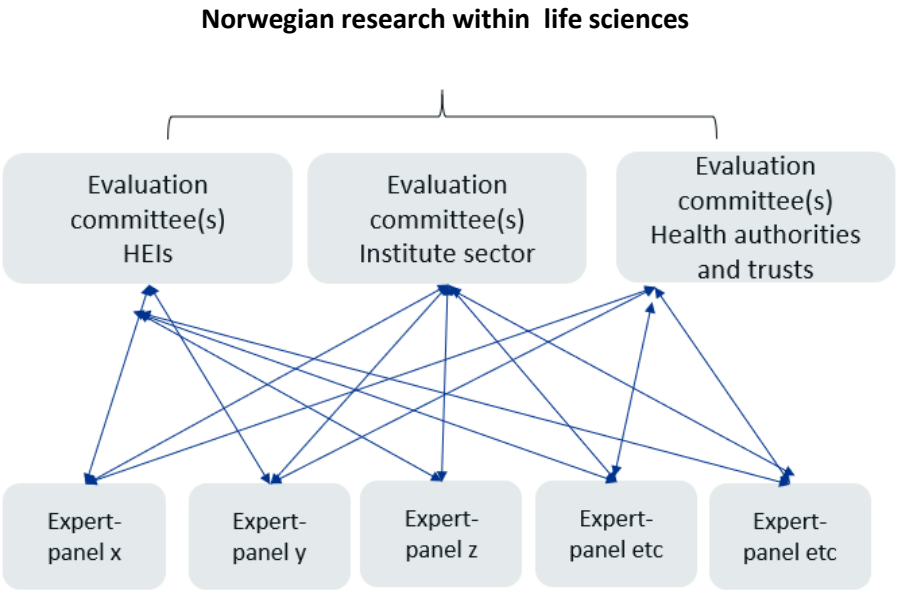

Figure 1. Evaluation committees and expert panels

The evaluation committee takes international trends and developments in science and society into account when forming its judgement. When judging the quality and relevance of the research, the committees shall bear in mind the specific tasks and/or strategic goals that the administrative unit has set for itself including sectoral purposes (see section 2.4 above).

3.2 Accuracy of factual information

The administrative unit under evaluation should be consulted to check the factual information before the final report is delivered to the RCN and the board of the institution hosting the administrative unit.

3.3 National level report

Finally, the RCN will ask the chairs of the evaluation committees to produce a national-level report that builds on the assessments of administrative units and the national-level assessments produced by the expert panels. The committee chairs will present their assessment of Norwegian research in life sciences at the national level in a separate report that pays specific attention to:

- Strengths and weaknesses of the research area in the international context
- The general resource situation regarding funding, personnel and infrastructure
- PhD training, recruitment, mobility and diversity
- Research cooperation nationally and internationally
- Societal impact and the role of research in society, including Open Science

This national-level assessment should be presented to the RCN.

Appendix A: Terms of References (ToR)

[Text in red to be filled in by the Research-performing organisations (RPOs)]

The board of [RPO] mandates the evaluation committee appointed by the Research Council of Norway (RCN) to assess [administrative unit] based on the following Terms of Reference.

Assessment
You are asked to assess the organisation, quality and diversity of research conducted by [administrative unit] as well as its relevance to institutional and sectoral purposes, and to society at large. You should do so by judging the unit's performance based on the following five assessment criteria (a. to e.). Be sure to take current international trends and developments in science and society into account in your analysis.

a) Strategy, resources and organisation
b) Research production, quality and integrity
c) Diversity and equality
d) Relevance to institutional and sectoral purposes
e) Relevance to society

For a description of these criteria, see Chapter 2 of the life sciences evaluation protocol. Please provide a written assessment for each of the five criteria. Please also provide recommendations for improvement. We ask you to pay special attention to the following [n] aspects in your assessment:

1. …
2. …
3. …
4. …

…

[To be completed by the board: specific aspects that the evaluation committee should focus on – they may be related to a) strategic issues, or b) an administrative unit's specific tasks.]

In addition, we would like your report to provide a qualitative assessment of [administrative unit] as a whole in relation to its strategic targets. The committee assesses the strategy that the administrative unit intends to pursue in the years ahead and the extent to which it will be capable of meeting its targets for research and society during this period based on available resources and competence. The committee is also invited to make recommendations concerning these two subjects.

Documentation
The necessary documentation will be made available by the life sciences secretariat at Technopolis Group.

The documents will include the following:

- a report on research personnel and publications within life sciences commissioned by RCN
- a self-assessment based on a template provided by the life sciences secretariat
- [to be completed by the board]

Interviews with representatives from the evaluated units
Interviews with the [administrative unit] will be organised by the evaluation secretariat. Such interviews can be organised as a site visit, in another specified location in Norway or as a video conference.

Statement on impartiality and confidence
The assessment should be carried out in accordance with the *Regulations on Impartiality and Confidence in the Research Council of Norway*. A statement on the impartiality of the committee members has been recorded by the RCN as a part of the appointment process. The impartiality and confidence of committee and panel members should be confirmed when evaluation data from [the administrative unit] are made available to the committee and the panels, and before any assessments are made based on these data. The RCN should be notified if questions concerning impartiality and confidence are raised by committee members during the evaluation process.

Assessment report
We ask you to report your findings in an assessment report drawn up in accordance with a format specified by the life sciences secretariat. The committee may suggest adjustments to this format at its first meeting. A draft report should be sent to the [administrative unit] and RCN by [date]. The [administrative unit] should be allowed to check the report for factual inaccuracies; if such inaccuracies are found, they should be reported to the life sciences secretariat no later than two weeks after receipt of the draft report. After the committee has made the amendments judged necessary, a corrected version of the assessment report should be sent to the board of [the RPO] and the RCN no later than two weeks after all feedback on inaccuracies has been received from [administrative unit].

Appendix B: Data sources

The lists below shows the most relevant data providers and types of data to be included in the evaluation. Data are categorised in two broad categories according to the data source: National registers and self-assessments prepared by the RFOs. The RCN will commission an analysis of data in national registers (R&D-expenditure, personnel, publications etc.) to be used as support for the committees' assessment of administrative units. The analysis will include a set of indicators related to research personnel and publications.

- **National directorates and data providers**
- Norwegian Directorate for Higher Education and Skills (HK-dir)
- Norwegian Agency for Quality Assurance in Education (NOKUT)
- Norwegian Agency for Shared Services in Education and Research (SIKT)
- Research Council of Norway (RCN)
- Statistics Norway (SSB)

National registers

1) R&D-expenditure
    a. SSB: R&D statistics
    b. SSB: Key figures for research institutes
    c. HK-dir: Database for Statistics on Higher Education (DBH)
    d. RCN: Project funding database (DVH)
    e. EU-funding: eCorda
2) Research personnel
    a. SSB: The Register of Research personnel
    b. SSB: The Doctoral Degree Register
    c. RCN: Key figures for research institutes
    d. HK-dir: Database for Statistics on Higher Education (DBH)
3) Research publications
    a. SIKT: Cristin - Current research information system in Norway
    b. SIKT: Norwegian Infrastructure for Bibliometrics
    (full bibliometric data incl. citations and co-authors)
4) Education
    a. HK-dir/DBH: Students and study points
    b. NOKUT: Study barometer
    c. NOKUT: National Teacher Survey
5) Sector-oriented research
    a. RCN: Key figures for research institutes
6) Patient treatments and health care services
    a. Research & Innovation expenditure in the health trusts
    b. Measurement of research and innovation activity in the health trusts
    c. Collaboration between health trusts and HEIs
    d. Funding of research and innovation in the health trusts
    e. Classification of medical and health research using HRCS (HO21 monitor)

Self-assessments

1) Administrative units
    a. *Self-assessment covering all assessment criteria*
    b. Administrative data on funding sources
    c. Administrative data on personnel
    d. Administrative data on the division of staff resources between research and other activities (teaching, dissemination etc.)
    e. Administrative data on research infrastructure and other support structures
    f. SWOT analysis
    g. Any supplementary data needed to assess performance related to the strategic goals and specific tasks of the unit

2) Research groups
    a. *Self-assessment covering the first two assessment criteria (see Table 1)*
    b. Administrative data on funding sources
    c. Administrative data on personnel
    d. Administrative data on contribution to sectoral purposes: teaching, commissioned work, clinical work [will be assessed at committee level]
    e. Publication profiles
    f. Example publications and other research results (databases, software etc.) The examples should be accompanied by an explanation of the groups' specific contributions to the result
    g. Any supplementary data needed to assess performance related to the benchmark defined by the administrative unit

The table below shows how different types of evaluation data may be relevant to different evaluation criteria. Please note that the self-assessment produced by the administrative units in the form of a written account of management, activities, results etc. should cover all criteria. A template for the self-assessment of research groups and administrative units will be commissioned by the RCN from the life sciences secretariat for the evaluation.

Table 1. Types of evaluation data per criterion

Evaluation units / Criteria	Research groups	Administrative units
Strategy, resources and organisation	Self-assessment Administrative data	Self-assessment National registers Administrative data SWOT analysis
Research production and quality	Self-assessment Example publications (and other research results)	Self-assessment National registers
Diversity, equality and integrity		Self-assessment National registers Administrative data
Relevance to institutional and sectoral purposes		Self-assessment Administrative data
Relevance to society		Self-assessment National registers Impact cases
Overall assessment	*Data related to:* *Benchmark defined by administrative unit*	*Data related to:* *Strategic goals and specific tasks of the admin. unit*

The Research Council of Norway

EVALBIOVIT

Self-assessment for administrative units

Version 1.2

Overview

Institution (name and short name):
Administrative unit (name and short name):
Date:
Contact person:
Contact details (email):

1 Introduction

The primary aim of the evaluation is to reveal and confirm the quality and the relevance of research performed at Norwegian Higher Education Institutions (HEIs), and by the institute sector. For the life sciences area, research undertaken by regional health authorities and health trusts is also included. These institutions will henceforth be collectively referred to as research performing organisations (RPOs). The evaluation report(s) will provide a set of recommendations to the RPOs, the Research Council of Norway (RCN) and the concerned ministries. The results of the evaluation will also be disseminated for the benefit of potential students, users of research, and society at large.

You have been invited to complete this self-assessment as an administrative unit. The self-assessment contains questions regarding the unit's research- and innovation related activities and developments over the past 10 years. All the submitted data will be evaluated by evaluation committees (for administrative units) and expert panels (for research groups). Please read through the whole document including all instructions before answering the questions to avoid overlaps.

As an administrative unit, you are also responsible for collecting the completed self-assessment for each of the research groups that belong to the unit. The research groups need to submit their completed self- assessment to the unit no later than the 1st of December 2022. The unit will submit the research groups' completed self-assessments and the unit's own completed self-assessment no later than the 5th of December 2022.

The whole self-assessment shall be written in English.

Please use the following format when naming your document: name of the institution, and name of the administrative unit, e.g. UiO_FacBiosci. Send it to evalbiovit@technopolis-group.com no later than 5th of December 2022.

For questions concerning the self-assessment or EVALBIOVIT in general, please contact RCN's evaluation secretariat at Technopolis Group: evalbiovit.questions@technopolis-group.com.

Many thanks in advance![1]

[1] Personal information will be deleted when evaluation reports are published and no later than 30 April 2024

For more information on how Technopolis Group handles data processing, see: http://www.technopolis-group.com/privacy-policy/

For more information on how the Research Council of Norway handles data processing, see: https://www.forskningsradet.no/en/privacy-policy/

2 Self-assessment for administrative units

Self-assessment guidelines:

- Data on personnel should refer to reporting to DBH on 1 October 2021 for HEIs and to the yearly reporting for 2021 for the institute sector
- Other data should refer to 31 December 2021 if not specified otherwise
- Please read the entire self-assessment document before answering
- Provide information – provide documents and other relevant data or figures about the administrative unit, for example strategy and other planning documents, as well as data on R&D expenditure, sources of income and results and outcomes of research
- Describe – explain and present using contextual information about the administrative unit (most often this includes filling out specific forms) and inform the reader about the administrative unit
- Reflect – comment in a reflective and evaluative manner how the administrative unit operates
- 4000 characters including spaces equals one page

2.1 Strategy, resources and organisation of research

2.1.1 Research strategy

2.1.1.1 Describe the main strategic goals for research and innovation of the administrative unit (1000–4000 characters). How are these goals related to institutional strategies?

- Describe the main fields and focus of research and innovation in the unit
- Describe how you work to maximise synergies between the different purposes of the unit
- Describe the planned research-field impact; planned policy impact and planned societal impact
- Describe how the strategy is followed-up in the allocation of resources and other measures
- Describe the most important occasions where priorities are made (i.e., announcement of new positions, applying for external funding, following up on evaluations)
- If there is no long-term research strategy – explain why

Form 1 *Administrative unit's strategic planning documents*

Instructions: For each category (Research strategy, Research funding, Cooperation policy, Open science policy) present up to 5 documents that according to you are the most relevant. If the administrative unit uses the strategies, policies, etc. of a larger institution, then present these documents. Please use the following formatting: Name of document, Years active, Link to the document.

Example: Norwegian University of Science and Technology Strategy, 2021–2025, hyperlink to the document

2.1.2 Organisation of research

2.1.2.1 Describe the organisation of research and innovation activities at the unit, including how responsibilities for research and other purposes (education, knowledge exchange, patient treatment, training etc) are distributed and delegated (500–1500 characters).

Form 2 *SWOT analysis for administrative units*

Instructions: Please complete a SWOT analysis for your administrative unit. Reflect on what are the major internal Strengths and Weaknesses as well as external Threats and Opportunities for your research and innovation activities and research environment. Assess what the present Strengths enable in the future and what kinds of Threats are related to the Weaknesses. Consider your scientific expertise and achievements, funding, facilities, organisation and management (500–2000 characters per cell).

2.1.3 Research funding

2.1.3.1 Describe the funding sources of the unit and indicate the share of the unit's budget (NOK) dedicated to research compared to other purposes. Shares may be calculated based on full time equivalents (FTE) allocated to research compared to total FTE in unit (500–1500 characters).

2.1.3.2 Describe how successful the administrative unit has been in obtaining competitive regional, national and/or international research funding grants (200–1000 characters).

Form 3 *Funding levels for the administrative unit for 2021*

Instructions: For administrative units in the institute sector receiving basic funding via RCN, funding levels should be provided for 2021 in the funding categories used in the yearly reporting:

a) National grants (NOK) (post 1.1 og 1.2)):

   i) from the Research Council of Norway (NOK) – excluding basic funding

   ii) from the ministries and underlying directorates (NOK)

   iii) from industry (NOK)

   iv) other national grants including third sector, private associations and foundations (NOK)

b) National contract research (post 1.3)

c) International grants (post 1.4)

d) Funding related to public management (forvaltningsoppgaver post 1.5)

For Higher Education Institutions costs covered by external funding sources should be reported according to the same categories as far as possible. Costs may be classified as Other if they cannot be placed in one of the specified categories. Reporting should be based on incurred costs (regnskapstall) for 2021.

2.1.4 Participation in national infrastructures

2.1.4.1 Describe the most important participation in the national infrastructures listed in the Norwegian roadmap for research infrastructures (Nasjonalt veikart for forskningsinfrastruktur) including as host institution(s) (200–1000 characters).

Form 4 *Infrastructures listed in the Norwegian roadmap for research infrastructures (Nasjonalt veikart for forskningsinfrastruktur)*

Instructions: Please present up to 5 participations in the national infrastructures listed in the Norwegian roadmap for research infrastructures (Nasjonalt veikart for forskningsinfrastruktur) for each area that were the most important to your administrative unit. For each category area, please use the following formatting:

Name of research infrastructure, Years when used, Description (100–500 characters) of the engagement with the research infrastructure (reasoning, objectives, expected/actual outcomes).

[2] Excluding basic funding.

[3] For research institutes only research activities should be included from section 1.3 in the yearly reporting

2.1.4.2 Describe the most important participation in the international infrastructures funded by the ministries (Norsk deltakelse i internasjonale forskningsorganisasjoner finansiert av departementene) (200–1000 characters).

Form 5 *Participation in international research organisations*

Instructions: Please describe up to 5 participations in international and European infrastructures (ESFRI) for each area that have been most important to your research unit. When presenting your participation, please use the following formatting:

Name of research infrastructure, Years when used, Description (100–500 characters) of the participation in the research infrastructure (reasoning, objectives, expected/actual outcomes).

2.1.4.3 Describe the most important participation in European (ESFRI) infrastructures (Norske medlemskap i infrastrukturer i ESFRI roadmap) including as host institution(s) (200–1000 characters).

Form 6 *Participation in infrastructures on the ESFRI Roadmap*

Instructions: For each area, please give a description of up to 5 engagements that have been most important to your research unit. When presenting your participation, please use the following formatting: Name of research infrastructure, Years when used, Description (100–500 characters) of the engagement with the research infrastructure (reasoning, objectives, expected/actual outcomes)."

2.1.5 Accessibility to research infrastructures

2.1.5.1 Describe the accessibility to research infrastructures for your researchers. Considering both physical and electronic infrastructure (200–1000 characters).

2.1.5.2 Describe what is done at the unit to fulfil the FAIR-principles[4] (200–1000 characters).

2.1.6 Research staff

2.1.6.1 Describe the profile of research personnel at the unit in terms of position and gender (200–1000 characters).

Form 7 *Administrative data on the division of staff resources for 2021*

2.1.6.2 Describe the structures and practices to foster researcher careers and help early-career researchers to make their way into the profession (200–1000 characters).

2.1.6.3 Describe how research time is distributed among staff including criteria for research leave (forskningsfri) (200–1000 characters).

2.1.6.4 Describe research mobility options (200–1000 characters).

2.2 Research production, quality, and integrity

2.2.1 Research quality and integrity

2.2.1.1 Describe the scientific focus areas of the research conducted at the administrative unit, including the unit's contribution to these areas (500–2000 characters).

2.2.1.2 Describe the unit's policy for research integrity, including preventative measures when integrity is at risk, or violated (200–1000 characters).[5]

2.2.2 Open Science policies at the administrative unit

2.2.2.1 Describe the institutional policies, approaches, and activities to the following Open Science areas (consider each area separately, 500–1000 characters in total):

- Open access to publications
- Open access to research data and implementation of FAIR data principles
- Open-source software/tools
- Open access to educational resources
- Open peer review
- Skills and training for Open Science
- Citizen science and/or involvement of stakeholders / user groups

2.2.2.2 Describe the most important contributions and impact of the unit's researchers towards the different Open Science areas (consider each area separately, 500–1000 characters in total):

- Open access to publications
- Open access to research data and implementation of FAIR data principles
- Open-source software/tools
- Open access to educational resources
- Open peer review
- Skills and training for Open Science
- Citizen science and/or involvement of stakeholders/user groups

2.2.2.3 Describe the institutional policy regarding ownership of research data, data management, and confidentiality (200–1000 characters). Is the use of data management plans implemented at the unit?

2.3 *Diversity and equality*

2.3.1 Diversity and equality practices

2.3.1.1 Describe the policy and practices to protect against any form of discrimination in the administrative unit (200–1000 characters).

Form 8 *Administrative unit's policies against discrimination*

Instructions: Give a description of up to 5 documents that are the most relevant. If the administrative unit uses the strategies, policies, etc. of a larger institution, then these documents should be referred to. For each document use the following formatting: Name of document, Years active, Link to the document

Example: Norwegian University of Science and Technology Strategy, 2021–2025, hyperlink to the document

2.4 Relevance to institutional and sectorial purposes

2.4.1 Sector specific impact

2.4.1.1 Describe whether the administrative unit has activities aimed at achieving sector-specific objectives[6] or focused on contributing to the knowledge base in general. Describe activities connected to sector-specific objectives, the rationale for participation and achieved and/or expected impacts (500–3000 characters).

- Alternatively, describe whether the activities of the unit are aimed at contribution to the knowledge base in general. Describe the rationale for this approach and the impacts of the unit's work to the knowledge base.

2.4.2 Research innovation and commercialisation

2.4.2.1 Describe the administrative unit's practices for innovation and commercialisation (500–1500 characters).

- Describe the interest among the research staff in doing innovation and commercialisation activities
- Describe how innovation and commercialisation is supported at the unit

Form 9 *Administrative unit's policies for research innovation*

Instructions: Describe up to 5 documents of the administrative unit's policies for research innovation, including IP policies, new patents, licenses, start-up/spin-off guidelines, etc., that are the most relevant. If the administrative unit uses the strategies, policies, etc. of a larger institution, then present these documents. For each document use the following formatting: Name of document, Years active, Link to the document

Example: Norwegian University of Science and Technology Strategy, 2021–2025, hyperlink to the document

2.4.2.2 Provide examples of successful innovation and commercialisation results, such as new patents, licenses, etc (500–1500 characters).

Form 10 *Administrative description of successful innovation and commercialisation results*

Instructions: Please describe up 10 successful innovation and commercialisation results at your administrative unit. For each result, please use the following formatting: Name of innovation and commercial results, Year, Links to relevant documents, articles, etc. that present the result, Description (100–500 characters) of successful innovation and commercialisation result.

2.4.3 Collaboration

2.4.3.1 Describe the unit's policy towards regional, national and international collaboration, as well as how cross-sectorial collaboration and interdisciplinary collaboration is approached at the administrative unit (500–1500 characters). Please fill out the forms that match your institution: the institute sector fills out Form 11a and Form 11b; HEIs fill out Form 12.

- Reflect on how successful the unit have been in meeting its aspirations for collaborations

Form 11a (institute sector) *Administrative unit's partnerships ('faktisk samarbeid')*

Instructions: For each of the administrative unit's tender and project-based cooperation (which are not tax deducted) please present up to 5 examples under each category (Collaboration with national public institutions; Collaboration with national private institutions; Collaboration with international public institutions; Collaboration with international private institutions). Please use 100– 500 characters to describe the impacts and relevance of collaboration.

Form 11b (institute sector) *Administrative unit's collaboration*

Instructions: For each of the administrative unit's tender and project-based cooperation please present up to 5 examples under each category (Collaboration with academic partners nationally; Collaboration with non-academic partners nationally; Collaboration with academic partners internationally; Collaboration with non-academic partners internationally). Please use 100–500 characters to describe the impacts and relevance of collaboration.

2.4.3.2 Reflect on the importance of different types of collaboration for the administrative unit (200–1000 characters).

- Regional, national and international collaborations

Collaborations with different sectors, including public, private and third sector

Form 12 (HEIs) *Administrative unit's partnerships" ('faktisk samarbeid')*

Instructions: For each of the administrative unit's tender and project-based cooperation (which are not tax deducted) please present up to 5 examples under each category (Collaboration with national public institutions; Collaboration with national private institutions; Collaboration with international public institutions; Collaboration with international private institutions). Please use 100– 500 characters to describe the impacts and relevance of collaboration.

2.4.3.3 Reflect on the importance of different types of collaboration for the administrative unit, the added value of these collaborations to the administrative unit and Norwegian research system (500–1500 characters).

2.4.4 ONLY for higher education institutions

2.4.4.1 Reflect on how research at the unit contributes towards master and PhD-level education provision, at your institutions and beyond (200–1000 characters).7

2.4.4.2 Describe the opportunities for master and bachelor students to become involved in research activities at the unit (200–1000 characters).

2.4.5 ONLY for research institutes

2.4.5.1 Describe how the research activities at the administrative unit contribute to the knowledge base for policy development, sustainable development, and societal and industrial transformations more generally (500–1500 characters).8

2.4.5.2 Describe the most important research activities including those with partners outside of research organisations (500–1500 characters).

2.5 Relevance to society

2.5.1 Administrative unit's societal impact

2.5.1.1 Reflect on the unit's contribution towards the Norwegian Long-term plan for research and higher education, societal challenges more widely, and the UN Sustainable Development Goals (500–1500 characters).

2.5.1.2 Describe how the administrative unit's research and innovation has contributed to economic, societal and cultural development by submitting one to five impact cases depending on the size of the unit. For up to 10 researchers: one case; for 10 to 30 researchers: two cases; for 30-50 researchers: three cases; for 50-100 researchers: four cases, and up to five cases for units exceeding 100 researchers. Please use the attached template for impact cases. Each impact case will be submitted as an attachment to the self-evaluation. Institutions that submit impact cases do not have to fill in the box below.

Case no. 1

Thank you for completing the self-assessment.

[7] Please note: RCN will provide data from the national student survey (Studiebarometeret) on students' experience with research methods and exposure to research activities. The data will most probably be on an aggregate level but including the unit under assessment.

[8] Strategi for helhetlig instituttpolitikk, Kunnskapsdepartementet, p.4): «Instituttsektoren skal utvikle kunnskapsgrunnlag for politikkutforming og bidra til bærekraftig utvikling og omstilling, gjennom forskning av høy kvalitet og relevans.» (The government's strategy for an independent institute sector).

Scales for research group assessment

Organisational dimension

Score	Organisational environment
5	An organisational environment that is outstanding for supporting the production of excellent research.
4	An organisational environment that is very strong for supporting the production of excellent research.
3	An organisational environment that is adequate for supporting the production of excellent research.
2	An organisational environment that is modest for supporting the production of excellent research.
1	An organisational environment that is not supportive for the production of excellent research.

Quality dimension

Score	Research and publication quality	Score	Research group's contribution Groups were invited to refer to the Contributor Roles Taxonomy in their description https://credit.niso.org/
5	Quality that is outstanding in terms of originality, significance and rigour.	5	The group has played an outstanding role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
4	Quality that is internationally excellent in terms of originality, significance and rigour but which falls short of the highest standards of excellence.	4	The group has played a very considerable role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
3	Quality that is recognised internationally in terms of originality, significance and rigour.	3	The group has a considerable role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
2	Quality that meets the published definition of research for the purposes of this assessment.	2	The group has modest contributions to the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
1	Quality that falls below the published definition of research for the purposes of this assessment.	1	The group or a group member is credited in the publication, but there is little or no evidence of contributions to the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.

Societal impact dimension

Score	Research group's societal contribution, taking into consideration the resources available to the group	Score	User involvement
5	The group has contributed extensively to economic, societal and/or cultural development in Norway and/or internationally.	5	Societal partner involvement is outstanding – partners have had an important role in all parts of the research process, from problem formulation to the publication and/or process or product innovation.
4	The group's contribution to economic, societal and/or cultural development in Norway and/or internationally is very considerable given what is expected from groups in the same research field.	4	Societal partners have very considerable involvement in all parts of the research process, from problem formulation to the publication and/or process or product innovation.
3	The group's contribution to economic, societal and/or cultural development in Norway and/or internationally is on par with what is expected from groups in the same research field.	3	Societal partners have considerable involvement in the research process, from problem formulation to the publication and/or process or product innovation.
2	The group's contribution to economic, societal and/or cultural development in Norway and/or internationally is modest given what is expected from groups in the same research field.	2	Societal partners have a modest part in the research process, from problem formulation to the publication and/or process or product innovation.
1	There is little documentation of contributions from the group to economic, societal and/or cultural development in Norway and/or internationally.	1	There is little documentation of societal partners' participation in the research process, from problem formulation to the publication and/or process or product innovation.

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