Forskningsrådet

Evaluation of Life Sciences 2022-2024

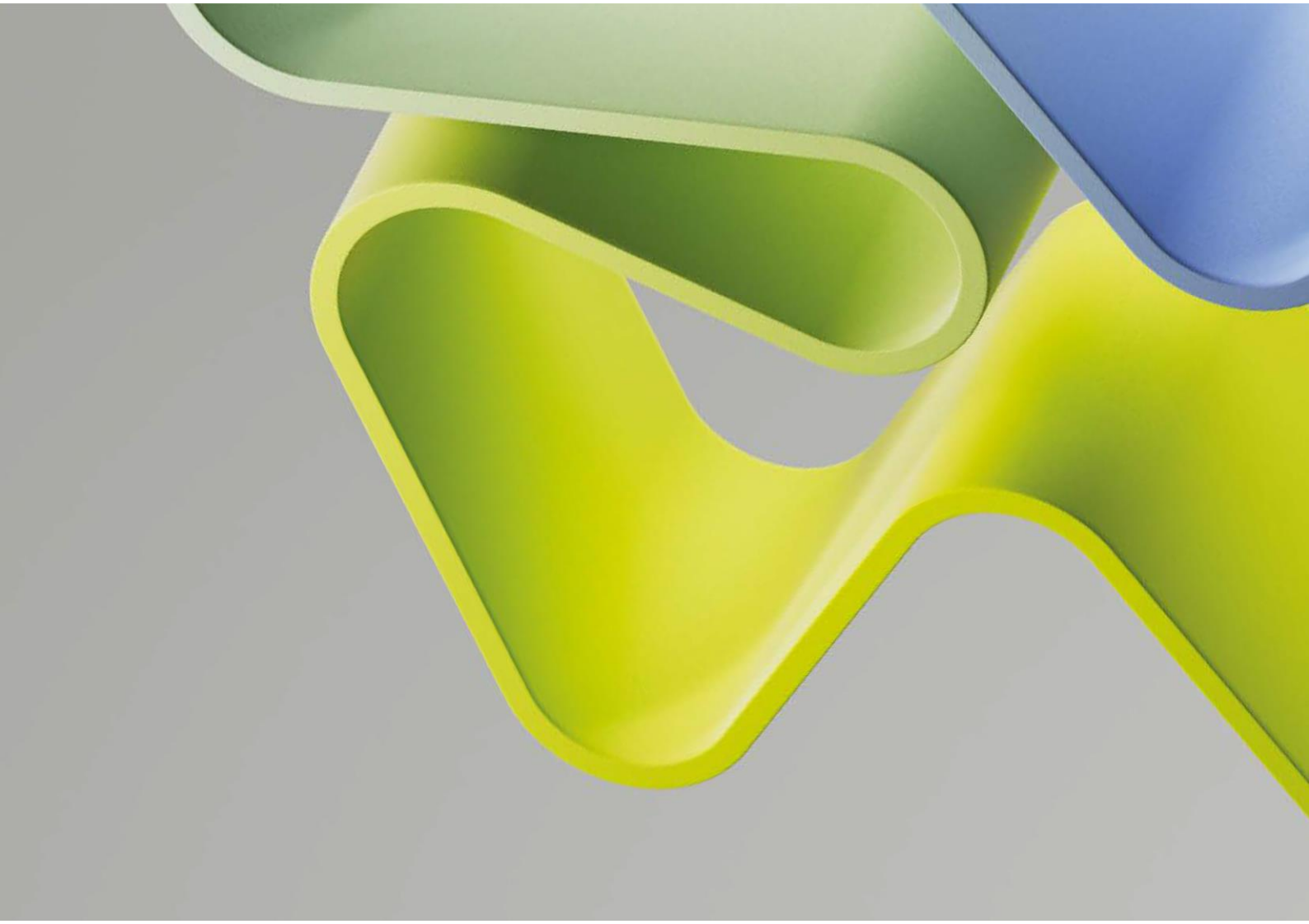
Evaluation of Biosciences 2022-2023

Evaluation report – Administrative unit

Department of Biology (IBI)

Norwegian University of Science and Technology (NTNU)

December 2023



Contents

Statement from Evaluation Committee 1 (Higher Education Sector)

This report is from Evaluation Committee 1 which evaluated the following administrative units representing the higher education sector in the Evaluation of Biosciences 2022-2023:

- Faculty of Environmental Sciences and Natural Resource Management (MINA), NMBU
- Faculty of Veterinary Medicine (VET), NMBU
- Department of Biology (IBI), NTNU
- Faculty of Science and Engineering, UiA
- The Department of Natural History, NTNU
- University Museum of Bergen (UM), UiB
- Natural History Museum (NHM), UiO
- The Arctic University Museum 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 1. All members of the committee have agreed with the assessments, conclusions and recommendations presented here.

Evaluation committee 1 consisted of the following members:

Professor/dean
Marianne Holmer (chair),
University of Southern Denmark

Professor/chair
Alan Dobson,
University College Cork

Research group leader
Felicity Jones,
The Friedrich Miescher Laboratory

Professor/section manager
Jan Tind Sørensen,
Aarhus University

Professor/ head
Kjell Arne Johanson,
The Swedish Museum of Natural History

Professor
Martin Polz,
University of Vienna

Ass. Professor/head
Natasha Louise de Vere,
University of Copenhagen

Ivette Oomens, Principal Consultant, Technopolis Group, was the committee secretary.

Oslo, December 2023

Profile of the administrative unit

As of 2021, the Department of Biology (IBI) had a total of 171 employees. Among these 39 were PhD-students, 43 postdoc/researchers, 18 lecturers/associate professors, 29 professors, 29 engineers and 13 administrative staff, including the head of department. Moreover, the gender -ratio among professors is highly male-biased with 24% being women. This was not the case for postdocs/researchers and lecturers/associate professors where 58% and 56%, respectively, were women.

IBI is comprised of six research groups: Animal physiology, Centre for biodiversity dynamics, Cell and molecular biology, Environmental toxicology, Marine sciences and Multiscale biology.

The research strategy of IBI is directly linked to its vision of “Understanding Life - Preserving the Environment”. Therefore, IBI's strategy is to contribute significantly to new knowledge about and understanding of nature's complexity, links and mechanisms, from molecular to ecosystem levels. IBI's aim is for fundamental research of a high international standard in the basic disciplines (cell and molecular biology, physiology, behaviour, ecology and evolution) and interdisciplinary collaboration with leading national and international research groups to enable the department to contribute to greater understanding and an ability to predict the effects of global environmental challenges, with an emphasis on climate change, pollution and loss of biodiversity. The results of IBI's research should also help to ensure sustainable natural resource development, use and management on land and in aquatic environments and innovations in society. In relation to this, IBI emphasises curiosity-driven basic research that contributes to an improved understanding of basic biological processes.

As a higher education institution, IBI strives to reach the four overall goals of Norwegian Higher Education Institutions: high quality in research and education, research and education for welfare, value creation and innovation, access to education (esp. capacity in health and teacher education) and efficiency, diversity and solidity of the higher education sector and research system. IBI has several types of activities that contribute to achieving key performance indicators in the Development Agreements between the Ministry of Education and Research and NTNU, as well as activities that contribute to the knowledge base in general. For example, IBI has developed and manages various types of infrastructure that serve as basis for research of high scientific quality. IBI has multiple research groups that are in the international forefront of research. One of these groups is the “Centre for Biodiversity Dynamics”, a Norwegian Centre of Excellence in Research (SFF-III), which received the highest rank “Exceptional” in its mid-term evaluation (in 2017).

Based on its self-assessment, IBI in the future might take advantage of the research that is oriented towards global challenges and its research expertise and infrastructure making them attractive partners for collaboration. This may lead to further reinforcement of their research groups and quality, including Norway's Centre's of Excellence in Science (Centre for Biodiversity Dynamics) and IBI's contribution to the Centre for Autonomous Marine Operations and Systems.

Overall assessment

The overall assessment considering the Terms of Reference provided by the administrative unit is that IBI has a clear research strategy which they are very clearly focused on achieving. IBI's research continues to make an important contribution to increasing our understanding of biological processes, with their research in the microplastics and in the biodiversity areas being particularly important in this respect. The unit's research has also contributed to advances in the area of biology research in general, particularly in the areas of genome editing, together with environmental toxicology and climate change and in animal physiology. Research activities within IBI involve interdisciplinary approaches that are important in allowing them to study basic biological processes. A number of IBI researchers are involved in national collaborations, some involving relevant industrial partners. In addition, IBI researchers are involved in international collaborations, which is reflected in their published outputs. These national and international collaborations are very important to the research profile of the unit. In this respect IBI has a very good and high-quality scientific reputation with a few very high-quality research groups.
The unit has a very good overall management structure with an inclusive research culture, and cooperation between research teams within the unit is good. IBI researchers have access to state-of-the-art facilities. Many IBI researchers have demonstrated leadership roles in national and international projects and initiatives. IBI has been very successful in obtaining research funding from a variety of different funding sources. There is clear evidence of the applied aspects of IBI's work having an economic impact at a national level, but there is less clear evidence regarding the socioeconomic impact nationally of the work.
The future prospects of the administrative unit are contingent on the recruitment of new staff and in the reorganisation of some of their research groups. This will help to ensure the continued high-quality research being undertaken by the administrative unit.

Recommendations

The evaluation committee recommends that IBI works with its six research groups to develop coherent research plans and future strategies which are better aligned to the administrative unit's overall strategic research. This will facilitate each of these groups in identifying how to maximise their scientific, economic and societal impacts, utilising the existing expertise of their researchers and importantly, identifying key expertise that needs to be retained or acquired to ensure the sustained future development of the research groups. Following the virtual meeting with IBI, the administrative unit indicated that they are currently compiling an interim strategy, which is likely to involve a reorganisation of the research groups. The evaluation committee recommends that they do this in a timely fashion.

The committee recommends that IBI also supports its research groups with developing strategies to increase the profile of the scientific outputs of some of these very high-quality research groups through targeting of scientific journals with higher scientific profiles, to further increase their international profile.

In addition, regarding career development, mobility and retention of staff within IBI, the committee recommends that IBI implements its policy throughout the different research groups. It is important that IBI builds on the opportunity that now exists through the recent recruitment of high-quality Associate Professors and researchers with ERC Starting, Consolidator and Advanced awards, whose career progress will be key in ensuring the overall future sustainability of the research groups in which they are housed and to IBI as an entity.

Finally, and most importantly, the committee recommends that IBI recruits new staff in a timely fashion, to replace retiring staff within many of their groups. This is particularly important in the case of the ENVITOX and CMB groups.

1. Strategy, resources and organisation of research

IBI has a very good overall management structure, with an appropriate representation involving an Extended Management Group (EMG), which directly advises the Head of Department, and a Research Committee which together creates an entity that supports high-quality research. IBI has a well-articulated and coherent research strategy, which in broad terms focuses on climate change, biodiversity, pollution and marine research. This strategy is clearly aligned with the Faculty of Natural Sciences and with a number of NTNU's strategic research areas, particularly with respect to NTNU Sustainability, NTNU Oceans and NTNU Biotechnology. However, this coherence was not always evident within the research groups, with some of the IBI research groups lacking a cohesive and clearly articulated research strategy. Notwithstanding this, the quality of published research outputs from IBI researchers is internationally excellent in terms of originality, significance and rigour. Additionally, the contribution of the researchers to the research process from the formulation of the overarching research goals and aims, via their research activities, to the preparation of publications can be considered significant. IBI researchers have access to very high quality and appropriate research facilities, including facilities for environmental toxicology and molecular biology and experimental studies in aquaculture and marine biology and in physiology.

Grant capture by IBI researchers has been impressive over the reporting period, particularly the acquisition of ERC Starting, Consolidator and Advanced awards, together with Marie Curie Fellowships, RCN and industry funding. While this level of external grant capture is very good, it might be expected that this level could have been somewhat greater, given the overall size of the administrative unit which consists of a large number of research personnel. At the virtual meeting with IBI, the administrative unit indicated that both new and existing staff members are working hard to acquire both EU and national funding.

1.1 Research Strategy

IBI has a clearly described, cohesive and coherent research strategy, with the overall aim of generating new knowledge by understanding complex natural systems from the molecular to the ecosystem level. IBI is employing a range of different disciplines with the goal of understanding and potentially predicting the effects of global environmental challenges, particularly with respect to climate change, pollution and biodiversity loss. IBI's research goals are clearly aligned with the Faculty of Natural Sciences and with NTNU's strategic research areas, particularly with respect to NTNU Sustainability, NTNU Oceans and NTNU Biotechnology. In addition, through their overall focus on climate, loss of biodiversity, pollution and sustainable use and management of natural resources, IBI is contributing to several of the United Nations Sustainable Development Goals (UNSDGs).

The overall coherency of IBI's research strategy was not always evident in the six constituent research groups within this administrative unit. From the expert panel evaluation reports of the IBI groups, which were assessed by different panels, it was evident that several of the groups lacked a cohesive research strategy or needed to more clearly articulate their research strategy. Notwithstanding this, the average score for the groups with respect to Strategy, resources and organisation was 4, with only the Animal Physiology group scoring

below this average. This reflects that the IBI constitutes an organisational environment that is very strong in supporting the production of excellent research.

1.2 Organisation of research

IBI is comprised of six research groups: Animal physiology, the Centre for biodiversity dynamics CBD), Cell and molecular biology (CMB), Environmental toxicology (ENVITOX), Marine sciences and Multiscale biology (MSB). The main weakness highlighted in the SWOT analysis is the geographical distribution of IBI at three different locations, with one of these, namely the Trondheim Biological station being located 12 kilometres from the other two sites. This is likely to provide challenges with respect to internal collaborative activities, which was highlighted. This issue may be negated in the future as the administrative unit is currently discussing moving the marine activity to Trondheim, which will help solve some of the collaboration challenges.

Another weakness that was highlighted is that of matching the infrastructure requirements with the scientific interests of some of the research groups, with respect to the diversity of the research interests of these groups. During the interview with IBI it became clear that a new digital system will be implemented where all the available infrastructure will be available for booking by administrative unit members. This will also help to reduce the chances of the duplication of smaller pieces of infrastructure.

Another potential problem that may emerge, which was highlighted in the expert panel reports, is the recruitment of future staff members. The CMB, ENVITOX, MSB and Animal Physiology groups raised concerns regarding the replacement of staff, primarily with respect to the retirement of current staff. These recruitments should ideally occur in a timely fashion, particularly in the case of ENVITOX and CMB due to imminent retirements. Concerns were also raised regarding the potential loss of facilities by the MSB group which, together with the potential staff replacements, could have a detrimental effect on this group. The continued provision of technical support to underpin IBI's research activities, is also important, particularly with the continued demand on team members with respect to their teaching duties. Opportunities that were described in the SWOT, focus on the continued opportunities of interdisciplinary and multidisciplinary collaborations with academic and industrial entities, which allow IBI to undertake high quality research. Potential threats involved the need for acquisition of external funding against a background of reduced national funding for basic research.

1.3 Research funding

IBI, as an administrative unit, has participated in an impressive number of projects over the reporting period and has acquired funding from a variety of sources such as ERC Starting, Consolidator and Advanced awards, together with Marie Curie, RCN and industry funding to support their research. This typically involved an average of four RCN and one EU project annually. The acquisition of six Marie Curie Fellowships is particularly impressive. Acquisition of research funding by IBI, based on the figures presented for 2021, was 240M NOK of which 163M NOK was from NTNU and 77M NOK was from external funding, with the latter constituting around 32% of the total funding. While this level of external grant capture is very good, it might be expected that this level could have been somewhat greater, given the overall size of the administrative unit with 158 research personnel including PhD students, researchers and engineers, but in particular given that there are 29 senior professors. Thus, grant capture for each professor of 2.65M NOK (€265K), is slightly lower than the annual

norms that have previously been reported in other EU countries such as for example 360K and 390K for professors in the UK and the Netherlands, respectively.
In addition, IBI has received a large amount of funding for the Centre for Biodiversity Dynamics with a total budget of 327M NOK. Other industry, foundations and directorate projects are mentioned at ranges up to 25M NOK per project.

1.4 Use of infrastructures

IBI researchers have access to excellent high-quality research facilities including facilities for environmental toxicology and molecular biology and experimental studies in aquaculture and marine biology and in physiology. This is facilitating them in undertaking high quality research. IBI is also involved in four infrastructures linked to the Norwegian roadmap for research infrastructures, in the strategic areas E-infrastructure, Climate and the Environment, Maritime Technology and in Medicine and Health. With respect to E-infrastructure, IBI has collaborated with UNINETT Sigma2 since 2011 and together with universities in Bergen, Oslo and Tromsø, is collectively offering access to High-Performance Computing (HPC) and large-scale data storage to researchers in Norway. A significant number of publications on the analyses of climate simulations has arisen from the administrative unit's involvement with this particular infrastructure. In Climate and the Environment, together with the Norwegian Institute for Water Research (NIVA), IBI has since 2016 been involved with SeaBee, an infrastructure involved in drone-based research, and has been an active partner within the Centre of Excellence AMOS (Autonomous Marine Operations and Systems) since 2013, involving areas such as marine hydrodynamics, ocean structures, marine biology, marine archaeology, and control theory. With respect to Maritime Technology, IBI is involved in the Ocean Space Centre and together with SINTEF will also be involved in the new national infrastructure - the Norwegian Marine Technology Center - which plans to be one of the world's most advanced facilities for research and education in marine engineering. Finally, in the Medicine and health domain, they are involved in two projects in Biobank Norway.

IBI uses and provides important inputs into the European Molecular Biology laboratory, the EMBL-EBI. The European Bioinformatics Institute (EBI) has provided IBI with high quality annotation resources and IBI researchers have collaborated with them in the development of standards for data representation and in the curation of gene regulatory information. Together with another NTNU administrative unit, the Department of Clinical and Molecular Medicine (IKOM), IBI has been actively involved as external source providing inputs to EMBL-EBI. From 2016 to 2022, IBI has also used and provided input into the European Strategy Forum on Research Infrastructures (ESFRI) - ELIXIR infrastructure, which is coordinated by the University of Bergen.

1.5 National and international collaboration

Excellent details were provided in the administrative unit's self-assessment regarding the regional, national and international collaborations in which IBI is involved. On a national level, IBI collaborates with both research institutes and industry (SINTEF, NINA and the Polar Institute). IBI also has collaborative linkages with other Norwegian Universities, particularly with Tromsø, Oslo and Svalbard and with the Norwegian University of Life Sciences (NMBU). The tangible nature of these national collaborations is reflected in several research papers involving IBI researchers together with researchers from the Norwegian Institute of Natural Research. International linkages are mainly with universities in Australia, China, Belgium, France, Sweden, the UK and the US. Around 75% of IBI’s publications involve international

collaborators as co-authors. The international collaborations have resulted in publications with researchers from the University of Helsinki, together with researchers from other universities in Denmark, Sweden, and Belgium, which are other top co-authoring institutions. With respect to internal collaborations within IBI itself, systems are in place to promote collaborations and synergies between research groups through internally funded PhD positions, with involvement of multiple research supervisors from different research groups.

1.6 Research staff

IBI has a total of 171 employees, of which 129 are research personnel, including PhD students, researchers, and Professors, 29 engineers and 13 administrative staff. There is a lack of gender balance with only (24%) of the professors being female, with overall an aging profile. Recent hires in the associate professor/lecturer categories appear to address this issue, which has resulted in an increase in the female ratio to (56%) women. There is also a high percentage of females in the PhD (74%), Postdoc and researcher (58%) categories, which is also to be welcomed.

Regarding mobility, Professors have sabbatical opportunities which are well structured with female applicants being prioritised. Other mobility opportunities involve internal competitions for funding opportunities for PhD students and for staff, with the latter being based on the productivity of the staff member. While groups within IBI are encouraged to undertake mobility opportunities, from the research panel reports it appears that staff mobility was not explicitly mentioned in some groups. Thus, it appears that there is a lack of uniformity in the provision of mobility opportunities to researchers throughout IBI.

2. Research production, quality and integrity

The research at IBI is focused in four main areas: Climate change, Pollution, Sustainability and Biological diversity, which are tightly linked to ongoing global challenges. IBI is attempting to gain increased knowledge of nature's diversity, processes, and mechanisms to help to contribute to predicting the effects of environmental challenges and in doing this, aims to help preserve the global environment and the more sustainable use and management of natural resources. The overall research undertaken by IBI researchers, and the quality of their published outputs, can be regarded as internationally excellent in terms of originality, significance, and rigour, which is reflected in the average score of 4 that the six groups received from the individual expert evaluation reports. In addition, the contribution of the researchers to the research process - from the formulation of the overarching research goals and aims, via their research activities, to the preparation of the publications - can be considered as considerable, which is reflected in an average score of 4 that the six groups received from the individual expert evaluation reports.

2.1 Summary of research group evaluations

Animal Physiology

This is a research group with a long track record. However, its current conformation is new, with three of the four permanent members recently recruited. The research group has a research focus on animal physiology and the individual members work on very distinct thematic fields. The research is characterised as curiosity driven, and of a fundamental nature

and the research outputs are of high quality and competitive at an international level. The lack of adequate details in some sections of the report coupled to the recent establishment of the current group structure, makes it difficult to give a consolidated view of the group's activity. The individual members of the research group are highly promising and if they can create cohesion and work together, this group has a very promising future. Recruitment of further permanent group members in the future, will be essential to give all members sufficient time for research and will help to build up a critical mass that will improve and increase the research groups' visibility and reputation. The apparent lack of strategy or vision in relation to the societal contribution and role of the research group is a significant concern that should be addressed.

Cell and Molecular Biology

The MolSysBio group has an excellent position within the Department of Biology and NTNU. It has shown very good past performance and made an impact in most study areas as well as training. The marine algae work is exactly within the focus of NTNU, and its strategic areas have great future potential. There are however several weaknesses that are further explained within the evaluation report and relate to (i) the small size of the group that is almost below critical size in the many areas it covers (marine and human biology) and large teaching load; (ii) the succession planning that is needed as some senior group members reach retirement within the coming decade; (iii) the limited EU funding in spite of the group members excellent scientific networks.

Centre for Biodiversity Dynamics (CBD)

The CBD group has had a unique position in developing a particular approach to understanding biodiversity – the focus on the details of single species has had high dividends for the group – with high quality works and research awards. The group lacks the societal impact dimension and strategy focus within the broader governance of NTNU. While the group delivers high quality graduate students, details on training and pedagogic approaches are poorly developed.

Environmental Toxicology (ENVITOX)

The research in the core field of the group, environmental toxicology and ecotoxicology, is very strong and has found its place in the international scientific community. The focus on microplastic pollution has good visibility. A strength of the group is the commitment to recruit a new generation of researchers (PhD program, MSc programs), and the large proportion of PhD fellows in the group. The group has attracted substantial research funds from diverse sources. The key strengths of the group are timely research topics, highly competitive capacity, and socially relevant research priorities.

Marine Sciences (MS)

Interdisciplinarity and multidisciplinary research is a strength of the MS RG that increases collaborations and allows the RG to find new opportunities. The close relationship and involvement with education (PhD and Master students) further creates opportunities to boost innovative research. However, given the dispersion of the topics addressed by the RG, it would be advisable to define some common objectives, as a guideline for the group. It is recommended that these be more specific than understanding the biological processes of marine ecosystems, as indicated in the benchmark for the RG.

Multiscale Biology (MSB)
This is a vibrant group with a critical mass of researchers, across career stages, working across a broad range of topics, which are all primarily related to plants. Overall, the group is strategically and scientifically strong, producing research with a good level of societal relevance. The latter is an area where the group has room for improvement. They are successful in supporting PhD students and post docs. The self-assessment did not provide much detail on their mentorship strategy, but they have a good ratio of junior to senior scientists; their requirement that PhD's have more than one supervisor in the group is good practice. The group is well aligned with the institute's interests. The research outputs were assessed as a mix of highly original and rigorous studies, and others less so; some were published in medium to high end journals and there is a good indication that the work was largely led internally. The group provided some good evidence for societal engagement, but this was not applied across all research areas, and it unclear how end users contributed to research development or altered their practices because of the research.

2.2. Open Science

NTNU has a "Policy for Open Science" which IBI is following, which states that in general and when legally possible, results from research must be made publicly available. IBI currently fulfils NTNU's policy on open access with all publications being published in open access journals or being made open access through storage in NTNU's own (NTNU Open) archiving system. This is reflected in a marked increase in the percentage of open access publications, ranging from 59.5% to 72.7% in the period 2019 to 2021. However, IBI stated in the self-assessment report that "The bibliographic report for IBI is not correct for the latest years regarding the percent publications which are not open access". Notwithstanding this, NTNU is currently further developing its plans for Open Science through a "Development plan for open science 2023-2025", which will integrate FAIR data principles into its policy; making these principles an integrated research component. All IBI's research projects have since 2019 had a data management plan. The evaluation committee noted that NTNU's policy regarding the ownership of research data, data management and confidentiality is well articulated in the assessment report.

3. Diversity and equality

IBI has the overall goal and vision of promoting a culture of collaboration, innovation and dissemination as a part of its research and educational activities. IBI established a gender equality committee in 2017, in line with NTNU's priority area for a better work environment. IBI strives to develop and improve its activities by improving quality at all levels throughout the Department. This is an admirable aspiration. IBI also has an Equal Opportunities Committee (EOC), which helps the administrative unit's management in the development and implementation of measures to facilitate gender distribution among employees and to facilitate the recruitment of women to senior scientific positions. This has been successful with respect to the recruitment of women scientists. The EOC also helps raise awareness about gender equality and discrimination and a measure of the success of this committee is evident through IBI's acquisition of the Gender Equality and Diversity award from NTNU in 2018.
IBI has also established guidelines for expert committees involved in the evaluation of candidates for scientific positions. In addition, NTNU itself has clear policies against

discrimination in place which include; Guidelines for sexual harassment and abuse; Guidelines for conflict management, harassment and improper conduct and a Policy for Gender Equality and Diversity.

4. Relevance to institutional and sectorial purposes

There are some good examples within IBI of innovation and the commercialisation of research. For example, IBI researchers have been involved in the establishment of two companies; Coegin Pharma AB (Avexxin AS) and Ecotone AS. Avexxin AS was highlighted in impact case study five (chapter 5), while Ecotone AS is an underwater hyperspectral imaging company, that is involved in activities such as the mapping and monitoring of seafloor habitats and in the inspection of pipelines. Six other examples were also provided, including the development of data analysis packages for R developed at the Centre for Biodiversity Dynamics (CBD). Other examples include the development of an uncrewed sampling vehicle for microplastics and aquaculture research, together with online tools to assess the risk of micro-, nano- and macro-plastics toxicity and a board game which can be used for educational purposes, in the context of natural resource management, as well as allowing engagement with stakeholders and policy makers in this sphere. The final example provided is a commercialisation project, which is aimed at providing a pipeline for clinical decision support in the context of cancer treatment, but with other potential utilities in new drug target combination discovery.

Regarding training and mentoring, there appears to be a lack of uniformity in the provision of career development opportunities throughout IBI. From the expert panel reports on the IBI research groups, there was a lack of specific detail provided regarding career development practices in a number of these groups.

5. Relevance to society

IBI's research activity is connected to "Seas and Oceans" and Climate, the environment and clean energy, and thus to the Norwegian long-term plan for research and higher education 2019-2028. However, there is a lack of clarity regarding how specifically they are connected. IBI does however provide details on how its development of high-quality research groups, through the Centre for Biodiversity Dynamics and recruitment of high-quality researchers through RCN and EU programmes, aligns with the Norwegian long-term plan of developing research communities of outstanding quality. IBI also provided information about how they are contributing to some of the UN's Sustainable Development Goals, specifically Zero hunger (SDG2), Climate action (SDG13), Life below water (SDG14) and Life on land (SDG 15). Nevertheless, overall there was a lack of specific detail regarding how IBI is actively contributing to the long-term societal development of Norway. This is reflected at least in part in an average score of 3 for the six IBI research groups; which means that as a whole the IBI's contribution is on a par with what is expected from groups in the same research fields.

The contribution of societal partners in the research process within IBI is quite modest, with very limited evidence of user involvement in the co-development of research. This was particularly evident for the CBD group. Notwithstanding their work highlighted in impact case 1, the expert panel felt that their "contribution to broader societal goals could be stronger".

Five interesting case studies were presented by IBI to highlight the contribution that their research has had on economic and societal development both nationally and internationally.

Impact case 1

This impact case has some societal relevance and while sources to corroborate the impact of the work were provided, more precise detail could have been provided on the specific societal benefits of this particular impact case. This impact case is based on the use of quantitative methods that the Centre for Biodiversity Dynamics (CBD) at IBI have developed for analysing dynamic processes in nature. These methods can be used to assess environmental risks to biological diversity. The researchers have developed a two-dimensional risk classification scheme allowing the grouping of different species into risk categories. This has been used in the criteria for risk assessment of alien species in Norway, in the blacklisting of various species and in management actions to reduce the invasion of harmful alien species into Norway. Another example of the use of these methods is in developing strategies to reduce the impact of Chronic Wasting Disease on wild reindeer populations at Hardangervidda. This impact case also described how CBD has been involved in evaluating how remote sensing data can be employed to predict the occurrence of rare and vulnerable bird species.

Impact case 2

This was a particularly impressive impact case with high societal relevance and was based on collaborative interactions that IBI has with researchers in the northern Serengeti in Tanzania, focusing on assessing the impact on wildlife and biodiversity of diverse types of land use, such as the construction of roads. Part of this impact case involved the AfricanBioServices project which together with other projects has also helped to raise the scientific capacity of both academics and local stakeholders, predominantly in Tanzania, but also in other countries. From 2011-2022, thirteen Tanzanian PhDs and fourteen Master students have graduated, with many of these students currently involved in senior positions in the Conservation and Education sectors. The provision of African based researchers and stakeholders with the capacity and knowledge to discuss and make informed decisions on the management of their local natural resources will ensure a powerful societal impact into the future.

Impact case 3

The societal impact of this case study was very clearly articulated. The impact case focused on how poly- and perfluorinated substances (PFASs) from skywax and flame-retardant foams (AFFFs) can have a detrimental effect on the health of birds, and bank voles in skiing areas. Details were provided on the underpinning research by the ENVITOX group in this area. This work has not only led to an increase in public awareness of the problem, but has also helped in developing regulations for both PFASs and AFFFs within Norway and Europe. In addition, the group's work on plastics is helping with inputs into the global regulations such as the Stockholm Convention and in the regulation of microplastics in Europe were highlighted and is therefore of high societal relevance.

Impact case 4

The current and ongoing societal impact of this impact case was very clearly articulated. It was based on "Bridgehead Aquaculture" which is a regional knowledge platform involving several stakeholders to facilitate the exchange of both practical and theoretical knowledge with the aquaculture sector. IBI together with other relevant stakeholders are aiming to

increase the relevance of the aquaculture business to students in education and to recruit researchers to the marine sector - particularly in the technology and engineering areas - and thereby reinforce research-based expertise in the seafood industry. How “Bridgehead Aquaculture” links to the UN SDGs was also addressed.

Impact case 5

The economic impact of the case study was very clearly articulated and involved work by the lipid signalling group at IBI and was based on the development of chemical compounds that selectively inhibit the phospholipase A2a enzyme. Details were provided regarding how these compounds can be used therapeutically in the treatment of psoriasis and Actinic keratosis, for which phase IIA clinical trials have demonstrated proof of concept. A new clinical trial is also underway for skin cancer and the group also plan to conduct similar tests for leukemia. The company Coegin Pharma was subsequently formed and is currently valued at 400M SEK. Two other related companies, Avexxin Oncology and Recurra Therapeutics, have also been formed from this core company, to undertake work on Leukemia and Basal cell carcinoma respectively using different molecular based tools. A clear future business model for the company was presented.

Appendices

List of research groups

Institution	Administrative unit	Research group
NTNU	IBI	*Multiscale biology (MSB)* *Environmental Toxicology (ENVITOX)* *Marine Sciences* *Centre for Biodiversity Dynamics (CBD)* *Animal Physiology Section* *MOLSYSBIO*

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 documentary review, the Committee held a meeting and discussed 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 two weeks before the interview.

Following the documentary review, the Committee interviewed the Administrative Unit in an hour-long virtual meeting to fact-check the Committee's understanding and refine perceptions. The Administrative Unit presented answers to the Committee's questions and addressed other follow-up questions.

After the online interview, the Committee attended the final meeting to review the initial assessment in light of the interview and make any final adjustments.

A one-page summary of the Administrative Unit was developed based on the information from the self-assessment, the research group assessment, and the interview. The Administrative Unit had the opportunity to fact-check this summary. The Administrative Unit approved the summary without adjustments. The Committee judged the information received through documentary inputs and the interview with the Administrative Unit sufficient to complete the evaluation.

The Committee judged that the Administrative Unit self-assessment report was insufficient to assess all evaluation criteria fully. However, the interview with the Administrative Unit filled gaps in the Committee's understanding, and the information was sufficient to complete the evaluation.

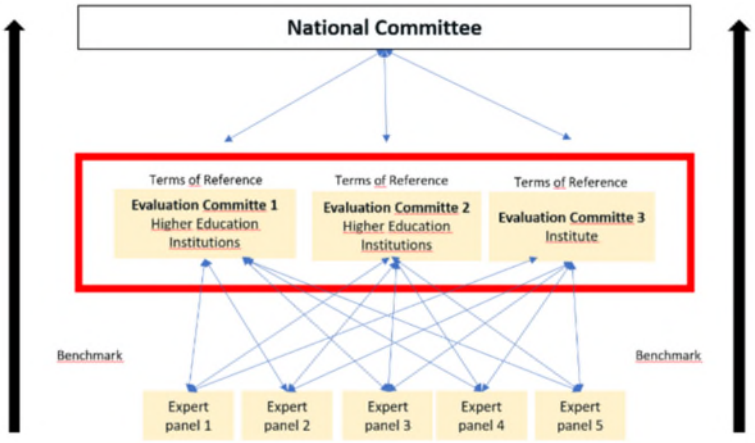
Evaluation of Biosciences 2022-2023

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

The Research Council of Norway
Visiting address: Drammensveien 288
P.O. Box 564
NO-1327 Lysaker

Telephone: +47 22 03 70 00
Telefax: +47 22 03 70 01
post@rcn.no
www.rcn.no

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

Oslo, 5 April 2022

ISBN 978-82-12-Klikk her for å fylle ut (xxxxx-x). (pdf)

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.

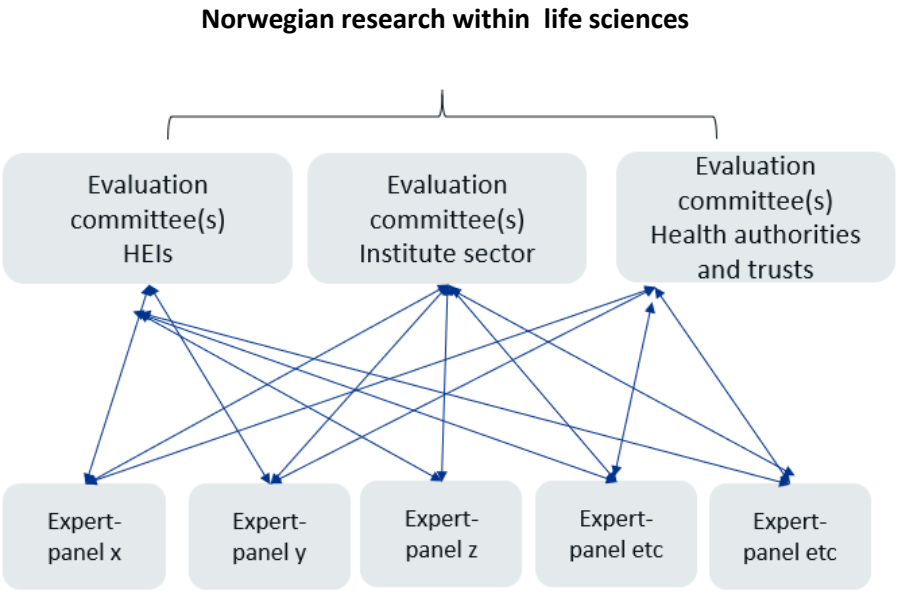


Figure 1. Evaluation committees and expert panels

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.

Forskningsrådet

Norges forskningsråd
Besøksadresse: Drammensveien 288
Postboks 564
1327 Lysaker

Telefon: 22 03 70 00
Telefaks: 22 03 70 01

post@forskningsradet.no
www.forskningsradet.no

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