Forskningsrådet

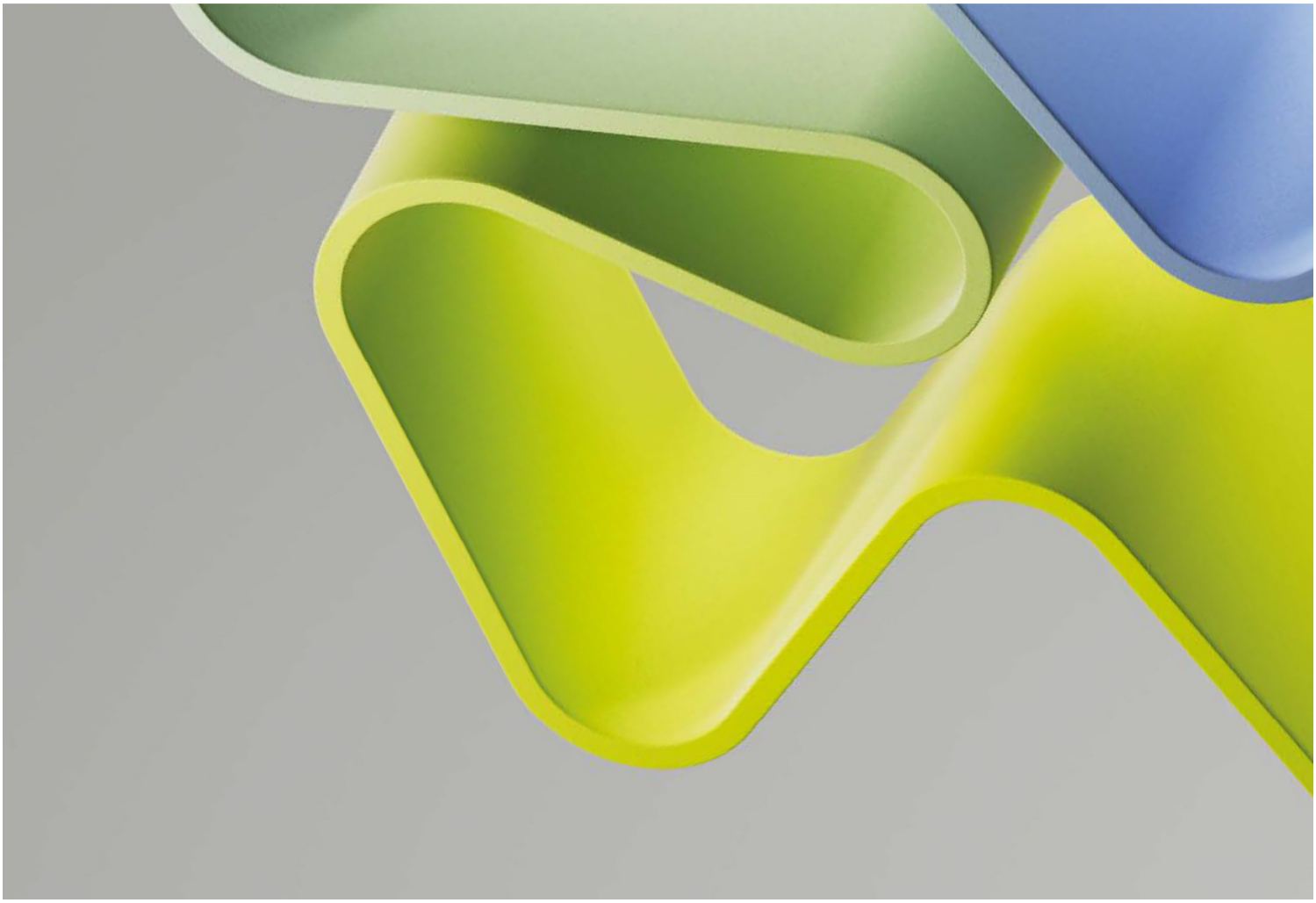
Evaluation of Life Sciences 2022-2024

Evaluation of Biosciences 2022-2023

Evaluation report

Norwegian Institute for Nature Research (NINA)

December 2023



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Statement from Evaluation Committee 3 (Institute Sector)

This report is from Evaluation Committee 3 which evaluated the following administrative units representing the institute sector in the Evaluation of Biosciences 2022-2023:

- Institute of Marine Research, Havforskningsinstituttet
- Norwegian Institute for Nature Research, NINA
- Norwegian food research institute, Nofima
- Norwegian Polar Institute, NPI
- Biotechnology and Nanomedicine (BTN), SINTEF Industry

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 3. All members of the committee have agreed with the assessments, conclusions and recommendations presented here.

Evaluation committee 3 consisted of the following members:

Visiting professor
Collin Moffat (chair),
Robert Gordon University

Professor
Barbara König,
University of Zurich

Professor
Bengt Persson,
Uppsala University & Karolinska Institute

Professor
Douglas McMillian
University of Kent

Geert van der Veen, Managing Partner, Technopolis Group, was the committee secretary.

Oslo, December 2023

Profile of the administrative unit

NINA's scientific staff consists of 270 employees out of which 12 are within the management, 70 are senior researchers, 109 are researchers, 22 are postdoctoral fellows and Doctor of Philosophy (PhD) candidates, 16 are scientific advisers and 41 are senior technicians and technician MScs. The sex-ratio shows a majority of men for all categories except the directorate.

There are twelve research groups at NINA relevant for the evaluation: Freshwater ecology, Salmonids, Coastal ecology and seabirds, Renewable energy, Terrestrial ecology, Pollination ecology and entomology, Cervids and domestic reindeer, Human-Carnivore coexistence, Restoration ecology and nature-based solutions, Nature in cities, Ecological condition and nature index and Innovative methods, GIS and big data.

NINA's goals 2020 - 2024 are divided into four main areas: Research, Benefit to society, Communication, and Organisation. NINA's core funding is used for activities that support the strategic plan, divided between the institute's strategic program (SATS) and NINA's professional development scheme (FU). NINA's mission is to contribute to sustainable development by delivering research-based and relevant knowledge about biodiversity, climate and society. The unit's researchers are active communicators in public media, bringing expert knowledge on NINA's fields into wider public debate, influencing and enhancing debate, civil society consensus, and policy outcomes. Departments and research groups create action plans with targets from the mission statement 2020 - 2024. Emerging central guidelines, parliamentary reports, and political priorities are continuously incorporated into NINA's plans.

In line with the requirements of being a Norwegian research institute, NINA strives to reach four goals[1]. In relation to this, NINA mentions in its self-assessment that its mission is to deliver applied ecological research to the environmental authorities and society. Since 1988, NINA has significantly increased the number of employees and its economic turnover. In addition, its research fields and position nationally and internationally have significantly expanded. The growth has been organic, caused by increasing demands and opportunities. The scientific staff consist of biologists, statistical experts, GIS experts and different types of social scientists. In addition, there is a very professional staff of technicians and administrative support staff. There is also a large amount of internal collaboration between departments and research groups. About 75% of NINA's income comes from contract research and monitoring, and consultancy from the public and private sector. Contracts for environmental authorities represents 50% of NINA's income.

Based on its self-assessment, NINA in the future might take advantage of its extensive interdisciplinary and cross-departmental collaboration and its highly competent employees with a high share of staff having a PhD, but also that nature is on the agenda (e.g., Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), EU's green deal, EU taxonomy).

[1] 1. maintain a sound academic level, documented through scientific publications in recognised journals, 2. obtain competitive national and/or international research funding grants, 3. conduct contract research for private and public clients and 4. demonstrate robustness by having a reasonable number of researchers allocated to each research field.

Overall assessment

NINA is a vibrant organisation delivering outputs in important research areas for Norway. Covering both terrestrial and marine environments, NINA has extensive, relevant data sets, some of which extend over significant time periods. This is essential in environmental assessments. NINA covers strategically important subject areas such as aquaculture, climate change and terrestrial systems. Staff contribute to advice being provided to decision makers and attend groups that review and conclude on the scientific evidence.

NINA has a strong staff ethos. This is reinforced through the staff development programme. In addition, the geographically dispersed nature of the organisation ensures contact with a range of universities and local businesses. Although the bottom-up nature of the drivers of research has advantages, there is a lack of a clear strategy to drive the research that should be done.

NINA collaborates widely, some of this involving contributing to long-term time series of which more could be made. Funding remains a challenge. This could, however, be lessened if, through showing the significant relevance of long-term time series, a more secure funding stream was obtained.

Over the period 2015 – 2021 an average of 67.7% of NINA's publications involved international co-authors. NINA has seen a steady rise in publications over the period 2018 – 2021 inclusive with there being a high of 346 publications in 2021, from a low of 189 in 2015. The number of publications per head per annum is 1.16 with good use being made of open access journals. The use of citations to assess research is common. As reference values, the field normalised world average corresponds to 100 on the mean normalised citation score (MNCS) indicator. The median value over the period 2012 to 2020 for the MNCS for NINA is 130.

The research conducted by NINA is grounded in clear environmental, biodiversity and climate issues. Over the next decade, such issues will become even more critical as will key research outputs that help regulators and government to make the most appropriate decisions. To this end, NINA is in a key position to capitalise on these opportunities, ensuring that the relevant research is being undertaken and is being disseminated in the most impactful manner.

Recommendations

1. There is a strong Mission Statement, covering the period 2020 – 2024, and associated Goals. However, the Evaluation Committee recommends that action is taken to translate the Mission Statement and organisational goals into a clear, long-term strategy that is embedded in the organisation so that cohesiveness is improved and a stronger common focus is achieved.

2. Describe, in this long-term strategy, the key areas for research, going beyond the desire to deliver work that is of high scientific quality and integrity, rather identifying the key areas of science that need to be continued, those areas that need to be developed and those areas that need less attention.

3. In the context of Point 2 above, the Evaluation Committee recommends that NINA take the increased relevance of natural capital, nature-based solutions and the criticality of renewable energy (all identified as opportunities by NINA) into account when planning their future.

4. Further develop interdisciplinary and cross-departmental research especially research feeding into both the climate and biodiversity crises, which are multifactorial.

5. Negotiate (together with relevant associated partners) with the Norwegian Government to secure funding for the critical long-term time series in which NINA is involved.

6. The Evaluation Committee encourages NINA to further work on the gender-ratio at the various levels across the organisation to bring them much closer to a 50/50 male/female split with a specific focus on senior researchers and senior technicians/technician MSc, and to be more proactive in equality and diversity beyond gender.

7. The Evaluation Committee encourages NINA to develop a strategy for engaging with researchers from Nordic countries to increase the number of applicants for positions at NINA from these countries.

1. Strategy, resources and organisation of research

The Norwegian Institute for Nature Research (NINA), an independent research foundation exploring nature and its interactions with human society, is an interdisciplinary organisation covering a wide range of topics, delivering outputs across a vast range of subjects, many of which are relevant to the United Nation's 17 Sustainable Development Goals (SDGs). This evaluation covers 12 of the 13 research groups of NINA, excluding the social research group. The omission of the social research group is considered a pity by the Evaluation Committee, since social research is very important to successfully transfer research outputs into practical outcomes.

The Mission Statement of NINA 2020 – 2024 is a compact document, some of which has been included in a pocket-sized version which means all staff at NINA can quite literally carry the Mission Statement in their pocket. NINA's goals for the period 2020 - 2024, brigaded under 4 headings (Research, Benefit to Society, Communication and Organization), give a clear picture of intent with respect to the key characteristics of the organisation. In addition, there are specific areas identified for extra or enhanced effort over the target period.

NINA operates three pillars: species, ecosystems and society. This requires the employment of both natural and social scientists. NINA are doing applied research for government, industry and society both nationally, and increasingly, internationally. The bulk of the funding is project-based with only 10% core funding. This is challenging given the requirement for long-term time-series, these being essential in the areas in which NINA undertake their research, especially as these time-series are fundamental to some of the advice that NINA provides.

Despite the clear strategy and strong leadership, which is making strident efforts to build a 'NINA culture', where success is celebrated by all at the Friday coffee sessions, it is apparent that there is a need for increased cohesion and understanding of staff views across NINA. A very positive outlook was presented by the senior staff at the interview when they articulated that the researchers feel that they represent NINA and not themselves. However, the research group reports presented a slightly less coherent picture with a strong bottom-up driver.

The project portfolio includes both small and large projects. The former are viewed as providing a very local context to the many NINA locations. NINA's senior management view the multi-site nature of the organisation as a strength. They use the funding from RCN to support projects that run across the different geographic locations. There is some duplication across the sites but, there are also location-specific projects. With the increase in staff numbers, NINA has had to devote increased time to the planning and organisation of its infrastructure.

NINA views cooperation as more important than competition. There is strong encouragement, partly through the bottom-up process, for within institute collaboration. This is necessary because of the geographically dispersed nature of the organisation.

NINA cooperates with local stakeholders (e.g. indigenous Sami reindeer herders), and with scientists. NINA view cooperation with other scientists as improving the scientific production. An example is SEAPOP, a long-term seabird programme in which NINA is one of two Executive Institutions, the other being the Norwegian Polar Institute (NPI). Tycho Anker-Nilssen from NINA is the National Coordinator, while Hallvard Strom from the NPI is the Arctic coordinator. In addition, NINA works closely with their customers to enhance the relevance of the applied research and the associated outputs. In terms of stakeholders, an example is the ConSite tool for optimising the siting of infrastructure such as wind-power plants. Additionally,

NINA have contributed to handbooks of best practice and geographical information systems which are aimed at different stakeholders including area planners.

In 2017, NINA considered merging with two other environmental research institutes in Norway. The objective was to gain a larger market position. However, following a process that involved all employees, the decision was to remain independent and to develop NINA. Part of the revised strategy was to prioritise collaboration with relevant institutes such as SINTEF and CICERO.

NINA has moved with the times in terms of using machine learning and Artificial Intelligence and introducing eDNA into its research and monitoring. However, NINA has also be part of long-term programmes, specifically on seabirds, reindeer (since 1991) and renewable energy (hydro-power and salmon). NINA regards itself as one of the key institutes for renewable energy research in Norway, due to its research and long-term programmes on salmon and hydro-power, seabirds and offshore wind and reindeer and hydro-power (project: RenewableReindeer). Renewable energy is an area that is of ever-increasing importance due to the on-going climate and biodiversity crises.

1.1 Research Strategy

The Norwegian Institute for Nature Research (NINA) is an independent foundation established in 1988. NINA describes itself as an organisation that 'contributes to sustainable development by delivering research-based and relevant knowledge about biodiversity, climate and society'. The contents of Section 2.1.1 fall short of answering the specific points highlighted for presentation in this section. For example, the lack of a long-term research strategy is not explained. Furthermore, there does not seem to be an occasion where the research portfolio of NINA is reviewed to provide a clear picture of the Institute's delivery and how it meshes. This may have been clearer if a greater proportion of the key documents provided in Form 1 had been accessible or if short summaries had been provided in English. This includes NINA's Strategic Programme SATS, 2020-2024. That said, the Terms of Reference document includes a link to NINA's external website. This proved to be a source of useful information. The Mission Statement 2020 - 2024, identified repeatedly in Form 1, highlights the main goals (Research, Benefit to Society, Communication and Organization). This is helpful as it illustrates the desired characteristics and where extra effort is required over the period 2020-2024. However, it outlines more about the desired quality of any research, what might be done with the information generated and the fact that the information should be communicated effectively. This document would have benefited from identifying the key areas for research that should be undertaken and why these are the important. For example, NINA hosts long-term time series that are essential for some of the big decisions that need to be made, especially in e.g. the further development of renewable energy. There is also the issue of interactions between species (e.g. bears and reindeer) which are important to indigenous people. The case studies present some excellent examples of the work of NINA, but there is no flavour how this is achieved in terms of strategic direction and critical drivers, in Section 2.1.1.

This Administrative Unit comprises 12 (of 13) Research Groups. The assessment of these groups highlights a lack of, or poor, strategic direction (See section 2.1 Overall Assessment for each Research Group). Such conclusions from the assessment of the Research Groups tend to further raise concerns that the research strategy is not well formed / implemented.

The strong bottom-up and geographic focus has undoubted benefits, but these could be enhanced by being couched in a long-term strategy which is clearly geared to assist Norway

to achieve the environmental goals in the thematic priorities including oceans and coastal areas (ocean-based industries accounted for about 19% of the total Norwegian economy in 2019), climate, the environment and energy and the vision of the European Green Deal.

1.2 Organisation of research

The bottom-up process is central to the organisation of the research at NINA. The organisation is geographically dispersed with the research groups working across geographies. The research is the responsibility of small project teams and the research groups. In addition, the various NINA sites are in major university cities to facilitate cooperation with the universities on research and education. The multiple sites also permit research on issues local to that geography and respond to the regional markets. That said, the geographical spread of the organisation may contribute to, what appears as, limited organisation of an overall research package.

The internal professional development scheme (which covers 25% of a researcher's time) is another component that feeds into the organisation of the research and is one of the three main avenues at NINA for setting of priorities.

The contents of the SWOT analysis, illustrates that NINA is in a prime area of huge societal relevance focusing on the connection between nature and climate, nature-based solutions, ecosystem accounting and natural capital. However, the SWOT analysis NINA made tends to support the conclusion that NINA comprises of many very able people, delivering particularly good outputs / papers, but the basis of what they are doing is dependent on a strong bottom-up process that has only limited context or direction. This means that the benefit of the whole does not outweigh that of the individual groups.

Low base funding and a limited share of long-term projects with predictable finances are both highlighted as weaknesses as is the low operating margin. The low basic funding, as presented by NINA, is described as a threat to the organisation.

It is interesting to note that NINA are of the view that there is a lack of value attached to research competence when awarding tenders that require a high level of professional competence and that this is a threat to the organisation. This point, and those in the previous paragraph, will have consequences for the research programme since it leads to uncertainty and increases the potential of staff moving to where there is more reliable funding or where the scientist perceives there to be a greater chance of success with research bids.

At the Research Group level, there were a range of comments supporting aspects of what is highlighted above. For the Freshwater Group, the point was made that "With the exception of 'co-ordinator' roles, there was no evidence of a strategic management structure to decipher the ways in which 'sites', 'departments' and the 'group' works in tandem". Similar comments were made for 'Index' while for 'Insects' the assessment concluded that "Development of strategy by the group is decentralized, and left to individual researchers". The assessment of the 'Big data' group concluded that "The self-assessment refers to a NINA internal strategy on geo data but provides no information on how it relates to the group's strategy." However, the Carnivore group was highlighted as a group where successful collaboration has been achieved, especially in long-term projects.

Ultimately, the poor organisation of the research was a common theme across many of the Research Group reports. However, for Salmonids, the assessment outlined that “Overall, despite the unclear description of the groups organization, it is clear that the group delivers an important service to both national and international organizations.”. There is a suggestion that the funding model is limiting knowledge building and innovation (See Section 1.3 below).

In conclusion, the organisation of the research appears to be limited with multiple issues being raised at the Group level and no real clarity being brought at Assessment Unit level.

1.3 Research funding

In 2021, NINA had a turnover of 47 million euros. The scientific staff accounted for 225.3 FTE (75.7%) while the support staff accounted for 72.3 FTE (24.3%). The overall basic grant is 12%. The largest single source of funding is the Ministry of Environment (commissioned projects) which accounts for 48% of the turnover. The more detailed funding for 2021 highlights the limited international funding gained by NINA. The self-assessment highlights the poor success with Horizon2020 funding. However, NINA has responded to this and has had some recent success in Horizon Europe funding. The largest tranche of competitive funding comes from national grants.

From the Research Group evaluations, it is apparent that several of the groups (e.g. Carnivore and Coast) rely on long-term funding programmes. This is good from the perspective of operating long-term time series, which are essential in environmental research to untangle anthropogenic impacts from natural variability. However, there is a vulnerability associated with being reliant on a small number of long-term programmes which may come under scrutiny. The Freshwater Group has been successful in bringing in National competitive funding, but a lack of international funding was highlighted by the Assessment Panel. This ‘theme’ was highlighted in several of the Research Group reports. However, for Urban Ecosystem Service Assessments there was some success reported in terms of attracting international funding with a ‘strong portfolio of past and current EU projects’.

Overall, there is a commonality of theme in terms of a small ‘block grant’, significant national funding through grants / contracts and only limited international funding for many of the research groups.

1.4 Use of infrastructures

NINA has limited involvement in national infrastructures: it is a partner in four roadmap infrastructures but, has not hosted any national infrastructures in the Norwegian Roadmap to date. NINA is not involved in international infrastructures that are funded by the Ministries. However, NINA is a research partner in the Svalbard Integrated Arctic Earth Observing System Consortium (SIOS).

In terms of NINA as a research organisation, it has modern laboratory facilities, including environmental DNA (eDNA), across the locations. The Salmonids research group has impressive sample collections and datasets, which puts them in a leading position internationally as there must be few institutions with the records and collections they possess. COAST has access to, and appears to make effective use of, field stations and equipment

such as aerial drones and molecular facilities. The facilities are what is expected of an effective, modern research organisation. There is, however, an example where a Research Group is dependent on others for at least some of their infrastructure. This encompasses the Research Group Restoration Ecology and Nature-Based Solutions. For this group, much of the field infrastructure and equipment is provided by project owners and clients.

Key for such an organisation as NINA is the veterinary input in respect of research on wild animals. NINA also runs, in Trondheim, a national reception laboratory for dead animals.

NINA provides modern offices, communication, library, safety and IT capacities that are commensurate with the nature of the Assessment Unit. In addition, human resources and project management expertise is provided at the institutional level.

1.5 National and international collaboration

NINA views collaboration as fundamental to the delivery of high-quality science and has done so since 2005. This has come about in response to the increasingly complex issues within nature research and the requirement for ecosystem assessments. This includes both internal and external collaborations. In recent times, collaboration between natural and social scientists has been given special attention. There is also an awareness at NINA of the criticality of collaboration with stakeholders and customers. The added value from the various forms of collaboration is well articulated.

In the self-assessment there are many examples of partnerships and collaborations across the various categories. Although there is a lot of activity, some of it being of fundamental relevance to Norway, there is little presented on the actual impact. Being part of e.g. ICES Working Groups covering seabirds and sea trout is important because the outputs from these groups influence the Governments of the 22 ICES Countries, but this would have been even more impactful if the examples had articulated the impact the input from NINA has made.

Co-authorship is commonly used as an indicator of research collaboration. Over the period 2015 – 2021 an average of 67.7% (Standard Deviation (SD) = 2.8%) of NINA publications involved international co-authors. The equivalent figure for national co-authors was 52.4% (SD = 3.2%). NINA comes 10th in the top 10 co-authoring Norwegian institutions 2019 – 2021 (NIFU Report). At 43 co-publications, NINA is behind the Norwegian Polar Institute and the Norwegian Institute for Water Research which delivered 50 and 51 co-publications over the period 2019 – 2021 respectively.

In conclusion, the opportunity to show substantial impact through national and international collaboration has been missed and to the extent to which the mission or goals of NINA have been delivered remains unclear.

1.6 Research staff

NINA, headquartered on the Norwegian University of Science and Technology (NTNU) campus in Trondheim, is an organisation comprising a research staff base of 270 employees. The staff numbers have grown over the last decade. Many of the staff are given permanent positions and this provides a level of stability amongst the research staff. There is not a lot of

movement around NINA. The reason for this, as presented in the self-assessment, is family, autonomy and community as well as the fact that many enjoy their job. The basis of the professional development time (25%) is to be applauded, but the nature of what is involved could have been better articulated.

The number of PhD candidates identified in the self-assessment (13) is low for the size of the institute, but these are only the PhDs that are 'in-house' and have a position at NINA. Staff at NINA supervise many more PhD students. That said, there were comments in the Research Group reports concerning the need to develop training programmes that included PhD students. It was also noted that some groups do not seem to host PhD students.

There remains a gender imbalance amongst the senior researchers and researchers, although not at the Research Director level. This is recognised by NINA.

Over the reporting period for this Assessment, between 2012 and 2015 (inclusive) there was a decline in total publications. Since 2015 the trend has generally been reversed such that NINA has seen a steady rise in publications over the period 2018 – 2021 inclusive with there being a high of 346 publications in 2021 from a low of 189 in 2015. This is a significant increase. The number of publications per head is dependent on whether or not the entire staff are included in the calculation or if a selection of staff is used. Over the four-year period 2018 – 2021 (inclusive) the average number of publications from NINA was 294. Taking the number of staff contributing to publications as 254 (270 minus the 16 temporary staff), the number of publications per head per annum is 1.16. The two journals with the most publications from NINA over the period 2019 – 2021 were Ecology and Evolution and Scientific Reports. The former is an open access journal with a journal impact factor (Clarivate) of 2.6 and a journal citation indicator of 0.69 which is less than the average citation impact. The latter is also an open access journal with a two-year impact factor of 4.6.

The author shares in 2021 are 95.4 which is the second highest across the 10 years presented for NINA in the Nordic Institute for Studies in Innovation, Research and Education (NIFU) report. The author share is consistently highest, by a significant margin, for Biosciences when compared with Economics, Geography, Geosciences, Multidisciplinary Natural Sciences and Multidisciplinary Social Sciences.

The use of citations to assess research is common. As reference values, the field normalised world average corresponds to 100 on the mean normalised citation score (MNCS) indicator and 10 on the 10-percentile indicator. The range of scores for NINA over the period 2012 to 2020 is 107 – 197 with a median value of 130 for the MNCS and 7.6% - 17.4% with a median value of 14.0% for the 10-percentile indicator.

2. Research production, quality and integrity

There is little doubting the importance and criticality to Norway of some of the outputs from the research undertaken by NINA. Some of the research outputs are of extremely high quality, but this is not universal. Furthermore, the contribution of some of the individual research groups was not rated highly. Based on the assessment of the individual research groups, user involvement was on occasion excellent but, again, this was not universal. There was also evidence that the organizational environment can be unclear and vague. Despite this, there are critical, high-profile projects (e.g. SEAPOP and SEATRACK) and NINA staff are publishing in journals that are very applicable to their field as well as contributing to the 64 reports listed on the SEAPOP website for which a member of staff from NINA has been a series editor.

NINA has a clear policy on open science and is actively pursuing this as a key deliverable for the Assessment Unit.

2.1 Research quality and integrity

There are 12 Research Groups that have been individually assessed during the first stage of the evaluation. The Research group on Social Sciences was not reviewed as part of this process. The Overall Assessments are presented for each of the Research Groups. The individual scores ranged from 2 – 5. For the 'Organisational dimension' the score range was narrower (2 – 4) with 3 being awarded to 7 of the 12 Research Groups. Three (3) was the most common score awarded (30/60) with a total of 21 occasions when a 4 was awarded.

There are processes in place for ensuring high levels of integrity. Indeed, a priority for 2020 – 2024, as outlined in NINA's Mission Statement, is that 'NINA's work has high scientific quality and Integrity'. The expected characteristics and the extra/enhanced efforts for the period covered by the Mission Statement are also presented.

Research group: Cervids and domestic reindeer (Ungulates)

Overall assessment
The evaluation panel appreciated the group having applied ecology/societal impacts at the forefront of its strategy. The group is strong at the senior researcher level, yet does not seem to have a clear strategy towards early-career mentoring. Still, 9 PhD students defended in the last 12 years is pretty good. That said, only one of the PhD students seems to feature as a co-author in the publications listed. The group does admit it faces funding challenges given its reliance on The Research Council of Norway support and thematic mismatches, but does not provide a clear strategy to respond to these.

Research group: Coastal Ecology and Seabirds (Coast)

Overall assessment
The Coastal Ecology and Seabird (Coast) group undertakes very good research on seabirds, primarily through SEAPOP and SEATRACK, with the outputs being useful for environmental management. The strategy does, however, require to be more developed with better theoretical and conceptual anchoring. In the self-assessment, three Goals are presented, but

only two have objectives attached to them. The objectives around delivering the goals need to be developed and used to help guide the strategic direction of the research. A good set of national and international collaborators is presented. However, these tend to be research institutes and international bodies (e.g. International Council for the Exploration of the Sea). Although there is some mention of stakeholder / wider societal involvement which is under-developed. There are some significant tranches of money available to Coast, two of these relating to the funding of SEAPOP and SEATRACK. However, overall the self-assessment is very limited in the data presented which means it is unclear as to the overall resource and how the available resource delivers across the 3 goals and indeed the two smaller research entities. Coast could capitalise on the three sub-groups to further develop interdisciplinary studies. The Panel felt that there was not much cross-over between the sub-groups. However, utilising all the expertise within Coast to deliver interdisciplinary studies could be a real benefit.

Research group: Environmental Condition and Nature Index Group (Index)

Overall assessment

The group's environment was deemed to be modest for supporting the production of excellent research, with the current focus being predominantly geared towards government needs. Whilst this work is important, more thought could be given strategically to balancing this alongside leadership roles within internationally important research projects. The organization/management of the group in relation to its geographical spread could be more clearly articulated within the strategy. The group plays an important role in freshwater research and has a considerable role in producing outputs that are internationally recognized, with some higher ranked outputs. The group's contribution to societal development in Norway was considered to be on a par with other groups in the field, with only modest examples of partner involvements in the research process provided in the narrative despite the group's work alongside national level government.

Research group: Freshwater Research Group (Freshwater)

Overall assessment

The group is well established and relatively large with 36 members noted. The group's benchmarks aim to be the leading freshwater biodiversity, ecological patterns and interactions institute is noteworthy, and in some areas such as routine biomonitoring underpinning the Norwegian component of the EU WFD this is already likely to be the case. As such, the group's suggested goal that they aim to be nationally recognised could be more ambitious by considering more their current standing, then focusing more on strategic growth in the international arena where there is clear potential for more work. The evaluation panel considered that more could have been presented about the group's existing international linkages – for example, some brief evidence was presented about several researchers being involved in projects at the European level but there were only fleeting mentions of collaborations in e.g. Austria, Slovenia. The group's future strategy could seek to capitalise more on these links. Societal contributions related to EU WFD implementation were noted as being excellent and a strength of the group, but there is a need for the group to build a broader strategy for creating scientific impact in society.

Research group: Human-Carnivore Coexistence (Carnivores)

Overall assessment

This is a strong research group that excels in interdisciplinary research on a focused topic at high international standards. Societal relevance and impact is high and well exploited. While the group has a strong outline strategy, this is not strongly future oriented, not in terms of the

changing field, neither in terms of societal interaction, and changing funding environment. Organizational dimensions are insufficiently described in the self-assessment.

Research group: Innovative methods, GIS and big data (MethodGISbigdata)

Overall assessment
The self-assessment report provides little insight into the organization of the group and its strengths. Despite ambitions to be more internationally active and play a key role within the institution, the panel did not see a noticeably clear strategy provided on how such a more central role can, and will be, achieved. Spatial data and big data are essential to a research institution like NINA and the support role of the group is very clear. However, the topic itself can also contribute to novel research, but would require a clearer strategy that builds on the particular strengths of the research group in comparison to other groups worldwide. Such a strategy is lacking. In terms of impact the group has provided several interesting spatial databases and contributed to spatial assessments to inform policy. These products are nicely made and particularly useful. Although spatial data and maps are a useful source for interaction with stakeholders, the self-assessment does not really describe such two-way communication and most of the products are dissemination oriented only.

Research group: Pollination Ecology and Entomology (Insects)

Overall assessment
The Pollination ecology and entomology group describes themselves as having expertise in ecology, entomology, genetics, molecular biology and environmental economics, in relation to insects. The group particularly emphasizes the ecology of pollinators and the resources they depend on as well as the ecosystem services that they deliver. Exotic insects are also a focus. The group consists of 16 individuals, 2 of which are senior researchers. In the self-assessment they state that strategy is developed internally, however their strategy comes across as unclear to the evaluation panel and needs to be better developed. The group appears to take advantage of internationalization, mainly through hosting young mobility grants. They appear to strive for international research collaborations via EU level grants, but to what degree these have been successful was not clear. The group aims for strong internal collaboration with other groups, including terrestrial ecology, environmental economics, GIS, genetics, to mention a few. The publication quality is moderate. The Insect group's research contributes a vital function to its institute by providing monitoring and research-based data, analysis and reports on pollinators and other insects used by national agencies. It is notable that only 10% of its funding comes internally, and 90% are derived from external grants. The strength of the group was considered average.

Research group: Renewable energy (Renewable)

Overall assessment
The panel concluded that the group is operating as expected for a group of its focus, which inherently has a local or regional impact. Its close interaction with stakeholders is necessary and is being done effectively to achieve impactful research. The group expresses awareness of potential conflicts of interest with stakeholders, and strives for impartiality and public and stakeholder trust. The panel concluded the international impact of the research was less than it could be; however, the group took a very good leadership role in its research production. The panel felt this reflected a trade-off in doing local applied research, and thus was expected for a group of its focus.

Research group: Restoration ecology and nature-based solutions (Restoration)

Overall assessment
The Restoration ecology group serves a vital function to society and to their institute. They produce highly relevant science. The unit would do well to aim to be knowledge-generators rather than primarily practitioners to remain relevant and vital. This directly relates to their stated threats from commercial actors. The panel felt the group is competing with commercial actors in the practitioner space, but should position themselves more into the concept-generation space. This is something that private industry would likely not readily compete with.

Research group: Salmonids

Overall assessment
The organizational environment of the group is unclear and is too vague to determine if it is the most effective for the dimension of the research group or how/if it could be improved. Nonetheless, the salmonids group plays an important role and clearly delivers on its role of monitoring and supplying data for National and International advisory bodies and permits Norway to effectively pursue its mission of maintaining sustainable salmonid populations and fisheries

Research group: Terrestrial ecology group (Terrestrial)

Overall assessment
The Terrestrial ecology group is strongly embedded in NINA. Maintaining such a diverse group based on project funding is challenging and has, given the size of the group, been successful. The self- assessment report is insufficiently clear on the achievements to allow a full evaluation by the panel, especially in relation to the societal impacts. While the strategy provided is appropriate, it is described in very generic terms and the work of the group seems to lack a clear focus. Therefore it is difficult to evaluate if the benchmarks are achieved. It is not clear in what topics the group is specialized and where the group is leading internationally. While a lot of outreach is done, there is no evidence of a strong structure or coordination of these. The panel's view is that this research group is performing well as a research unit, but from their self- assessment report it is difficult to see how ambitious their research truly is.

Research group: Urban ecosystem service assessments (Natureincities)

Overall assessment
The group has a clear focus on Nature in Cities, which is an extremely important topic with high interest from policy and planning, as well as from broader society. However, the ambitions of the group, as expressed in the benchmarking, is to be leading on multiple aspects of Nature in Cities. These ambitions are very high for a relatively small group, and the evaluation panel does not find it clear how the group aims to achieve these.

While little information is provided in the self-assessment on the organisation of the group, the quality of the research papers if very good and presented in the most important journals of the field. Societal impact is a clear focus of the group and some success in impacting on policies is mentioned. However, far too little insight is provided on how the group interacts with stakeholders and the level of co-design that is employed in projects with stakeholders.

2.2. Open Science

NINA has a clear policy on open science and is actively pursuing this as a key deliverable for the Assessment Unit. Creation and involvement in Living Norway is a particularly good example. The associated data portal includes data from a range of organisations, including NINA and is kept up to date. The Living Norway Open Science Lab is described as “our [NINA and wider consortium] initiative to expand activities to and share knowhow created in the Living Norway Ecological Data Network with the broader Norwegian and international community. The initiative spans across roles, institutions, and career stages.”.

Since 2012, there has been a progressive reduction in publications in non-Open Access journals. In 2021 the distribution was 58.2% “green’ Open Access, (OA), 35.9% “Gold” OA with only 5.9% described as “Not OA”.

NINA also supports the development and publication of open-source software and encourages employees to use and publish open-source. In addition, researchers are encouraged to share tools and resources for public and educational use. Finally, NINA arranges workshops, meetings and webinars to promote open science in the research community. This represents significant effort on the part of NINA which would have been further enhanced by an assessment of the impact of the various initiatives.

The FAIR-principles are the basis for the policies and strategies for data management as laid out in the internal data policy-document and the internal GIS-strategy.

3. Diversity and equality

NINA has a gender imbalance, as highlighted earlier in this report. However, NINA has been active in both gathering information (by means of adapted work environment survey) and setting goals (in the Gender Balance Action Plan last revised in February 2022). NINA are conscious that progress is not as quick as they would like and that they are slightly behind some other organisations.

Diversity and equality are more than gender. Minority groups are highlighted in the self-assessment. Specific goals in this respect have, however, not been found by the Evaluation Committee.

4. Relevance to institutional and sectorial purposes

The original ‘mission’ to deliver applied ecological research to the environmental authorities and society remains relevant in 2023. Contracts for environmental authorities on different levels in Norway represents 50% of the income and NINA perform well in such exercises which suggests that their science remains relevant to the Norwegian Authorities and regulators. NINA made an active decision not to merge with two other research units in Norway, rather they prioritised collaboration. This prioritisation has not been that evident in the self-assessment until being articulated in this section. What is missing from Section 2.4.1.1 is any information about achieving sector specific objectives. Indeed, no sector is specifically highlighted in Section 2.4.1.1. The Self-Assessment states that the outcomes from NINA are used in various ways. This section would have been strengthened with a couple of examples

or the inclusion of pointers to other parts of the document where specific information was presented.

Research commercialisation activities is an area of interest, but it remains more of a desire rather than something which is a strength or major deliverable. Given that the Self-Assessment highlights that since 2005 there has been a particular guiding principle, a greater proportion of internal NINA policies for research and innovation might have been anticipated as appearing in Form 9.

The research topics covered by NINA are such that often the impacts will come about from the results and associated recommendations being implemented by the public sector. However, NINA does undertake research for 'local' customers and non-public sector organisations, some of which could lead to commercialisation. Currently, there are no NINA patents or commercial licences. Where NINA has developed products that are designed for others to use, especially in planning, is in computer aided design. Several projects, presented in Form 10, have developed tools which can be used to e.g. optimise siting of infrastructure such as wind power-plants or estimate functional connectivity, quantify the importance of different areas for landscape suitability and connectivity, and predict movement corridors and paths. LiceTech uses DNA technology to indirectly quantify the density of sea lice in farms without handling the fish. A plan to commercialise through a spinoff company did not come to fruition. However, several of the ideas remain active, including analysis of ecosystems using the soundscape.

There is no doubting the criticality of the outputs from NINA. A considerable proportion of the science is commissioned by the Ministries and there are examples of where NINA staff sit on key international groups. Specific examples of the use of the science by policy makers, rather than just stating that this is what happens, would have helped illustrate direct relevance to government or customers. The impact of NINA activities in terms of changed policies and/or societal impact is crucial as this both enhances reputation and can be used when bidding for new contracts.

5. Relevance to society

There is little doubting the relevance of NINA's science to Norway. They cover strategically important subject areas such as aquaculture, climate change and terrestrial systems. Staff contribute to advice being provided to decision makers and attend groups that review and conclude on the scientific evidence. The various Impact Case Studies (specific comments below for each Case Study) illustrate this.

More could have been done to link the outcomes of NINA's science to the delivery by Norway of the UN Sustainable Development Goals.

The provision of ecosystem services provided by the conservation and restoration of urban tree cover in Oslo is an example of an urban project which has had both a national and international impact.

Comments to impact case 1

Handbook for environmental design in regulated salmon rivers

This impact case presents the development of a guide for improving both the wild salmon population and the hydro generation of electricity on regulated rivers. Popularly referred to as 'more salmon, more power', cross-disciplinary research allowed the exploration of the opportunities for combining the interests of salmon production and power production. The result is a handbook with information on tools which can be used. Illustrations of the impact are presented for three rivers. One of these examples, the River Mandalselva, is the largest environmental design project so far (c. 13 million NOK) resulting in large scale physical habitat restoration and major changes in the operation of a hydropower station. The estimated outcome is return of the salmon production to pre hydropower development levels and a small increase in the hydropower production. The outcomes of the research have been explored by both the Chinese and Romanians. There are indications of further development. Given the impacts of climate change, the consequences of the climate-driven temperature changes might be a much-needed additional consideration.

Comments to impact case 2

Large carnivore monitoring

This impact case is based on a long-term (2003 – 2021) programme with the impact being realised from 2011 onwards. However, key to this monitoring programme are the research components which have seen significant development in terms of the use of non-invasive DNA tests. This programme is further characterised by the cross-boundary nature and the use of citizen science. Both aspects have added significantly to the programme and the value of the data. Rovdata, established in 2010, is an independent unit within NINA and is responsible for operating, communicating and improving the Norwegian Large Carnivore Monitoring Programme. There is significant effort made in respect of communication and outreach with some impressive figures presented.

There is little doubting that this has been a key development over the last decade and improved understanding of carnivore numbers, movement and in-breeding. However, some information detailing the actual decisions made and the impact on population dynamics would have further enhanced the impact case.

Comments to impact case 3

SEATRACK

Mapping seabird non-breeding distribution for better management and marine protection in the North Atlantic – this impact case is based on research which was initiated in 2014 with impact being realised since 2016. The basis of the outputs are detailed tracks of the seasonal migration of seabirds. This is a multi-national programme with significant input from NINA. The data provided has been used in the establishment of a marine protected area in the North Atlantic by the OSPAR Commission, for directing national politics on marine conservation and when considering locations for offshore windfarms within the Norwegian Economic Zone.

This is an example of a carefully conducted monitoring programme that is using state of the art technology to provide critical information which is carefully mapped on two websites.

Comments to impact case 4

Urban ecosystem accounting in Oslo

This impact case is based on research conducted between 2014 and 2022 with impact being realised between 2020 and 2022. The basis of this research is the provision of ecosystem services provided by the conservation and restoration of urban tree cover in Oslo. This work has enabled NINA to participate in a working group developing the UN System of Environmental Economic Accounting, Ecosystem Accounting statistical standard. In addition, the research has resulted in specific decisions being taken in respect of halting the issuing of building permits and in priority setting. The mapping of tree canopy cover and integration with other green-space has resulted in greater consideration being given to tree-cover in planning processes.

Comments to impact case 5

Research on wild goose populations as a knowledge basis for adaptive management

This impact case is based on research undertaken between 2013 and 2022 with impact being realised since 2014. European geese populations have increased and this has resulted in various problems including agricultural damage and air-safety risks. Key to the impact has been the communication of the outputs. The team recognised that scientific papers on their own will not reach those who needed to implement the outcomes. Consequently, significant engagement was key to ensuring impact in terms of crop damage and conflict resolution as well as establishing the subsidy at farm level. Other developments have included the development of optimal goose hunting arrangements which included the production of goose-meat recipes. Handbooks have been produced as well as contributing to the European Goose Management Platform.

Appendices

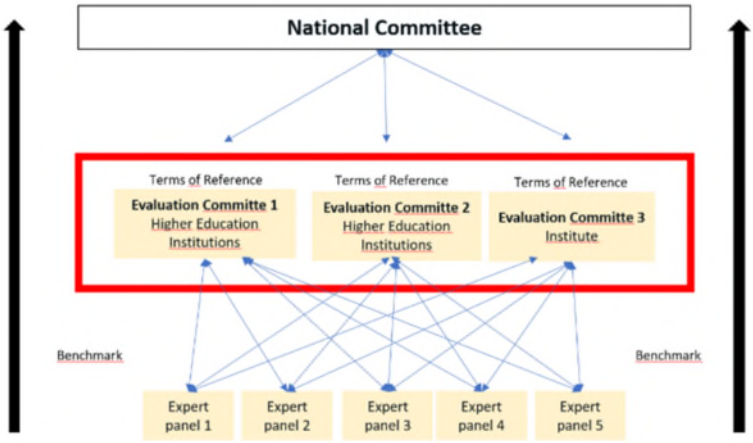
Evaluation of Biosciences 2022-2023

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

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

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

Organisation of evaluation of biosciences research 2022 - 2023



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

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

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

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

Til innmeldte administrative enheter til
fagevaluering av biovitenskap (EVALBIOVIT)

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

Fagevaluering av biovitenskap (EVALBIOVIT) 2022 – 2023

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

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

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

Tilpasning av mandat (vedlegg 1)

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

Innmelding av forskergrupper (vedlegg 2a og 2b)

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

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

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

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

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

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

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

Data og datainnsamling

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

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

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

Endring av administrativ enhet

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

Informasjonsmøte 9. mai 2022 og nettside for EVALBIOVIT

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

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

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

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

Med vennlig hilsen
Norges forskningsråd

Ole Johan Borge
avdelingsdirektør
Avdeling for helseforskning og helseinnovasjon

Hilde G. Nielsen
spesialrådgiver
Avdeling for helseforskning og helseinnovasjon

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

The Research Council of Norway

Evaluation of life sciences in Norway 2022-2023

LIVSEVAL protocol version 1.0

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

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www.forskningsradet.no/publikasjoner

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1 Introduction

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

1.1 Evaluation units

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

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

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

1.2 Minimum requirements for research groups

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

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

1.3 The evaluation in a nutshell

The assessment concerns:

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

The Research Council of Norway (RCN) will:

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

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

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

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

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

1.4 Target groups

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

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

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

2 Assessment criteria

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

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

2.1 Strategy, resources and organisation

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

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

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

2.2 Research production, quality and integrity

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

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

2.3 Diversity and equality

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

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

2.4 Relevance to institutional and sectoral purposes

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

Higher Education Institutions

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

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

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

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

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

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

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

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

Research institutes (the institute sector)

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

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

The institutes should:

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

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

The hospital sector

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

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

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

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

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

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

2.5 Relevance to society

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

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

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

3 Evaluation process and organisation

The RCN will organise the assessment process as follows:

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

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

3.1 Division of tasks between the committee and panel levels

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

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

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

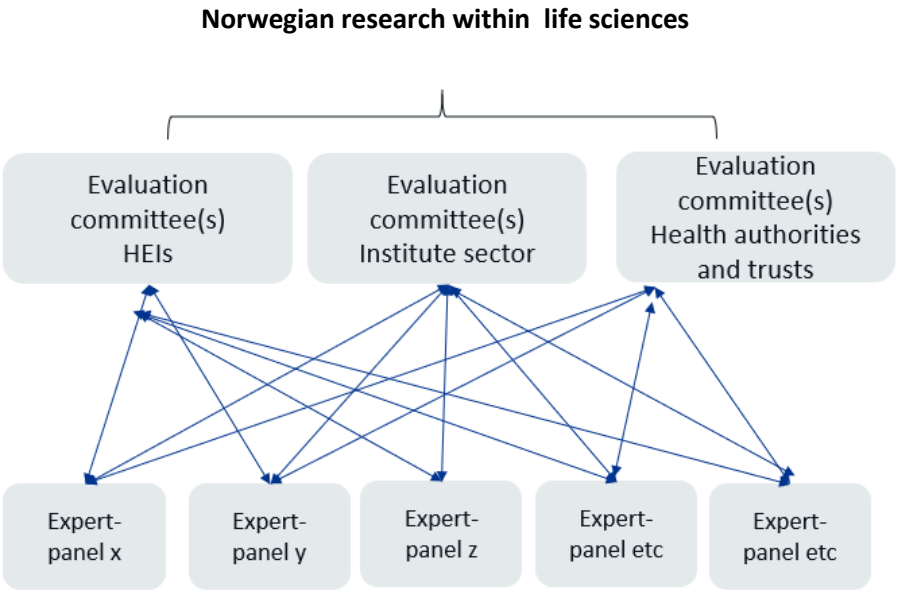

Figure 1. Evaluation committees and expert panels

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

3.2 Accuracy of factual information

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

3.3 National level report

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

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

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

Appendix A: Terms of References (ToR)

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

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

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

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

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

1. …
2. …
3. …
4. …

…

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

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

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

The documents will include the following:

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

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

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

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

Appendix B: Data sources

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

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

National registers

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

Self-assessments

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

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

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

Table 1. Types of evaluation data per criterion

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

The Research Council of Norway

EVALBIOVIT

Self-assessment for administrative units

Version 1.2

Overview

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

1 Introduction

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

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

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

The whole self-assessment shall be written in English.

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

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

Many thanks in advance![1]

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

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

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

2 Self-assessment for administrative units

Self-assessment guidelines:

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

2.1 Strategy, resources and organisation of research

2.1.1 Research strategy

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

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

Form 1 *Administrative unit's strategic planning documents*

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

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

2.1.2 Organisation of research

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

Form 2 *SWOT analysis for administrative units*

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

2.1.3 Research funding

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

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

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

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

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

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

   ii) from the ministries and underlying directorates (NOK)

   iii) from industry (NOK)

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

b) National contract research (post 1.3)

c) International grants (post 1.4)

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

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

2.1.4 Participation in national infrastructures

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

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

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

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

[2] Excluding basic funding.

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

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

Form 5 *Participation in international research organisations*

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

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

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

Form 6 *Participation in infrastructures on the ESFRI Roadmap*

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

2.1.5 Accessibility to research infrastructures

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

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

2.1.6 Research staff

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

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

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

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

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

2.2 Research production, quality, and integrity

2.2.1 Research quality and integrity

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

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

2.2.2 Open Science policies at the administrative unit

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

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

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

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

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

2.3 *Diversity and equality*

2.3.1 Diversity and equality practices

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

Form 8 *Administrative unit's policies against discrimination*

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

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

2.4 Relevance to institutional and sectorial purposes

2.4.1 Sector specific impact

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

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

2.4.2 Research innovation and commercialisation

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

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

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

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

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

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

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

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

2.4.3 Collaboration

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

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

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

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

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

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

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

- Regional, national and international collaborations

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

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

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

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

2.4.4 ONLY for higher education institutions

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

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

2.4.5 ONLY for research institutes

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

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

2.5 Relevance to society

2.5.1 Administrative unit's societal impact

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

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

Case no. 1

Thank you for completing the self-assessment.

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

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

List of research groups

Institution	Administrative unit	Research group
Norwegian Institute for Nature Research (NINA)	NINA	*Freshwater ecology*
		Salmonids
		Coastal ecology and seabirds
		Renewable energy
		Terrestrial ecology
		Pollination ecology and enthomology
		Cervids and domestic reindeer
		Human-Carnivore coexistence
		Restauration ecology and nature-based solutions
		Ecosystem accounting and environmental economics
		Ecological condition and nature index
		Innovative methods, GIS and big data

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.

Methods and limitations

Methods

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

The documentary inputs to the evaluation were:

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

After the documentary review, the Committee held a meeting and discussed an initial assessment against the assessment criteria and defined questions for the interview with the Administrative Unit. The Committee shared the interview questions with the Administrative Unit two weeks before the interview.

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

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

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

The Committee judged that the Administrative Unit's self-assessment report was insufficient to assess all evaluation criteria fully, and some information gaps remained after the interview with the Administrative Unit.

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