

Evaluation of Life Sciences 2022-2024

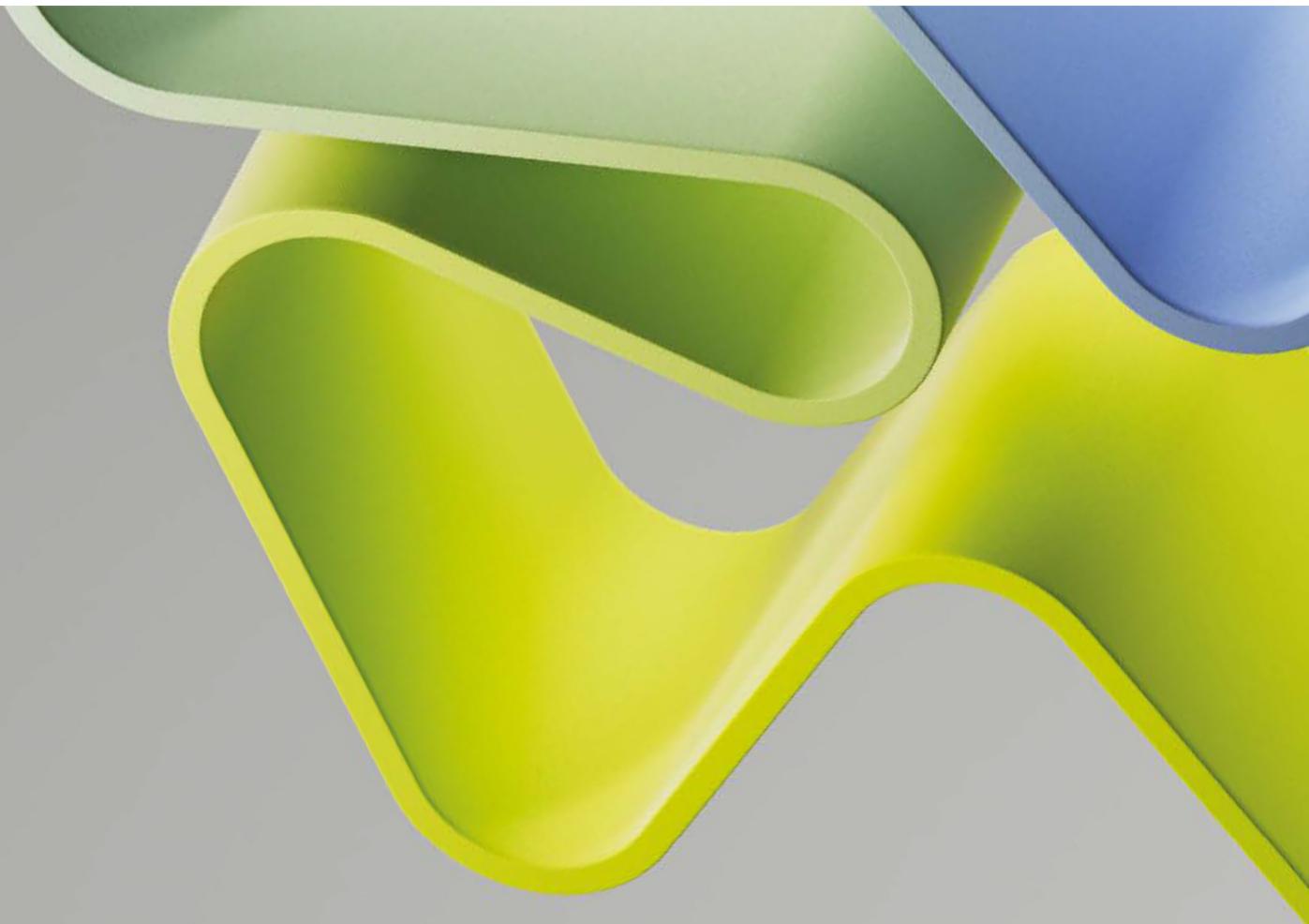
Evaluation of Biosciences 2022-2023

Evaluation report

Computational Biology Unit (CBU)

University of Bergen (UiB)

December 2023



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Statement from Evaluation Committee 2

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

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

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

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

Evaluation committee 2 consisted of the following members:

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

Professor
Caroline Austin,
Newcastle University

Professor/Pro-Dean
Ade Whitehouse,
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Lena Mäler,
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Nico P.E. Vermeulen,
Vrije Universiteit Amsterdam

EM. Professor/Director
Lene Lange,
Technical University Denmark

Adjunct Professor, dr.
Pikka Jokelainen,
Statens Serum Institut

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

Oslo, December 2023

Profile of the administrative unit

In 2021, the Computational Biology Unit (CBU) had a total of 50 employees, out of which nine were professors/associate professors, 12 were postdocs, 13 were PhD students, four were researchers, eight were senior/chief engineers, and four were (senior) advisors. Women were a minority in all categories except for (senior) advisors who were all women.

CBU is comprised of one research group, the Computational Biology Unit.

CBU follows the strategy described in its Strategy Plan 2020-2025, further concretised in the Research Plan approved to the Trond Mohn Foundation and last updated for the 2023-2026 period.

CBU conducts basic and applied research with a focus on methods development and is organised in seven priority areas: high-fidelity molecular modelling, mathematical modelling, marine systems biology, precision medicine, women's health, RNA biology and e-infrastructure. According to the self-assessment, the focus on methodology enables interdisciplinary collaborations on medical and biological questions.

CBU colocalises 11 principal investigators (PIs) – and their research teams – from different departments, enabling research collaborations that might not have been established otherwise. In addition, master's students are co-supervised by two PIs on projects that explore new collaborations.

Beyond the indirect impact of novel published methods in several subdisciplines of computational biology, CBU aims at having an impact on research in the life sciences through its online tools and collaborations with lab-based groups. CBU contributes to advances in personalised medicine and innovation through, for example, its engagement in large centres (Centre for Cancer Biomarkers and Neuro-SysMed; Centre for Digital Life).

As a higher education institution (HEI), CBU strives to follow the four overall goals for HEIs that receive public funding: high quality in research and education, research and education for welfare, value creation and innovation, access to education and efficiency, diversity and solidity of the higher education sector and research system. In relation to this, CBU in its self-assessment states that the unit conducts research at a high international level, as demonstrated by the timeliness and relevance of the research focus, by the Unit's ability to attract competitive external funding and by its publication record in top-tier computational biology and life science journals. The self-assessment also states that CBU contributes to popular science dissemination, for example in a yearly national science event that lasts for 2 days in downtown Bergen and targets school pupils and the general population. Examples of activities include an introduction to DNA sequence alignment using Lego bricks, gene bracelets using coloured pearls and drug-receptor recognition using virtual reality. CBU has also participated in Arendalsuka, the largest political gathering in Norway held annually since 2012 and been interviewed by research publications in Norway.

According to its self-assessment, CBU in the future might take more advantage of being a cross-faculty and cross-department centre, facilitating transdisciplinary research through a diverse team of PIs with different backgrounds and expertise, applying for Research Council of Norway (RCN) calls to support its most ambitious research as a centre and engaging as a partner in RCN calls for multidisciplinary large-scale research projects.

Overall assessment

The overall assessment considering the Terms of Reference provided by the Unit is that the Computational Biology Unit at the University of Bergen (UiB-CBU) understands and lives its role as a Centre of Competence for computational biology in Norway and overall gives a very positive impression. Their organisational structure as a matrix organisation to the university departments is conducive to interdisciplinary research and rather unique in the Norwegian life sciences. The people at the unit seem very motivated across all career stages and clearly identify with the unit. This created a unique spirit and atmosphere with a strong sense of belonging and direct contributions to personal careers, as evidenced by the strong mentoring system and success at the unit. A matrix organisation, however, is not free of risks, and mitigating them will be an important challenge for the unit going forward.

Another key challenge is maintaining (or reclaiming) the pioneering scientific role of the unit. The unit was founded when computational biology was still a niche. They were pioneers. In the past decade, however, computational biology has become mainstream with many new and outstanding centres internationally. The unit has to make sure they maintain a strong and visible presence in the forums, organisations, conferences, and publication outlets that crystallised around the global computational biology community.

The unit has contributed to the development of the field in several internationally visible research projects and a growing stream of well-cited publications. The external funding record is very good with about 50% of the unit's budget from competitive external schemes, 10% from EU sources. The unit's outstanding research has received a top level of international visibility and recognition. Further sharpening and focussing of their research topics will, however, be required to maintain their acclaim in the rapidly growing international computational biology community. The Scientific Advisory Board of the unit could help by providing a strong outside view.

A strong UiB-CBU will be essential as the Norwegian economy is expected to transform in the coming decade, and there are several great research projects in Norway that are already developing the sustainable and circular bioeconomy of the future. Providing them with the computational tools they need could present a window of opportunity.

Overall, this unit has been very successful and is well positioned to shape its future in order to maintain the high level of quality and international visibility.

Recommendations

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

The unit is recommended to:

- Start work immediately on its follow-up strategy and negotiate sustainable support beyond 2026. Make use of Research Council of Norway (RCN), UiB and national strategic plans when doing so.
- Develop a stronger and more integrated research vision in light of growing international competition, with more focus in methods or biological application. At the same time, the unit could better network with other top computational biology places. Identify and learn from international benchmark institutions.
- Further develop the organisational matrix structure to ensure its long-term sustainability in terms of core funding, support from the home departments, flexibility and ownership in teaching, and control over hiring decisions. For this, it could be key to have the head of the hosting department actively involved in the unit.
- Consider ways the home departments could specifically support research synergy and collaboration, for example by providing shared positions between the unit and collaborators in the departments.
- Consider growth carefully with good planning and guidance without harming the unit's unique spirit and culture.
- Strengthen the capacity to attract international funding, for example European Research Council (ERC) grants.
- Increase the fraction of publications in core computational methods venues in order to build a reputation and track record in this now well-established discipline.
- Pay attention to the funding situation of the service and technology parts, for example long-term support and maintenance of software, which are vital for the Norwegian life sciences moving into the digital age.
- Consider building their own mentoring structures for PhD candidates, postdocs and junior PIs to create more homogeneity within the unit and a stronger sense of support and community.
- Consider PhD graduations at the unit and ways to grow in this category.
- Be more proactive in external communication, e.g., by having a Wikipedia page, social media presence, etc. This is important to attract national and international students.
- Consider playing a more active role in fuelling the transformation of the Norwegian economy by providing computational methods and commercialising them with a stronger focus on disruptive machine learning (ML) and artificial intelligence (AI) methods.
- Be self-confident in advertising the success model, helping others form similar internationally visible cross-department centres in areas where Norway is strong (for example arctic marine biology).

1. Strategy, resources and organisation of research

The unit is composed of people who spatially sit together and identify as one group but are administratively assigned to different departments. Such matrix organisations are commonly used in universities to establish interdisciplinary centres. They provide clear advantages in terms of structural agility, research synergy, catalysis of novel ideas, and they tend to be popular with students. The matrix organisation, however, also comes with a set of risks with regards to sustainability, governance, and funding of the unit. A key factor is the maintenance of good terms with the home departments. While this typically works initially, when the founding members of the unit are still around, everybody is friends with each other, and the unit is small and light, there is a risk in the long term. Mitigating this risk requires well thought-through cooperation agreements and participatory structures and decision-making bodies. The UiB-CBU unit is well underway here, but putting its long-term existence on solid ground will require changes in the funding structure, such as more focus on international funding sources, more clarity in its governance, as well as a coherently focussed research strategy that creates tangible benefits for the home departments.

1.1 Research Strategy

The unit has a complete and detailed research strategy until 2026, which is available in writing. According to that strategy, the unit understands its role as a Centre of Competence for computational biology in Norway and aims to be a world-leading centre in computational life sciences by 2025. The unit is well networked both on the national (e.g., Digital Life Norway) and European levels, where it serves as the Norwegian node in the EU Bioinformatics Network ELIXIR.

The unit combines basic and applied research with a focus on computational methods development. It is organised in seven research priority areas. Each of those areas, however, is vast in itself, and their number is almost as large as the number of PIs. It is therefore questionable how much actual focus this brings. Focussing is difficult because computation is a universal paradigm. *Given the small size of the unit, it will be their main challenge to generate and leverage synergy between the PIs and place visible emphasis on topics that define the unit's perceived profile.* This will be important, however, to generate critical mass and a more integrated training/teaching environment. One way could be to focus on emerging topics in ML/AI, as also recommended by the Expert Panel.

The unit was able to attract significant strategic funding from the Bergen-based Trond Mohn Foundation, which enabled them to hire five additional group leaders in 2018/19. Hiring decisions were made by the home departments, but the unit's board oversaw the topic strategy. Not having full control over hiring decisions might be a strategic risk the unit may need to streamline in the future.

1.2 Organisation of research

The administrative unit consists of one group in an organisational matrix structure. The group consists of 11 PIs (10 research, 1 infrastructure) with home affiliations across five departments of UiB. In addition, CBU introduced associate group leaders in 2019, of which there are currently 3, to expand into new topics. All PIs maintain primary affiliations with their respective home departments, but their workplaces are co-located in a common space hosted by the department of computer science. This spatial proximity is key to success. It enables collaborations across departments that would otherwise be less likely to happen. The matrix organisation has been working well for the unit, mainly because the unit is small, and all PIs know each other. The model may not be scalable, though. Growth therefore is to be considered carefully and needs planning and guidance to maintain the unit's unique research culture.

Each PI is responsible for overseeing the work in their team and for attracting external funding. They do, however, interact very closely, for which the unit has established several mechanisms (bi-weekly PI meetings, strategic board meetings twice a year, annual PI retreats, weekly research seminars).

This is excellent and conducive to interdisciplinary research. Importantly, the unit has its own governance structure and own Scientific Advisory Board, which is extremely good and sets an example for many other places.

1.3 Research funding

The unit is administratively supported by the home departments. A dedicated coordinator is hired by the Department of Computer Science. This is very good. The unit is strong in attracting external funding with 50% of its overall budget from competitive external sources. These funds are effectively used toward research with only 25% overhead. Salaries of PIs are covered by the home departments, which, in addition to administrative support, also occasionally provide in-kind contributions in the form of PhD candidate positions. This is a standard setup for interdisciplinary centres like this and is implemented very effectively and efficiently here.

Five group leaders and six PhD candidates are paid by one large grant from the Trond Mohn Foundation, which is set to end in 2026. This creates an existential risk for the unit, which must be mitigated given the importance, success and visibility of the unit's research. One strategy could be to focus more on EU/ERC funding, while the unit is currently mostly strong in attracting national funds (90% national, 10% international). *A higher fraction of international funding will be crucial, not only for survival, but also for international recognition and visibility.*

The low level of basic research and research infrastructure funding in Norway is a clear threat, also identified by the administrative unit in their self-assessment. In light of this, every opportunity should be explored to negotiate ongoing support with the Foundation, the university, or the home departments. *Given the timeline, this is something the CBU's management should clarify soon.* This could include a separate core budget for the unit, for example from grant overheads, which would alleviate the precarious funding situation for CBU's service and technology parts. It is also an opportunity for CBU and the departments to think of new schemes to support synergistic work, for example by providing funds for joint projects.

1.4 Use of infrastructures

CBU makes very good use of several infrastructures, including a common IT infrastructure in collaboration with the Department of Computer Science, which provides local servers and storage. *A sustainable organisational concept for computing and storage seems to be lacking, though, which is something that should be addressed.* Crucial high-performance computing and storage resources are provided by Sigma2/NRIS (Norwegian Research Infrastructure Services) at no cost, upon positive evaluation of a proposal. NRIS participates in PRACE (Partnership for Advanced Computing in Europe) and EuroHPC (European High-Performance Computing Joint Undertaking). *This will be existential for CBU to maintain also in the future and the costs should be clarified in the long term.*

Laboratory space is made available for conducting occasional experiments at the departments of biosciences and chemistry, as well as at the Sars Centre (International Centre for Marine Molecular Biology) partnered by the European Molecular Biology Laboratory (EMBL) as the Norwegian node of ESFRI EMBRC (European Strategy Forum on Research Infrastructures - European Marine Biological Resource Centre).

The unit also makes very good use of shared platforms, including the proteomics facility of UiB (PROBE/NAPI), the DNA sequencing facilities of the National Consortium for Sequencing and Personalised Medicine (NorSeq), recirculating aquaculture systems (RAS-lab) at Stiftelsen Industrielaboratoriet (ILAB), and the Norwegian nuclear magnetic resonance (NMR) Platform (NNP). They also use the HUSK national registry (The Hordaland Health Studies).

This is outstanding and provides UiB-CBU with the equipment it needs to perform research on the highest level of quality. Crucially for computational work, it provides the unit with real biological data

and experimental means of validating and verifying computational predictions. This interplay between experiment and computation is mandatory.

1.5 National and international collaboration

UiB-CBU is nationally and internationally very well connected, as evidenced by more than half of the publications involving external co-authors (70% international, 57% national). Given its small size, UiB-CBU also boasts an impressive number of research collaborations both nationally (e.g., UiO, NTNU, UiT, FHI, SINTEF, NIVA among others) and internationally (EMBL, European Bioinformatics Institute (EBI), Zuse Institute Berlin, University of Geneva, German Cancer Research Center (DKFZ), Mount Sinai Hospital, Roche). In many instances, the unit leads the collaboration or a work package. This includes Digital Life Norway (data and models lead), the National Consortium for Research in AI (NORA), where a unit PI is chairperson of the board, and E-INFRA Uninett Sigma2 (data management and storage infrastructure for life sciences, since 2011), where UiB-CBU scientists served on the board and co-authored the original grant.

UiB-CBU leads the Norwegian node of the EU Bioinformatics Network ELIXIR, an ESFRI Roadmap Infrastructure. ELIXIR Norway additionally includes 4 other Norwegian universities (UiO, NTNU, UiT and NMBU). It provides data management and analysis, as well as training and support to life scientists across Norway.

Remarkably, there is almost no collaboration with industry (only one mention in Form 12). While it is true that Norway has relatively few companies in the pharmaceutical and biotechnology sectors, and this could be a threat to the unit, computational biology and research are international.

Internationally, the unit is also very well connected, e.g., to EMBL (one of the unit's PIs is the Norwegian delegate in the EMBL council) and European Molecular Biology Organization (EMBO), where they co-organised and participated in various workshops and events. The unit also actively promotes interdisciplinary research at the institutional level, e.g., in the Centre for Cancer Biomarkers, Centre for Data Science, and Centre for Translational Epidemiology. This is outstanding community engagement.

1.6 Research staff

UiB-CBU provides a collaborative environment with tight interaction between the PIs, including annual retreats and mutual help, e.g., with proposal writing and proof reading. All researchers have a large portion of their time available for science (PIs: 46%, PhD candidates and postdocs: >75%, permanent researchers: 100%). Senior scientists embedded in the research teams operate infrastructure and services. The unit supports promising early career researchers in applying for funding to start as independent PIs. All PIs hired at the unit as associate professors have been promoted to full professors in the evaluation period. This is exemplary.

There seem to be relatively few staff members dedicated to operating, developing, and maintaining software and computational infrastructure, though. *The sustainability of these vital services should be addressed together with the Department of Computer Science and external parties.*

Mentoring of students, PhD candidates, and postdocs is outstanding and follows the most stringent international standards. All PhD candidates are enrolled in structured programmes providing them with mentoring, training, and an independent second supervisor. All postdocs have career development plans and an assigned mentor different from their supervisor. MSc students are typically supervised by two PIs, and teaching activities are overseen by a programme board.

The unit provides superb mobility options with attractive destinations (e.g., University of California, San Diego, University of Michigan, University of Massachusetts Amherst, Alan Turing Institute) and generous Sabbatical regulations (of note, female associate professors can apply after half the accrual period).

Regular social activities by and for PhD candidates and postdocs conclude the overall very positive impression.

2. Research production, quality and integrity

The research group of the administrative unit has been evaluated by an expert panel, whose evaluation summary and performance scores are included below after a spelling and language check.

UiB-CBU performs high-quality research of international calibre and received very good scores from the expert panel. The only dimension not rated at maximum grade is “societal impact”. But that is still extremely good for computational work, which always has indirect impact by catalysing other research.

From the NIFU report, UiB-CBU has on average 3 publications per PI and year, which is good. Both the number of publications and the author shares have increased since 2015. Their parallel increase indicates that the involvement of the unit in collaborative work has been consistent. In 2016, the unit achieved a spectacular 30% share in the 10% most cited publications, which is on par with the best computational biology places in the world. Since then, however, both the impact share (2020: 6.4%) and the cite score have declined (from 548 to 97, Norwegian average: 120), which, together with the overall larger number of publications, could hint at increasing international competition. The unit has a good international co-author share (>70%), which was also more or less stable over the years, showing active international collaborations. The fraction of publications with national co-authors seems to have a declining trend, from around 90% before 2017 to 60-80% since.

UiB-CBU's research clearly contributes to advancing the discipline but falls short of being “world-leading” (a strategic goal for the unit by 2025) when compared to benchmark computational biology places in terms of both visibility and publication output. *In the current environment of strong and growing competition (e.g., Flatiron Center for Computational Biology, Center for Systems Biology Dresden, Centre for Systems Biology Edinburgh, Howard Hughes Medical Institute Janelia Farm, Chan Zuckerberg Biohub), the unit should sharpen its research profile to ensure its visionary role in the next decades.*

UiB-CBU follows and actively promotes all measures of research integrity and ethics and has guidelines and training in place for safeguarding good scientific practice, which is excellent.

2.1 Research quality and integrity

Computational Biology Unit research group – overall assessment by Expert Panel 4b

The group has strong and competent leadership that has led the expansion through new external and university funding that has led to the excellent and international competitive position they hold now. Now is the time to further capitalise on this and acquire competitive international funding so as to maintain their excellence in the area of computational biology that is growing ever in the view of massive data explosion, genome editing, predictive modelling and artificial intelligence.

2.2. Open Science

UiB-CBU thoroughly follows open-access (OA) and FAIR principles (Findable, Accessible, Interoperable, and Reusable) and routinely uses open science repositories like zenodo, github, the National Infrastructure for Research Data, the European Nucleotide Archive, Genbank, Short Read Archive, etc. Computer codes are made available as open source by principle. The fraction of publications that are openly available, either by self-archiving or as Gold OA, has continuously increased over the years and been practically 100% since 2019. This was made possible by actively encouraging researchers to prefer OA routes and central coverage of OA fees by UiB. *This is very good and should be continued.*

UiB-CBU is a strong proponent of FAIR principles in research data management, in particular for computer codes, and actively lives this vision. All research projects at the unit have to have a data management plan and deposit all non-sensitive data in the open research data repository of UiB. This is also very good and follows the highest international standards.

Open reviews are conducted as needed, and there is a seminar series by the UiB Library on Open Science and Data Management that is available to all staff. This seminar series is a clear asset and unfortunately not commonplace. *The administrative unit should make good use of this resource and motivate all of its researchers, but also students, to attend such seminars.*

Openness in innovation is promoted and IP rights protected with an IP retention plan. Educational resources are shared in a central open digital platform of UiB, and the university library actively experiments with citizen research and crowdsourcing. This could be a valuable resource for the unit to tap into, as machine-learning approaches become state-of-the-art in computational biology but require annotated training data. There is a prime opportunity to engage in crowdsourcing here.

As per UiB regulations, employees own the rights to the results they generated unless otherwise required by statutes, contract or law. All employees of UiB are subject to obligatory confidentiality according to the Public Administration Act. These are all standard legal requirements, which the unit follows.

Overall, UiB-CBU follows all current national and international provisions and has demonstrated a clear emphasis on open science and FAIR research data management. This is very good and on par with the best places internationally.

3. Diversity and equality

UiB-CBU actively promotes diversity and equality and follows the UiB Diversity and Inclusion Action Plan, for which the university received the HR Excellence in Research Award 2019. In addition, the unit participates in the GenderAct project of the Faculty of Mathematics and Natural Sciences, working toward “long-term, sustainable gender balance at the faculty through both cultural and structural change.” The Department of Computer Science, which hosts the unit administratively, has had an action plan for gender equality and inclusion since 2022.

These engagements seem to pay off for the unit, as it has overall good gender balance given the computational methods focus of its research. The unit was able to improve gender balance with three (out of 5) female group leader recruitments in 2018/19. The only point of concern is the low share of women among postdocs (17%). The unit is on a good pathway to address this, through active postdoc networks, women’s networks, social activities, and retreats.

The unit has also been shown to be an attractive place for international scientists, as evidenced by 18 countries from four continents represented at the unit. It is very good that internationality is

matched by a high diversity of educational backgrounds, uniting researchers from chemistry, physics, mathematics, computer science and biology. This shows that the interdisciplinary concept of the unit works in practice and is attractive to international scientists.

4. Relevance to institutional and sectorial purposes

UiB-CBU is highly relevant to institutional and sectorial purposes of a HEI. It performs very well in research, teaching, external funding acquisition, career development, and industry collaboration. Its work in the area of computational biology has a direct and essential impact onto developing the Norwegian life sciences into the digital era. The software tools and services developed and hosted at the unit are used by >1500 scientists in Norway and provide an essential basis for Norwegian research. The unit leads the national ELIXIR node of Norway and is involved in several other data infrastructures both on the national and European levels, as outlined above. Importantly, the unit represents Norway in international organisations such as EMBL and actively engages in linking Norwegian science with the rapidly growing international computational biology community.

UiB-CBU also plays a leading role in educating the next generation of life scientists in digital and computational skills at UiB, already at the bachelor's level. The unit leads the development of a teaching portfolio for computational life sciences across all participating departments and in collaboration with the Centre of Excellence in Education of UiB's department of biological sciences. Importantly, the unit also aims to provide biology education to ICT students, which is crucially important for them to carry environmental awareness and knowledge of bio-economic prospects into their future careers. This goes to show that the unit very well understands the bi-directional nature of interdisciplinarity, which is to be explicitly commended.

UiB-CBU has also been productive and successful in PhD candidate training, albeit 2-3 PhD graduations per year is not a lot for a group of 11 PIs. This could be an opportunity to grow. But it could also hint at a structural problem in the Norwegian system with PhD candidates and postdocs essentially costing the same, putting the more mentoring-intensive PhD candidates at a disadvantage. The unit is, however, in a prime position to shape PhD education in the area of computational life sciences, as members of the unit lead NORBIS, the national PhD research school in bioinformatics, biostatistics and systems biology. This role could likely be put to more active use.

The unit actively contributes to science communication, citizen science, crowdsourcing, and other formats that engage the general public. This includes the Bergen Science Fair, panel debates, industry days, events for politicians, and even a movie festival. This is outstanding.

5. Relevance to society

Societal relevance of computational work is always indirect, but it provides the necessary basis for the data-driven, digital and AI-enabled future of society, medicine and industry. As such, its importance cannot be underestimated. The unit has already demonstrated that they actively contribute to this, for example by advancing personalised medicine through the development of novel computational methods in the Centre for Cancer Biomarkers and the Centre for Neuro-Systems Medicine. *However, UiB-CBU could focus more on emerging and disruptive technologies, for example in the area of ML/AI to maximise their societal relevance.*

A more direct societal impact is achieved by the UiB-CBU's infrastructure work. The unit coordinates and leads national e-infrastructure development and has a central role in the development and teaching of a portfolio of computational life science courses as well as the PhD research school

NORBIS. The unit operates the Norwegian ELIXIR node for bioinformatics and data services, which has had tremendous societal impact, e.g., through its COVID-19 workflows.

The unit participates in the Digital Life Norway Centre for biotechnological innovation and supports commercialisation of promising projects. This has led to 20 publicly available software packages, but no patents or spin-off companies so far. Here, UiB-CBU is hampered by the lack of strong a biotechnology or pharmaceutical industry in Norway. However, the unit is advised to creatively think about how to contribute in the future. The Norwegian economy is expected to transform in the coming decade, and there are several great research projects in Norway that already now develop the sustainable and circular bioeconomy of the future. Providing them with the computational tools they need could present a unique window of opportunity. The unit currently leads three technology-transfer projects, which is a promising start.

Overall, the work and results of the UiB-CBU are aligned with the Norwegian long-term plan for research and higher education, in particular its Technology Initiative. The unit conducts high-quality computational research for the life sciences, it is responsible for both a bachelor's and a master's programme in this important area for the future development of society and industry. The unit has been successful in applying its basic research in collaboration with both academic and industrial partners, contributing directly to national societal needs and UN Sustainable Development Goals (SDGs), particularly SDG2 (sustainable agriculture) and SDG3 (good health and well-being).

Comments on impact case 1 – ELIXIR Norway

The impact case provided describes the development of the Norwegian ELIXIR node from 2012-2021. ELIXIR is a European bioinformatics infrastructure hosted at EMBL-EBI. The Norwegian node is hosted at UiB-CBU and coordinated by the unit's infrastructure team since 2012. It is the direct successor of the FUGE (functional genomics research) technology platform for bioinformatics, which was hosted at the unit since its inception in 2002.

The impact case describes the development of the Norwegian research data management tool chain, including a data stewardship wizard, workflow engine and meta-data search. This implements FAIR principles for all Norwegian researchers in the life sciences. The success of the platform was impressively demonstrated during the COVID-19 pandemic. The unit then enabled the National Institute of Public Health (Folkehelseinstituttet, FHI) to store and share Norwegian viral sequence data in the open European Nucleotide Archive (ENA). A data workflow was implemented from regional hospitals to FHI and further to ENA. The unit also regularly met with the European Commission to discuss sharing of molecular COVID-19 data.

This impact is documented in numerous web pages, news articles, and software repositories, as well as two general scientific publications. *Going forward, it is expected that such data infrastructures will be of increasing importance, but in the future, they should be extended from purely scientific data to data for public policy making. The unit could play a pivotal role in this.*

Appendices

List of research groups

Institution	Administrative unit	Research group
University of Bergen (UiB)	Computational Biology Unit (CBU)	Computational Biology Unit (CBU)

Methods and limitations

Methods

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

The documentary inputs to the evaluation were:

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

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

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

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

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

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

Limitations

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

Evaluation of Biosciences 2022-2023

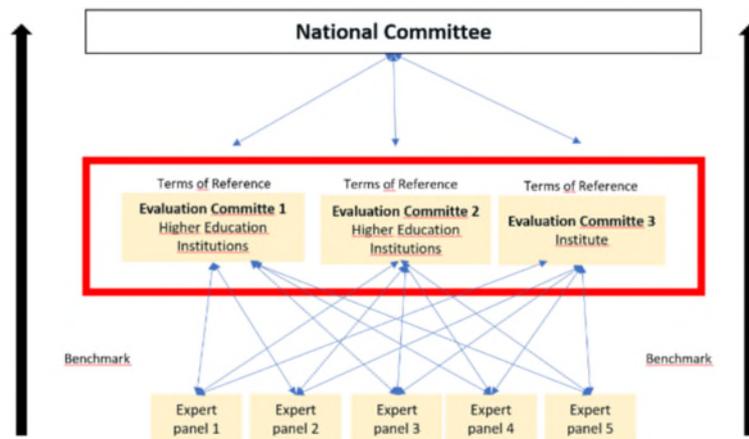
By evaluating Norwegian research and higher education we aim to enhance the quality, relevance, and efficiency. In accordance with the statutes of the Research Council of Norway (RCN), the RCN evaluates Norwegian professional environments to create a solid and up-to-date knowledge base about Norwegian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

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

Evaluation of biosciences (EVALBIOVIT) 2022-2023

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

Organisation of evaluation of biosciences research 2022 - 2023



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

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

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

The web page for the evaluation of biosciences 2022-2023:

<https://www.forskningsradet.no/en/analysis-numbers/evaluations/subject-theme/biosciences/>

Til innmeldte administrative enheter til
fagevaluering av biovitenskap (EVALBIOVIT)

Vår saksbehandler/tlf.
Hilde D.G. Nielsen/4092 2260

Vår ref.
21/10653
Deres ref.

Oslo,
21.04.2022

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.

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 egevaluering 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 enheten¹ 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

Evaluation of life sciences in Norway 2022-2023

LIVSEVAL protocol version 1.0

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

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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.

<i>Administrative unit</i>	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.
<i>Research group</i>	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 Reference¹ 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 colleges²

- 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 sector³ 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 (RHF) in Norway. They are responsible for the specialist health service in their respective regions. The RHF 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 (HF), 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 main 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.

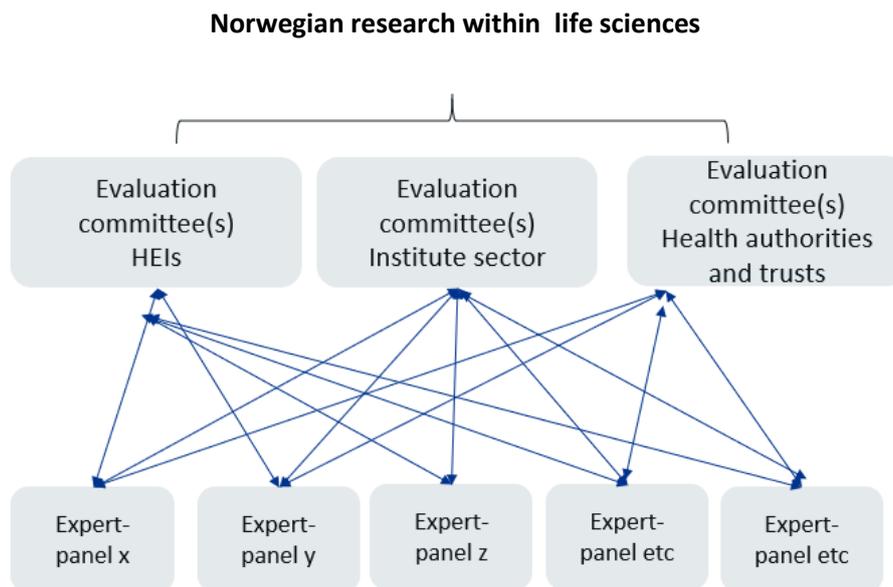


Figure 1. Evaluation committees and expert panels

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

Criteria	Evaluation units	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		<i>Data related to: Benchmark defined by administrative unit</i>	<i>Data related to: Strategic goals and specific tasks of the admin. unit</i>



**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 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.forskingsradet.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-principles⁴ (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 objectives⁶ 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 to 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 politikktutforming og bidra til bærekraftig utvikling og omstilling, gjennom forskning av høy kvalitet og relevans.» ([The government's strategy for an independent institute sector](#)).



Scales for research group assessment

Organisational dimension

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

Quality dimension

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

Societal impact dimension

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

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