Forskningsrådet

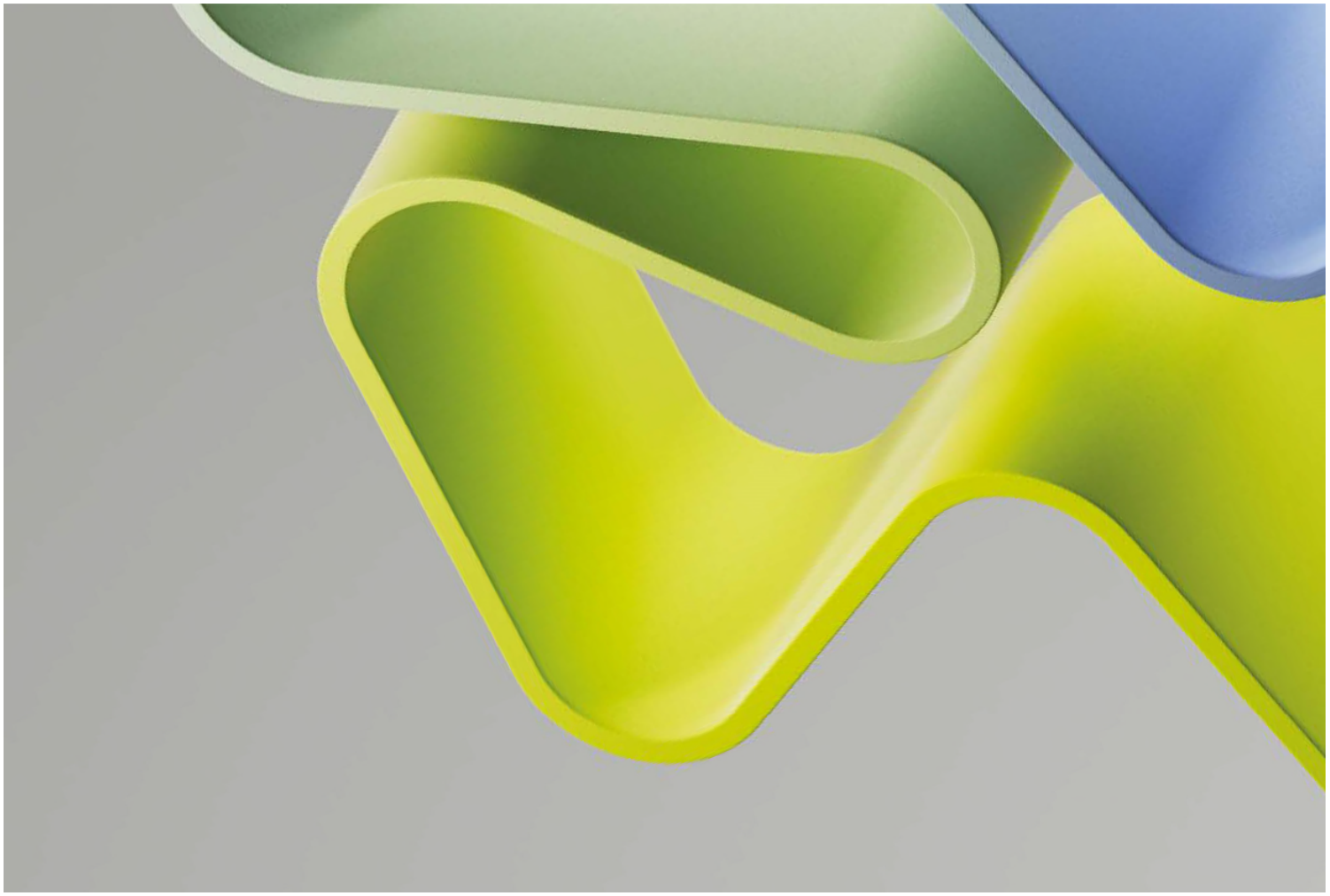
Evaluation of Life Sciences 2022-2024

Evaluation of Biosciences 2022-2023

Evaluation report

Norwegian Food Research Institute (Nofima)

December 2023



Contents

Statement from Evaluation Committee 3

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 administrative unit

Nofima has a total of 397 employees of which 122 are scientists, advisers and chief engineers, 73 are senior scientists and senior advisers, 83 are engineers and other technical-scientific staff, 95 are administrative and technical operations and 24 are leaders, including the managing director, division directors, project leaders and section leaders. 60% of the staff are women.

The administrative unit is comprised of five research groups: Industrial economics, Breeding and Genetics, Nutrition and Feed technology, Fish health and Production biology.

Nofima's vision is sustainable food for all and its mission is excellent research and innovation contributing to sustainable food production and responsible governance of resources from sea and land, with a focus on agrifood, aquaculture and fisheries/seafood. The concept of innovation in Nofima encompasses several activities such as contributing towards creating completely new or improved products, services, business models and ways of work. Key elements include new forms of management and a revised organisational structure, new forms of distribution/marketing and new business models. Its contribution to innovation has a basis in their research and contributes in changing businesses towards sustainable value creation. Another contribution is the support that contributes to the improvement and modernisation of the public regulatory framework. As illustrated in Nofima's strategy 2009 - 2022 and the Nofima 2025 strategic roadmap, all research and innovation in Nofima is developed to fulfil economic, societal and environmental sustainability goals as well as having maximum impact. This is made clear by describing all three divisions research strategy goals in the context of the United Nations Sustainable Development Goals (UN SDGs).

In line with the requirements of being a Norwegian research institute, Nofima strives to: 1. maintain a sound academic level, evidenced through scientific publications in recognised journals, 2. obtain competitive national and/or international research funding grants, 3. conduct contract research for private and/or public clients and 4. demonstrate robustness by having a reasonable number of researchers allocated to each research field. In relation to this, Nofima states in its self-assessment that it is an applied research institute with a clear sector-specific mission. Research and innovation produced by Nofima has the purpose to improve competitiveness and sustainability of the food sector. Nofima's knowledge supports sustainable growth and development of fisheries, aquaculture and the food science sectors. The UN’s Sustainable Food Systems Summit in New York (November 2021) stated that global food systems are broken and must be transformed. This is a major task where Nofima's competence and delivery of its mission. Nofima is involved in national, international and especially European fora and committees where research agendas for sustainable food systems are being developed and implemented.

Based on its self-assessment, Nofima in the future might take advantage of the excellent and modern research infrastructure, laboratories and modern research instrumentation, the relevant competencies responding to the challenges facing the target markets and industries (aquaculture, fisheries and seafood, food science), but also that sustainable food production and food systems are on the national and global agenda.

Overall assessment

Nofima is a moderately sized (in Norwegian terms) research institute with 380 staff and a turnover of 677 million NOK (in 2021). The institute is quite heterogenous and seeks to contribute to Norwegian society and industry through 14 research groups of which 5 were submitted for review under the auspices of the Life Sciences Evaluation Committee 3. The focus is on food science and the food science-policy interface. Funding opportunities and policy priorities are the primary strategic influences, but there is also a strong undercurrent of public interest research. Nofima attracts high quality scientists and generates high quality applied research. Around 95% are open access publications. Research quality is slightly below other equivalent Norwegian institutes with around 9% of publications among the 10% most cited but this probably reflects the applied nature of the work which is considered of average to good quality across the groups. Links with industry are excellent generally and this reflects years of investment in relationship building. Nofima and the industrial sector both benefit hugely from this. However, there are also restrictions, for example, in relation to academic freedom to publish and the breadth of research questions considered. Getting this balance right requires excellent management and a flexible working culture together with incentives. For the most part Nofima gets this balance right, successfully managing to combine applied academic research outputs through close integration with businesses and government policy. It also takes its responsibilities in terms of discrimination, gender balance and open access research seriously and has deployed effective policies in these areas. Within the Norwegian context Nofima provides a valuable, possibly unique service to the Norwegian food industry. In terms of weaknesses it is not clear to what extent Nofima research engages directly with societal impact. For example, consumer research or the public good element of food systems/production. A related weakness is the low profile given to international collaboration, for example the award of large EU / international grants with a broader, more interdisciplinary focus on food systems and food policy.

Recommendations

1. Strengthen the process of strategic planning to develop new future avenues for research and collaboration, especially with respect to internationalisation of research and more integrative interdisciplinary projects. Given the diversity of Nofima and the heterogeneous nature of the research groups this may require senior management to select key research topics and associated Institute-wide groupings for internationalisation and inter-disciplinarity. This potentially would involve attracting high calibre research staff with the potential to develop and lead large projects in competitive international calls.
2. Quality and quantity of published scientific output can be improved. This will undoubtedly be helped by more internationalisation and interdisciplinarity
3. Build on Nofima's strong support for early career researchers by establishing an 'Early Career College' with its own identity and place in the organisation. Nofima should specifically bolster its opportunities for young researchers to contribute to emerging strategic research themes and collaborations. Engagement in mentoring joint PhD students (in collaboration with local universities) should be improved.
4. Stronger institutional cohesion in relation to the future research agenda is required. Distinctive high level research themes should be developed which bring several research groups together to promote higher research impact and raise international profile. Such themes will provide management the opportunity to promote research priorities and organise resources appropriately and make better use of the wealth of knowledge and data that are held by the individual groups. Again, this will support the interdisciplinarity and internationalisation agendas.
5. Develop stronger collaborations with leading organisations in Europe to help bolster research on 'public good' aspects of marine food systems and how they interface with private corporate interests. This will help to raise the international profile of Nofima and the quality of science-policy outputs in this field.

1. Strategy, resources and organisation of research

Nofima strives to deliver on its vision (Sustainable food for all) through research and business innovation with a focus on agrifood, aquaculture and fisheries/seafood. The complex nature of food system sustainability and the heterogeneous nature of the Institute in terms of research topics and disciplinary expertise creates significant strategic challenges for management and there is a need to have a clear strategy that engages with the Norwegian national strategy. Nofima also needs to be responsive – reacting positively and quickly to evolving industrial and societal requirements, while also keeping a keen eye on academic reputation (publishing) and funding opportunities. A challenging brief, but one the current management seems to be relatively successful in meeting.

The organisation of the Institute seems a little inflexible with small distinctive/specialist groups. Food systems need be studied more holistically at the Institute and this may require some reorganisation. Given the historic development of the Institute and the strengths of the individual groups that have evolved over time, Nofima may wish to shift the dynamic by seeking out specific funding opportunities that will kick start cross-group/department activities. The creation of an 'Early Career College' at Nofima, possibly in association with other Institutes would also help advance the evolution toward interdisciplinarity and greater internationalisation. The management structure is quite top down and there appears to be a need to promote collaboration/communication between the divisions and departments, perhaps through a matrix or a meta-project approach.

1.1 Research Strategy

Nofima's vision is Sustainable food for all. Nofima's mission is excellent research and innovation contributing to sustainable food production and responsible governance of resources from sea and land, with a focus on agrifood, aquaculture and fisheries/seafood. Nofima's objective is to be an internationally recognised research institute delivering excellent research results that can be implemented for value creation in industry and society. Nofima generates high quality applied research of which around 95% are in open access publications. Research quality is slightly below other equivalent Norwegian institutes, with around 9% of publications among the 10% most cited but this probably reflects the applied nature of the work. The Research Group Assessment panels rated Nofima research across the groups submitted to Life Sciences between 3 and 4 (out of a maximum of 5). Publishing tends to focus on applied journals which reflects the applied nature of research funding especially from business, but also government. Higher quality outputs in applied areas can perhaps only be achieved through more multi-national, multidisciplinary funding with more focus on social sciences. Interdisciplinarity is not prominent with each group focused on its own priorities. This model has worked well in the past but may restrict future opportunities to compete for large research funds at national, but especially international, level.

1.2 Organisation of research

The research activities are organized within three divisions: Division Aquaculture, Division Seafood, and Division Food science. Each division consists of 4-5 departments. The divisions are supported by the common administration within areas as facilities management, business development, human resources (HR), communication and information technology, and economy (budget and accounting). The management line is top-down with a Director-CEO, Division Directors, Research Directors, and Project leaders/researchers. Where appropriate, section leader functions (e.g., lab leaders) are

established within the individual departments. In the Aquaculture Division, two lab leaders and one research station leader are organized at the same level as research directors. The CEO has the responsibility for overall management of the institute. Division directors have the overall responsibility to develop and implement the research strategy, for scientific deliveries, economical result, and staff. Operationally, the same tasks are delegated to research directors at department level. Project leaders have the responsibility for carrying out their projects according to contracts, and within the defined economic frames. The whole scientific staff share the responsibility to contribute to project acquisition according to their functions and expertise. The business development section is responsible for innovation activities, innovation strategy and IP-management.

1.3 Research funding

The total budget in Nofima in 2021 was 677 million NOK. The largest funder is the Ministry of Trade, Industry and Fisheries (NFD) which is responsible for fisheries and aquaculture management, seafood safety, fish health and fish welfare, the framework conditions for seafood trade and market access for Norwegian seafood. NFD funds basically Nofima's research infrastructure (16%). The fishery and aquaculture research fund (FHF) manages the funding scheme for industrial research and development work within fisheries and aquaculture to contribute to sustainable value creation and growth in the industry and is responsible for 9% of Nofima funding. The Research Council of Norway (RCN) funds through a basic grant (14%) and via different research competitions (18%). The EU framework programme for research and innovation supplies 3% of the total Nofima budget. The research funding for the agriculture and food industry and partner companies (FFL) funds 12%. National and international industry and companies are responsible for 28% of Nofima's turnover. Nofima overall is quite dependent on funding from private companies whether directly or through joint funds. Government funds focus more on basic running costs and infrastructure which supports private sector research needs with only 18% of turnover provided by government backed research competition. More government funding for programmes or projects would enhance Nofima's societal contribution to sustainable food systems research and boost Norway's international profile in this field of sustainable development research.

1.4 Use of infrastructures

Nofima's most significant participation in strategic infrastructure initiatives is via the Aquafeed Technology Centre (ATC) which together with Norce, and the University of Bergen and the National Algaepilot Mongstad has established a state-of-the-art technology centre addressing challenges related to the circular bio-based economy and sustainability of the world aquaculture industry. Nofima contributes by offering research infrastructure dedicated to improved and novel utilization of alternative raw materials such as marine, animal by-product, insect, plant, and other materials. Nofima scientists sporadically used EMBL-infrastructures and is a partner in the European Marine Biological Resources Centre (EMBRC)-NORWAY. The objective of this project is primarily to establish and operate a coordinated top-level marine experimental research infrastructure representing the major marine research environment in Norway, and secondary to ensure access to marine experimental facilities, to facilitate engagement and collaboration of Norwegian and international research, and to facilitate and promote, as part of the EMBRC-ERIC, scientific interaction and exchange with the European research community in order to enhance the visibility of Norwegian marine research. In Nofima, infrastructure included is a research station specially designed for selective breeding of cod, and other marine fish species. Presently, Nofima also has an agreement with SIKT (Norwegian agency for shared services in education and research) and is working to improve the internal control of research data and are developing a data platform strategy for this purpose. Recently Nofima decided to enter an agreement with "DataverseNo", a national, generic repository for open research data.

1.5 National and international collaboration

Nofima has a clear policy toward collaboration and cooperation with other research entities, industry, research institutes and universities within their field of research and is a key part of the overall strategy. Collaboration with other entities is anchored in the objective of widening research and competence base, avoiding double investments with public money, and at the same time getting and giving access to research infrastructure and competencies to both national and international research partners. Nofima has a number of collaborative agreements with universities, other research institutes and industry describing the objective of strategic collaboration. Nofima promotes bottom-up collaboration, and this is supported by management through the provision of clear guidelines, administrative support and if required, additional financial support. Compared to other Life Sciences Institutes, Nofima has the lowest percentage of papers with international co-authors (51%) and by some distance the lowest percentage of co-authors from other Norwegian Institutes (40%). Collaboration outside the organisation needs further strengthening both within Norway and on the international front. This could be achieved through large collaborative grant applications and expanding the excellent initiatives such as hosting 'Visiting Researchers' and staff secondments. More needs to be done here but it is not easy given the financial and personal constraints operating on staff and the Institute.

1.6 Research staff

Nofima has a good split of staff across scientific and non-scientific areas with over half focused on science (58%). Senior scientists and leaders represent a high percentage that might normally be expected and although Nofima has introduced some initiatives to encourage early career researchers (36 years of age or below), the Institute would probably benefit from a higher proportion of younger, more junior research staff to give added vibrancy and generate new opportunities. Nofima currently provides strong support for early career researchers and post-graduates, actively seeking to recruit good MSc and PhD students. Nofima may wish to build on this initiative and consider strategic investment in the establishment of an 'Early Career Academy' to create an even stronger and formal identity and support for PhD students, post-doctoral workers and young research leaders. Gender balance is excellent throughout the Institute, with a very high percentage of females in leadership roles (70%).

2. Research production, quality and integrity

The research production and quality across the groups considered were variable, but generally of a high standard and equivalent to a moderate international standard. Generally, Nofima research groups reviewed as part of Life Sciences Evaluation Committee 3 provide applied and/or service functions to business and to some extent government sectors. Nofima's societal impact is generally higher than their scientific impact but, this is mainly through supporting the various enterprises of the corporate sector. Nofima struggles a little with interdisciplinarity and delivering on public good aspects of salmon farming and their other activities. However, a very high percentage of publications are open access which adds to the public value. Despite the heterogeneous nature of the research groupings, most appear to be quite tightly focused on their target activities and publications. Research quality is variable across the groups with some scoring excellent and others more average. Overall, only 9% of journal output hits the top 10% of citations of targeted academic journals which is lower than the sector average. Publication rate per member of staff is only 0.5 per year per staff member which is low compared to other institutes in the Life Sciences. The structure of Nofima appears a little rigid and some attention would have to be paid to management if Nofima were to successfully target higher ranking journals and international funding that favour interdisciplinary and multifaceted research. Research integrity is of high importance for Nofima and the model they use is hard to fault given the constraints created by working so closely with industry. Overall, Nofima leadership seems proactive and responsive to challenges and is aware of how to balance the need to generate high quality research relevant to sustainability (e.g. United Nations Sustainable Development Goals (SDGs)) while also providing important applied research that has high immediate impact. Overall, the

Evaluation Committee rates the research quality to be slightly below average for the sector (Norway) and even lower if compared internationally.

2.1 Research quality and integrity

Research quality is variable across the groups considered with some good and others more average. Only around 9% of journal output hits the top 10% of citations of targeted academic journals which is lower than the average for the Life Sciences Institutes in this evaluation. Publication rate per member of staff is only 0.5 per year per staff member which is low compared to other research institutes in the Life Sciences in this evaluation but comparable with applied research institutes serving the private sector. Overall, Nofima's leadership seems proactive and responsive to challenges and is aware of how to balance the need to generate high quality research relevant to sustainability (e.g. SDGs) while also providing important applied research that has high immediate impact. Overall, the Evaluation Committee rates the research quality to be slightly below average for the sector (Norway) but more so if compared internationally.

Research group: The Department of Breeding and Genetics

Overall assessment:
The group focuses on breeding programs and genetic resources in aquatic species in Europe, Asia, and in Africa. The focus is on applied research with strong collaborative links with industry and increasingly uses genomic tools to improve aquatic breeding stock. The group's focus is on breeding robust and healthy animals that are resistant to viral and parasitic diseases and minimising metabolic disorders related to heart and liver. The group is successful in obtaining external funding and plays an import role within international (EU) research consortia. Overall this is a reasonably high-quality group with good scientific outputs. Given the applied nature of the research publication are not often in the very highest journals. The group performs well under societal impact / user involvement and contribution to research publications.

Research group: Fish Health

Overall assessment:
The Fish Health (FH) group has expertise in fish immunology and aspects of mucosal health. There has been a recent focus on production platforms that are being developed especially Recirculating Aquaculture systems (RAS) and closed contained systems, with specific questions about fish health in these systems. Also, research is related to water quality with an emphasis on the first line barriers (skin, mucus, gills and intestine). There is very good internal support from Nofima for both administration and infrastructure for facilities. There is strong external funding with private companies involved in most projects. Scientific outputs are consequently not very strong and the societal impact is weak. Overall Fish Health is a very applied research group but would benefit from more ambitious research agenda to bolster research quality and societal impact. The group has expressed a desire to have more PhD students and this may be a positive development in this regard.

Research group: Industrial Economics

Overall assessment:
The quality of the research is recognised internationally but not especially high. The group contributes extensively to policy development in Norway but research of this nature is not likely to be published in top journals. The IE group plays a pivotal role in the delivery of sustainable fisheries (both wild and aquaculture) in Norway. There may be some debate around the nature of the 'research' since the work may appear as repetitive, based on an analysis of year-on-year changes in various industry metrics and very applied. However, such analyses and the clear dissemination of the information, as

well as its use by government, intergovernmental bodies (e.g. ICES) and in the development of standards are a key component of delivering a sustainable seafood sector.

Research group: Nutrition and Feed Technology

Overall assessment:
This is a very strong, key research group in Norway, which is very well supported by Nofima. The nutrition of fish and the impact on human fish consumption is extremely important. The group has significant expertise in omega 3 oils and has published papers in very high-quality international journals. There is an aspiration to have projects of longer duration that will allow the group to undertake more in-depth research in these projects and these should be pursued. Overall, NFG has a number of important core research areas which include nutrient metabolism especially on lipids, fillets quality, vertebral deformities and the impacts of novel feed ingredients on fish performance. Other areas of research include physiochemical processes in the extrusion process.

Research group: Production Biology

Overall assessment:
PB is a strong group that carries out research to improve the welfare and environmental sustainability of aquaculture. The group is well funded and has secured over 500M NOK in research funds in recent years. The group has a number of core areas of expertise, these being in new aquaculture production systems RAS and SCCS that should reduce the environmental impacts of aquaculture, health and welfare, cod breeding and development of digitalization for aquaculture production. There are 23 staff associated with the group spilt across three sites, this may be a hinderance to communication, but is potentially complemented by differing expertise and bespoke facilities. Scientific outputs are strong, but often in specialised journals, reflecting the applied industrially focused work of Nofima. There is good support from Nofima and also very good mentoring of young staff, which should help in the retention of skilled personnel. Public dissemination and societal contribution is very strong with many book, reports and other policy contributions. The group is very well networked both nationally and internationally and is clearly a group of choice for many collaborative projects.

2.2. Open Science

Nofima encourages all researchers to publish scientific papers according to Open Access (OA) principles. Today, near 100 % of scientific papers with Nofima employees as first author, are published OA. The costs of OA publishing are covered by the Institute. Where research is funded by the Research Council of Norway, or the EU, the institute must comply at all times with the requirements from these funders. Often the same principles can be applied with other project funders. Nofima also encourages all employees to manage data according to the FAIR principles. Research data, by which scientific papers are based upon, should be made openly available. Implementation of the FAIR data principles is in process, but data from industry funded projects may be excluded due to confidentiality issues.

3. Diversity and equality

Nofima has focused on gender discrimination for several years and has have taken several measures in order to ensure equality on all levels of the organization. Research staff consists of 52% women and 48% men and among senior researchers the balance consists of 49 % women and 51 % men. In relation to leadership, 70% of the Institute staff are female which is quite remarkable for a science institute. HR annually reports to the Board and management team on gender balances in the

organization, the distribution of female and male managers at different levels and pay differences. Nofima's Code of Conduct states that no harassment, unwanted attention or discrimination will be accepted, be it on the grounds of culture, ethnicity, gender, religion, sexual orientation, age or any other factor. Nofima expects employees to treat everyone they come into contact with through their work with courtesy and respect. Making staff aware of discrimination is an important part of their onboarding program. Training is arranged at management level, and their Ethical Council arrange case-discussions on a broader level.

4. Relevance to institutional and sectorial purposes

Nofima is an applied research institute directed at improving competitiveness and sustainability of the Norwegian food sector. The Institute's knowledge and data support the sustainable growth and development of fisheries, aquaculture and food science sectors. Commercialization activities encompass the creation of new or improved products, services, business models and way of working. Innovation includes Nofima's contributions to the implementation of new technologies and development of new production processes, in addition to new forms of management, distribution, marketing and business models. Another important element is the contribution aimed at improvement and modernisation of public regulatory framework. As part of this, Nofima receives financial support from the Ministry of Trade, Industry and Fisheries (NFD). The major part of the support is to cover expenses related to research infrastructure of national importance and the national program for cod breeding (Torskeavlsprogrammet). In addition, Nofima receives funding for maintaining the database and performing the annual national analysis of fisheries economics. This serves as an important input factor in fisheries policy development.

5. Relevance to society

Nofima has built the strategy around its contribution towards a more sustainable society by focusing on applying high quality research to improve business performance of aquaculture in Norway. Their activities link to some of the United Nations SDGs but the research undertaken is especially strong with regard to the seafood business sector and the local and national economy of Norway. This contribution to Norwegian society reflects long standing relationships and networks with the corporate sector and is clearly demonstrated in the case studies of the seafood sector. The contribution of Nofima to the wider sustainable development agenda and society are less discernible or demonstrable and it seems societal gains are assumed to be linked to impact on corporations and business practices. This assumption is increasingly questioned due to job shedding associated with the deployment of new technology and the research groups submitted for review to the Life Sciences Evaluation Committee 3 did not really demonstrate any real engagement with societal well-being. Furthermore, there is little reference to the long-term research strategy of the Norwegian Government and little in the way of evidence demonstrating societal impact beyond the industrial collaboration. One could question the trickle-down model and the assumption that corporate gains improve human well-being and lead to societal improvements. For example, what jobs are being created and are they safer and healthier than the ones that are lost? In relation to the environment, it is not clear from the submission how Nofima is making a distinctive contribution to nature conservation, maintaining biodiversity, and responding to the climate crisis. While this is disappointing there is no doubt that Nofima's research is making a distinctive and positive contribution to Norwegian society through improving the sustainability of the food systems (all be it with a rather narrow focus).

Comments to impact case 1
Documenting fish welfare in commercial aquaculture
This case study is ongoing and concerns Nofima developing tools for helping external stakeholders document fish welfare (and health) in aquacultural settings, and how these have been applied to differing species, life stages, rearing systems, routines and operations. This is a very well-presented case study that documents the impact of the project and highlights the impact of Nofima's work with corporate stakeholders.

Comments to impact case 2
Aquaculture breeding and genomics
This case study concerns advancing traditional aquaculture selective breeding programmes to include genomics information. The report describes genetic improvements of 20-50% per generation compared to traditional selection methods. These advancements increase sustainability of the aquaculture breeding programmes and of the production they serve, because they enable improved selection accuracy for e.g. disease resistance traits that have low accuracy when using traditional selection methods. This case study describes the applied science but does not really describe or quantify impact in relation to productivity gains in the corporate sector. The case study is relatively narrow in scope and not especially innovative or ambitious in terms of sustainability, with a sole focus on production parameters for salmon. For example, how do these biological improvements translate to environmental gains or enhanced consumer confidence?

Comments to impact case 3
Omega-3 fatty acids in feed for robust salmon
This case study shows that Atlantic salmon has a higher requirement for the omega-3 fatty acids EPA and DHA under challenging environmental conditions in sea than previously believed. This resulted in a paradigm shift in the Norwegian aquaculture industry, promoting them to increase the dietary levels of omega-3 fatty acids to secure fish robustness and fillet quality. The case study also resulted in new knowledge on two novel omega-3 sources; oil from genetically modified canola crop and microalgae Schizochytrium. Results showed that both ingredients are safe, resulting in good fish performance, health and fillet quality. Both sources are commercially available and contribute to securing the total global availability of omega-3 ingredients and thereby securing further growth of the aquaculture industry. Excellent application of underpinning science to real world impact but again a little narrow focus on the biological – for example, for a case study, it would have been fantastic if the case study had also demonstrated how this excellent science had actually improved business performance/ profitability and how it influenced / affected consumer choice and well-being. What are the environmental issues?

Comments to impact case 4
Salmon farming in RAS
Nofima made Recirculation in Aquaculture (RAS) part of the strategy from 2000 by building the first RAS facility. The research done has filled in knowledge gaps regarding water quality requirements, water treatment methods, fish and system performances that have been necessary for developing mainly Norwegian, but also the international RAS industry besides contributing to research. In 2015, the focus on RAS also resulted in research to develop technological and biological innovations to make closed containments using a reliable and economic sustainable technology. The focus on RAS has also resulted in the bi-annual conference "Smolt production in the future", held in Sunndalsøra. Finally, the focus has resulted in expanding the infrastructure to meet the industrial needs for more research on RAS, and single-RAS units, where each tank has its own RAS system. These have been built in Sunndalsøra and Tromsø. This case study does not yet demonstrate tangible uptake from industry hence is a work in progress, but at least the research is supporting the debate and corporate farming organisations are showing interest.

Comments to impact case 5
Annual seafood industry analyses
This case study documents the research and impact of the Industrial Economics (IE) group at Nofima. This research is renowned in the seafood industry and is integral to business and policy development

in the Norwegian seafood sector. IE deploys its expertise in evaluating how institutional instruments impact marine industries in terms of environmental, economic, institutional, and social sustainability. Accordingly, IE is strongly involved in documenting the claims made about mislabelling in the seafood industry. An important output is to document how marine resources are utilized and impact on national, regional, and local value creation. IE's effort to update and quality-assure a unique socioeconomic database provides contextual knowledge about new challenges and relevant research questions for the seafood industry. This also means that IE either receives direct questions from industry and/or public authorities about scientific explanations to why problems occur and suggestions for how such problems can be handled. This is an excellent case study that highlights the role of data and analysis from this group which is used in high level policy and industry meetings. It clearly demonstrates the benefits of such close collaboration between Nofima, producers and government (national and local). Such a network generates superior research outcomes for all concerned. Possibly the network could be reviewed and expanded to ensure that all interests are represented and possible alternative narratives articulated and considered.

Appendices

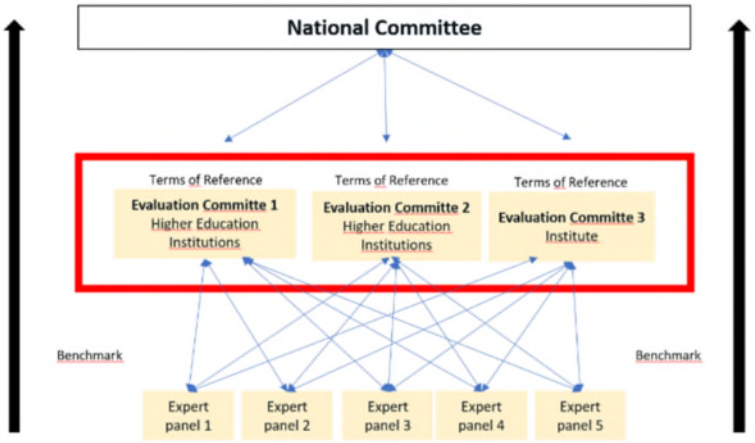
Evaluation of Biosciences 2022-2023

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

Oslo, 5 April 2022

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

1 Introduction

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

1.1 Evaluation units

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

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

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

1.2 Minimum requirements for research groups

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

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

1.3 The evaluation in a nutshell

The assessment concerns:

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

The Research Council of Norway (RCN) will:

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

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

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

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

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

1.4 Target groups

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

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

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

2 Assessment criteria

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

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

2.1 Strategy, resources and organisation

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

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

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

2.2 Research production, quality and integrity

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

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

2.3 Diversity and equality

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

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

2.4 Relevance to institutional and sectoral purposes

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

Higher Education Institutions

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

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

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

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

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

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

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

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

Research institutes (the institute sector)

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

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

The institutes should:

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

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

The hospital sector

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

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

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

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

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

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

2.5 Relevance to society

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

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

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

3 Evaluation process and organisation

The RCN will organise the assessment process as follows:

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

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

3.1 Division of tasks between the committee and panel levels

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

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

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

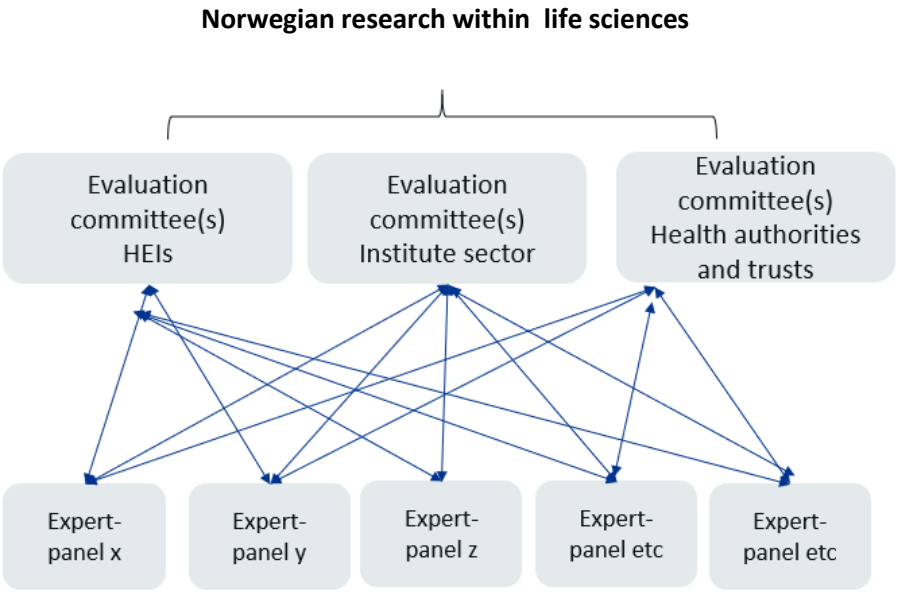

Figure 1. Evaluation committees and expert panels

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

3.2 Accuracy of factual information

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

3.3 National level report

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

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

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

Appendix A: Terms of References (ToR)

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

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

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

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

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

1. …
2. …
3. …
4. …

…

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

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

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

The documents will include the following:

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

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

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

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

Appendix B: Data sources

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

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

National registers

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

Self-assessments

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

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

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

Table 1. Types of evaluation data per criterion

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

The Research Council of Norway

EVALBIOVIT

Self-assessment for administrative units

Version 1.2

Overview

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

1 Introduction

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

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

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

The whole self-assessment shall be written in English.

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

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

Many thanks in advance![1]

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

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

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

2 Self-assessment for administrative units

Self-assessment guidelines:

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

2.1 Strategy, resources and organisation of research

2.1.1 Research strategy

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

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

Form 1 *Administrative unit's strategic planning documents*

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

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

2.1.2 Organisation of research

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

Form 2 *SWOT analysis for administrative units*

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

2.1.3 Research funding

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

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

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

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

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

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

   ii) from the ministries and underlying directorates (NOK)

   iii) from industry (NOK)

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

b) National contract research (post 1.3)

c) International grants (post 1.4)

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

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

2.1.4 Participation in national infrastructures

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

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

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

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

[2] Excluding basic funding.

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

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

Form 5 *Participation in international research organisations*

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

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

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

Form 6 *Participation in infrastructures on the ESFRI Roadmap*

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

2.1.5 Accessibility to research infrastructures

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

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

2.1.6 Research staff

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

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

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

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

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

2.2 Research production, quality, and integrity

2.2.1 Research quality and integrity

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

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

2.2.2 Open Science policies at the administrative unit

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

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

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

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

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

2.3 *Diversity and equality*

2.3.1 Diversity and equality practices

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

Form 8 *Administrative unit's policies against discrimination*

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

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

2.4 Relevance to institutional and sectorial purposes

2.4.1 Sector specific impact

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

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

2.4.2 Research innovation and commercialisation

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

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

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

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

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

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

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

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

2.4.3 Collaboration

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

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

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

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

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

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

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

- Regional, national and international collaborations

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

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

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

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

2.4.4 ONLY for higher education institutions

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

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

2.4.5 ONLY for research institutes

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

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

2.5 Relevance to society

2.5.1 Administrative unit's societal impact

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

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

Case no. 1

Thank you for completing the self-assessment.

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

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

List of research groups

Institution	Administrative unit	Research group
Norwegian food research institute (Nofima) AS	Nofima AS	*Industrial economics*
		Breeding and Genetics
		Nutrition and feed technology
		Fish health
		Production biology

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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Publikasjonen kan lastes ned fra
www.forskningsradet.no/publikasjoner

Design: [design]
Foto/ill. omslagsside: [fotokreditt]

ISBN 978-82-12-03988-9 (pdf)