

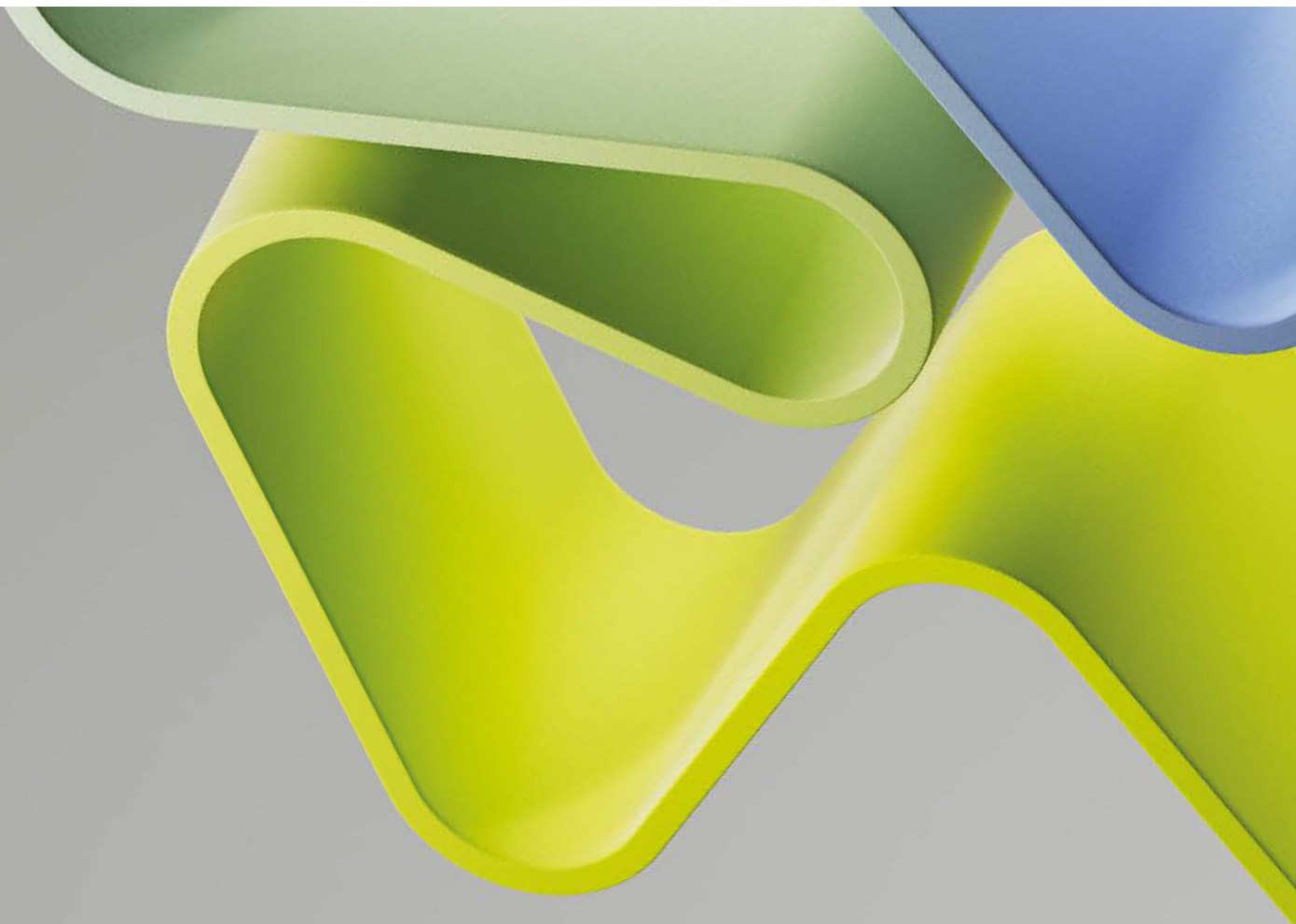
# *Evaluation of Medicine and Health 2023-2024*

Evaluation report – Panel 4b

Research Group: Department of Food Safety (KMMT)

Administrative Unit: Division of Climate and Environmental Health

Institution: Norwegian Institute of Public Health (NIPH)





# Content

Preface	4
Abstract	5
Overall assessment	5
Recommendations	6
1. Strategy, resources and organisation	7
1.1 Research group's organisation and strategy	7
1.2 Research group's resources	9
1.3 Relevance to the institution	10
2. Research quality	11
2.1 Research group's scientific quality	11
2.2 Research group's societal contribution	12
Appendices	13

## **Preface**

The Research Council of Norway (RCN) is given the task by the Ministry of Education and Research to perform subject-specific evaluations. The primary aim of the evaluation of medicine and health (EVALMEDHELSE) 2023-2024 is to reveal and confirm the quality and relevance of research performed at Norwegian Higher Education institutions, research institutions (the institute sector) and the health trusts, in an international perspective. Such knowledge is useful for the institutions that participate in the evaluation, for the Research Council who advise the authorities on how research should be developed further, and for the authorities, who set targets and frameworks for research and higher education. Research groups submitted by their administrative unit will be assessed by 18 expert panels organised by research subjects or themes. The expert panels will assess research groups across institutions and sectors based on research group's self-assessments and examples of scholarly output. These research reports will be part of the evaluation of their belonging administrative units.

## Abstract

The Department of Food Safety was established in 2021 within the Division of Climate and Environmental Health at NIPH, following a series of re-organizations. Despite its 'short' existence in its current form, the Department has developed into a state-of-the-art biomonitoring platform with facilities including analytical chemistry, exposure research, toxicology, risk assessment, environmental epidemiology, nutrition, research ethics, and user participation, across the topics environmental pollutants and diet. The Department is internationally recognised, and aspires to be nationally and internationally (EU) 'leading' in their research, with research supporting their institutional or sectoral purpose. They aim for all major projects and activities to be competitively acquired and externally funded to ensure high quality science. The very recent development of the Centre for Sustainable Diets, led by the Department but combining expertise from across the Institute, could become an important asset for Norway, and a centre of interest for international collaborators. All researchers work 50% on research and 50% on advisory work, which is reflected in the split of income.

## Overall assessment

The panel has evaluated the Department of Food Safety as outstanding for supporting the production of excellent research, and internationally excellent for their quality of the research. The group's contribution to economic and societal impact is considerable, with considerable involvement of societal partners in the research process. The Department is very clear on their main goals. They have formulated clear objectives and strategies on how to achieve their main goals, and set a benchmark at the appropriate level, ambitious and achievable, but lacking metrics-based expectations. The Department has a strong national as well as international research reputation and track record, with an impressive list of past and current grants, and with significant funding coming to the Institute. Many grants and collaborations are substantial and have led to high impact publications. There has been stable core funding in last 5 years, and this funding has been doubled through RCN funding, international funding and other income (chemical analysis). Especially international income has seen growth in past years, indicating the international standing of the Department. However, in none of the international grants cited they are leading, which offers scope for further opportunities to become internationally leading. By its nature, the Department has substantial societal impact through education, analytical evidence, engagement in chemical preparedness for accidents/incidents, involvement in formal risk assessments and enhancing the population's knowledge on pollution, diet and health. A clear example of this impact is the development of tolerable weekly intakes for PFAS "forever chemicals" in food, EU food and drinking water legal limits for these chemicals, and EU bans on some PFAS. Several researchers in the Department are/have been members of national/international risk assessment bodies i.e. The Norwegian Scientific Committee for Food and Environment (VKM) and the European Food Safety Authority (EFSA).

Grading:

Dimensions	Score
Organisational dimension (How adequate the organisational environment is in supporting the production of excellent research).	5
Quality dimension (Research and publication quality/Research group's contribution)	4/4
Societal impact dimension (Research group's societal contribution/User involvement)	4/3

## Recommendations

- The Department may want to evaluate the need to adapt their skillsets over the next years, incorporating expertise to underpin the new development of the Centre for Sustainable Diets, or new expertise needed in advanced data analysis in order to exploit 'big data' opportunities.
- In relation to this, the Department is recommended to develop a strategic vision on staff training in areas where technologies and tools are developing rapidly, and on recruitment and internationalisation.
- It is recommended that the Department sets SMART benchmarks to support prioritisation of resources and to guide ambitions.
- The Department should consider strategies for better involving those that are impacted by the research outcomes into the development of research priorities.
- Co-construction of research with such groups can ensure that the outcomes of the research are relevant to them, and often this is a powerful approach to develop new research questions. In addition, it may be helpful for the Department to identify new areas of societal and economic impact in the future, and to develop a strategy to achieve such impact.

# 1. Strategy, resources and organisation

## 1.1 Research group's organisation and strategy

The Department of Food Safety was established in 2021 within the Division of Climate and Environmental Health at NIPH, following a series of re-organizations in NIPH. Despite its 'short' existence in its current form, the department has developed the original laboratory infrastructure into a state-of-the-art biomonitoring platform with facilities including analytical chemistry, exposure research, toxicology, risk assessment, environmental epidemiology, nutrition, research ethics, and user participation, across the topics environmental pollutants and diet, from measuring and understanding exposure through to their health effects, particularly during pregnancy and child health outcomes. The Department is home to the Norwegian Environmental Biobank (NEB), using data from the Norwegian Mother, Father and Child Cohort Study (MoBa), and other health registries. The Department also contributes to NIPH's responsibility in chemical preparedness. The Centre for Sustainable Diets established in 2023 is anchored in the department, combining expertise from across the institute.

The Department's main goals are to i) contribute to a better and more comprehensive understanding of the links between exposure to environmental pollutants and consequences for health, as well as the importance and mediating effect of diet and nutrition and other environmental factors, and ii) achieve a good overview of the population's exposure to environmental pollutants over time. For this they develop tools, methods and models, and continue collections and extend biomonitoring capacities to maintain its status as a leading European institution in this field. They continuously develop researchers' competence and actively apply for project funding in collaboration with national and international networks. They are currently developing the NIPH Centre for Sustainable Diets to be leading in Norway.

The panel feels that benchmark is set at appropriate level, e.g. research should support the institutional or sectoral purpose, and should be nationally leading and internationally (EU) recognized. All major projects and activities should be competitively acquired to ensure high quality. High-quality scientific publishing and comprehensive and open dissemination of research. However, the benchmark lacks metric-based achievements and expectations.

The Department has no direct educational responsibilities, but it is contributing extensively to supervision MSc and PhD students, and postdocs, and accommodating visiting scientists. They are also regularly acting as external reviewers of PhD viva's.

The host institution provides essential and complete support to research groups, including general admin support, finance support, legal support, IT support, comms support, library services, R&I support,

The Department has an extensive list of collaborations, both on level of institutional duties of monitoring and providing expert advice (EU food safety authorities and EFSA), but also at the level of research (both national and international funding).

### Recommendations:

- The Department should consider whether 'portfolio of expertise' changes are required to facilitate future developments. For example, the recent development of the Centre for Sustainable Diets, led by the Department but combining expertise from across the Institute, could become an important asset for Norway, and an interesting centre for collaboration from an international perspective, in a time where diets will need to be transformed fast and effectively to reduce environmental impact.

- The Department should also consider how maintenance and sustainability of growth will be managed, including setting a strategy for training, recruitment and internationalisation.
- The panel advises that the Department and Institute should outline how they are going to deal with 'big data' and other opportunities, and consider which collaborations within and out with Norway are going to be most important for this. It may be good to assess which key areas of expertise are going to be central to the Department and which areas are going to be attracted through collaboration.

## **1.2 Research group's resources**

The Department of Food Safety consists of 1 director, 7 senior scientists (professor level with leadership on research area and projects and writing funding applications), 1 senior advisor, 3 head engineers, 2 senior engineers, 2 engineers and 1 postdoc. All researchers working 50% on research and 50% on advisory work (e.g. risk assessments, providing expert knowledge etc), reflecting the division of their funding. It has been noted that this Department consists of female employees only.

The research projects are based on core funding and project-based organization with external funding and designated project leaders. There has been stable core funding in last 5 years and this funding is pretty much doubled through RCN funding, international funding and other income (chemical analysis). Especially international income has seen growth in past years, indicating the international standing of the Department. The income for chemical analysis is a stable amount of NOK 3M/year, but the self-assessment does not clarify whether this is to facilitate a year-on-year monitoring programme, or whether this funding is competitively acquired.

The current Department director, who has been in position since 2014, has over 25 years of experience in environmental medicine and analytical chemistry (PhD), and oversees scientific development, the biomonitoring platform, administration, and general management. Each research area is led by a senior scientist. It is unclear from the self-assessment whether there is a strategy for training, capacity building, and recruitment to the Department. The role of researcher training, mobility and how research is organised is not clear from the self-assessment.

The Department states in their self-assessment that it finds it difficult to obtain resources to exploit the biomonitoring opportunities to their fullest, for example for studying time trends and for maintaining the platform – this is not uncommon and familiar for similar research institutes elsewhere. However, the panel feels that the Department is very successful in attracting external research funding (up to 50% consistently, each year), allowing them to exploit their assets. It has built up a solid and robust national and international reputation in their area of expertise and it is therefore foreseen that it will continue to attract external research funding. This external research funding is essential for attracting PhD students and postdocs to build competence in this research area. The panel does advise further involvement in education and involvement in MSc programmes may help the competence building.

While stable leadership is a great asset, having a director in place for more than a decade may also hamper innovation. As such, it would be good to reflect on timely transition once the current director would prepare to leave. At that point, the Department may want to discuss whether, in the future, a more regular transition of leadership would be something they would want to aim for.

### **Recommendations:**

Recommendations to the research group are already captured above for section 1.1.

### **1.3 Relevance to the institution**

Within the Division of Climate and Environmental Health, the Department of Food Safety contributes with advisory work related to exposure and risk assessment of contaminants in food and questions related to diet. NIPH's mandate is to produce, summarize and communicate knowledge to contribute to better public health and health services. This comprises knowledge that "describes the health status of the population and factors that impact" - and includes surveillance of exposure to environmental pollutants and their impact on health.

The Department also manages the biomonitoring platform, a state-of-the-art chemical analytical research facility mostly based on mass spectrometry for targeted and non-targeted analysis, with extensive QA methodology and reference materials. The department also develops exposure models and physiologically based pharmacokinetic models, which are openly shared for public use. Whilst the set-up for quantitative methodologies seems robust and extensive, it is unclear what quantitative tools, and GPS tracking, are being used and how important they are for the research.

The establishment of the Centre for Sustainable Diets, which takes an interdisciplinary view on sustainable diets, including amongst other both food safety and nutrition, raises their profile for collaborations, and could improve possibilities of receiving external funding.

The panel feels the advisory work, project portfolio, biomonitoring platform and the Norwegian Environmental Biobank at the department are well aligned with the Institute's overall mandate and strategy. The Department also contributes to NIPHs responsibility in chemical preparedness.

#### **Recommendation:**

The panel has no further recommendations that those stated above in section 1.1.

## 2. Research quality

### 2.1 Research group's scientific quality

Many grants and collaborations are substantial and have led to high impact publications. The role in the EIRENE RI project (which pioneers the first EU infrastructure on the human exposome, environmental determinants of health) is important as they are the only Norwegian partner, albeit that their role is relatively small. Also, they are not leading on any of the international grants; aiming for this would offer further opportunities to become internationally leading.

The Department has produced several research reports – not all are available in English so it is difficult to judge what the scientific quality is. From the self-assessment it is not clear what the exact role of the Department has been in the development of these.

The Department has played an essential role in the MoBa collection of blood and urine samples from 600-700 parents and children in 2016-2017 for monitoring nutrients, environmental pollutants, and other substances in the body. These samples have been used in research projects and will be used as 'time capsules' for future studies, with a second collection being underway.

The scientific quality of the research, and the level of national and international collaboration are excellent. The infrastructure is excellent too. The panel feels that the Department has a strong national as well as international research reputation and track record, with an impressive list of past and current grants, and significant funding coming to the institute. Important, timely, highly cited and high-impact papers led by Department authors, mostly with multiple authors from the Department on one paper, indicating a strong group and supportive/collaborative ethos within the Department, possibly combining interdisciplinary expertise within such collaborations.

#### Recommendations:

- The panel recommends that the Department formulates a strategic aim to lead an international research consortium with competitive funding, as this would enhance their international reputation and impact.
- The Department may wish to reflect on the future of the MoBa biobank, in relation to its cost, size and representation of the general Norwegian population, or specific target groups, and develop strategies to acquire funding to sustain this biobank for future use.

## **2.2 Research group's societal contribution**

Several researchers in the Department are/have been members of national/international risk assessment bodies i.e. The Norwegian Scientific Committee for Food and Environment (VKM) and the European Food Safety Authority (EFSA). The department is responsible for support to the Food Safety Authority on hazardous substances in food arising from the environment.

The panel assesses that by its very nature, the Department has substantial societal impact through i) education; ii) generation of analytical evidence through analytical chemistry and biomonitoring platforms for national and international customers; iii) engaged in chemical preparedness for accidents/incidents; iv) involvement in formal risk assessments of unwanted substances in food; v) enhancing the population's knowledge on pollution, diet and health. This is why the panel thinks the groups 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.

An example of actual impact is the development of tolerable weekly intakes for PFAS "forever chemicals" in food, EU food and drinking water legal limits for these chemicals, and EU bans on some PFAS. Departmental research has contributed globally as supporting evidence for the Stockholm Convention on PFAS. It would have been good to have further examples of societal or economic impact, are there any. With regard to user involvement, the panel feels that societal partners have considerable involvement in the research process.

### **Recommendation:**

It is unclear from this self-assessment how those that are impacted by the research (e.g. the users, who are, for example, members of the general public) are involved in the research. Co-construction of research with such groups will ensure that the outcomes of the research are relevant to them. The panel suggest that the Department may want to identify new areas of societal and economic impact, and develop a strategy to achieve such impact. This includes an evaluation of how to work with others in Norway to develop impact for the country. Furthermore, the Department may want to develop a strategy on how best to initiate and implement new interventions, including the evaluation of population impact.

## Appendices

## Evaluation of Life Sciences in Norway 2022-2024

### Evaluation of Medicine and Health 2023-2024

#### Mandate Expert panels

The Research Council of Norway (RCN) is given the task by the Ministry of Education and Research to perform subject-specific evaluations. The Portfolio board for Life Sciences in the Research Council of Norway has decided to carry out an evaluation of medicine and health in 2023-2024 as the second of two evaluations within Life Sciences. The evaluation of biosciences takes place in 2022-2023.

#### 1. The objective of the evaluation

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), by the institute sector and by health trusts.

The results of the evaluation will be used as recommendations to the institutions, the Research Council, and the ministries.

#### 2. Tasks of the expert panels

The panels are requested to:

- evaluate the strategy, resources and organisation of/for the research groups.
- evaluate research production and quality of the research groups.
- grade and write a short evaluation text to the evaluated research groups.

Each of the expert panels will write a brief report with evaluations of the different research groups as well as specific recommendations.

#### 3. Time schedule

Digital panel meetings will take place in the period March 15. - June 15. 2024.

Deadline for submitting panel report to the Research Council: June 15. 2024.

#### 4. Miscellaneous

Other important aspects of Norwegian life sciences research that ought to be given consideration.

## EVALMEDHELSE 2023-2024 – Panel group description – January 2024

Panel group	Description	Panel no.
<b>Group 1 PHYSIOLOGY</b>  Physiology-related disciplines (human physiology), including corresponding translational research	Anatomy, physiology, embryology, nutritional physiology, pathology, basic odontological research, exercise physiology, neurobiology, toxicology, pharmacology, medicinal chemistry, chemistry, biology, pathology.	Panel 1a  Panel 1b
<b>Group 2 MOLECULAR BIOLOGY</b>  Molecular Biology, including corresponding translational research	Microbiology, bacteriology, inflammation and infection disease research, forensic medicine, genetics, immunology, vaccine development, microbiological diagnostics, pharmaceutical microbiology, cell biology, molecular medicine and -biophysics, medical biochemistry, omics, organoids, imaging, toxicology, pathology, drug development, cancer research, translational research, systems biology, personalized medicine, biomarkers, oncology, genetics, genomics, epigenetics, proteomics, bioinformatics-/statistics, computational science, AI, biology, virology, radiology, ionisation, molecular biology, microbiology, pharmacology, pharmacogenomics, regenerative medicine and related subjects.	Panel 2a  Panel 2b  Panel 2c
<b>Group 3a CLINICAL RESEARCH</b>	Clinical Research, including surgery and translational research within: paediatrics, women's health, gynaecology, otorhinolaryngology, head and neck surgery, oncology, haematology, radiology and medical imaging.	Panel 3a_1  Panel 3b_2
<b>Group 3b CLINICAL RESEARCH</b>	Clinical Research, including surgery and translational research within: general medicine, emergency medicine, anaesthesiology, neurology, geriatric medicine, rehabilitation medicine, cardiology, nephrology/urology, endocrinology, pulmonary medicine, orthopaedics, rheumatology, Infection, gastroenterology.	Panel 3b_1  Panel 3b_2  Panel 3b_3
<b>Group 4 PUBLIC HEALTH</b>  Public Health and Health-related Research	Public health, community research, epidemiology, preventive medicine, mental health, behavioural research and ethics, medical statistics, environment, nutrition, preventive medicine, physiotherapy, sports medicine, implementation research, public health, health care services research, global health, nursing	Panel 4a  Panel 4b  Panel 4c

	sciences, rehabilitation sciences, public health systems, digital health care services, ICT, HTA, health competence, genetic and epigenetic epidemiology, non-communicable diseases, pharmacology, nursing research, professional research, occupational medicine.	Panel 4d Panel 4e Panel 4f
<b>Group 5 PSYCHOLOGY</b> Psychology and Psychiatry	Clinical psychology, personality psychology, developmental psychology, cognitive psychology, biological psychology and forensic psychology, psychiatry, including geriatric psychiatry, child and adolescent psychiatry and biological psychiatry, social-, community- and workplace psychology, organizational psychology, developmental psychology, behavioural and health psychology, health promotion and well-being.	Panel 5a Panel 5b

## Panel group 4 PUBLIC HEALTH

### Expert panel 4b

<b>Name</b>	<b>Title</b>	<b>Institution</b>
Marianne van der Sande (chair)	Professor	Institute of Tropical Medicine Antwerp
Baukje de Roos	Professor	University of Aberdeen
Lars Rylander	Professor	Lund University
Anders Stålmán	Docent	Karolinska Institutet

Baukje de Roos had a conflict of interest with the evaluation of the Department of Nutritional epidemiology at the University of Oslo (report 13) and Lars Rylander had a conflict of interest with the Department of Food Safety (KMMT) at the Norwegian Institute of Public Health (report 1). This meant that for those evaluations they did not have access to the self assessments or survey data and they did not participate in the discussion of the research group, nor did they participate in the preparation and completion of the evaluation report.



# Evaluation of Medicine and Health (EVALMEDHELSE) 2023-2024

## Self-assessment for research groups

Date of dispatch: **15. September 2023**

Deadline for submission: **31. January 2024**

Updated: **13. October 2023**

Institution (name and short name): \_\_\_\_\_

Administrative unit (name and short name): \_\_\_\_\_

Research group (name and short name): \_\_\_\_\_

Date: \_\_\_\_\_

Contact person: \_\_\_\_\_

Contact details (email): \_\_\_\_\_

# Content

Introduction.....	3
Guidelines for completing the self-assessment .....	4
1. Organisation and strategy .....	5
1.1 Research group’s organisation.....	5
1.2 Research group’s strategy.....	5
1.3 Relevance to the institutions.....	6
1.4 Research group’s resources .....	6
1.5 Research group’s infrastructures .....	7
1.6 Research group’s cooperations.....	8
2. Research quality .....	9
2.1 Research group’s scientific quality.....	9
2.2 Research group’s societal contribution.....	12
3. Challenges and opportunities.....	13

Short version

# 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), the institute sector and the health trusts. 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 responsible and 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 a research group. The self-assessment contains questions regarding the group's research- and innovation related activities and developments over the years 2012-2022. All submitted data will be evaluated by expert panels.

## **Deadline for submitting the self- assessment to your administrative unit – 26 January 2024**

The administrative unit will submit the research groups' completed self-assessments and the administrative unit's own completed self-assessment to the Research Council within 31 January 2024. Please submit completed self- assessment to the administrative unit no later than 26 January 2024.

Please use the following format when naming your document: [short name of the institution]\_[short name of the administrative unit]\_[short name of the research group], e.g. *UiT\_DepPsy\_Short name of the research group*.

For questions concerning the self-assessment or EVALMEDHELSE in general, please contact RCN at [evalmedhelse@forskningsradet.no](mailto:evalmedhelse@forskningsradet.no).

Thank you!

## Guidelines for completing the self-assessment

- Please read the entire self-assessment document before answering.
- The evaluation language is English.
- Please link to websites/documents in the self-assessment where relevant.
- Please be sure that all documents linked to in the self- assessment are written in English and are accessible.
- The page format must be A4 with 2 cm margins, single spacing and Calibri and 11-point font.
- The self-assessment follows the same structure as the [evaluation protocol](#). In order to be evaluated on the two evaluation criteria described in the evaluation protocol, the research group must answer all questions.
  - ⇒ Provide information – provide documents and other relevant data or figures about the research group, 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 research group and inform the reader about the research group.
  - ⇒ Reflect – comment in a reflective and evaluative manner how the research group operates.
- Data on personnel should refer to data reported to DBH on 1 October 2022 for HEIs and to the yearly reporting for 2022 for the institute sector and the health authorities. Other data should refer to 31 December 2022 if not specified otherwise.
- It is possible to extend the textboxes when filling in the form. **NB!** A completed self- assessment form cannot exceed 25 pages (pdf file). Expert panels are not requested to read more than the maximum of 25 pages. Pages exceeding maximum limit of 25 pages **might not** be evaluated.
- Submit the self- assessment as a pdf (max 25 pages) to the administrative unit within **26 January 2024**. Before submission, please be sure that all text are readable after the conversion of the document to pdf. The self- assessment should be sent from the administrative unit to [evalmedhelse@forskningsradet.no](mailto:evalmedhelse@forskningsradet.no) within **31 January 2024**.

***Please note that information you write in the self assessment and the links to documents/websites in the self-assessment are the only available information for the expert panel.***

***In exceptional cases, documents/publications that are not openly available must be submitted as attachment(s) to the self- assessment (pdf file(s)).***

# 1. Organisation and strategy

## 1.1 Research group's organisation

Describe the establishment and the development of the research group, including its leadership (e.g. centralised or distributed etc.), researcher roles (e.g. technical staff, PhD, post docs, junior positions, senior positions or other researcher positions), the group's role in researcher training, mobility and how research is organised (e.g. core funding organisation versus project based organisation etc.).

**Table 1. List of number of personnel by categories**

**Instructions:** Please provide number of your personnel by categories.

For institutions in the higher education sector, please use the categories used in DBH, <https://dbh.hkdir.no/datainnhold/kodeverk/stillingskoder>. Please add new lines or delete lines which are not in use.

	Position by category	No. of researcher per category	Share of women per category (%)	No. of researchers who are part of multiple (other) research groups at the admin unit	No. of temporary positions
<b>No. of Personnel by position</b>	Position A (Fill in)				
	Position B (Fill in)				
	Position C (Fill in)				
	Position D (Fill in)				

## 1.2 Research group's strategy

a) Describe the research group's main goals, objectives and strategies to obtain these (e.g. funding, plans for recruitment, internationalization etc.) within the period 2012-2022.

b) Please describe the benchmark of the research group. The benchmark for the research group should be written by the administrative unit in collaboration with the research group. The benchmark can be a reference to an academic level of performance (national or international) or to the group's contributions to other institutional or sectoral purposes.

Example: A benchmark for a research group is related to the research groups' aim which again is included in the strategy for the administrative unit. A guidance for the administrative unit to set a benchmark for the research group(s) can e.g. be: What do the administrative unit expect from the research group(s)?

c) Describe the research group's contribution to education (master's degree and/or PhD).

d) Describe the support the host institution provides to the research group (i.e., research infrastructure, access to databases, administrative support etc.).

### **1.3 Relevance to the institutions**

Describe the role of the research group within the administrative unit. Consider the research group's contribution towards the institutional strategies and objectives, and relate the research group's benchmark to these.

### **1.4 Research group's resources**

Describe the funding portfolio of the research group for the last five years (2018-2022).

**Table 2.** Describe the sources of R&D funding for the research group in the period 2018-2022.

	2018 (NOK)	2019 (NOK)	2020 (NOK)	2021 (NOK)	2022 (NOK)
<b>Basic funding</b>					
<b>Funding from industry and other private sector sources</b>					
<b>Commissioned research for public sector</b>					
<b>Research Council of Norway</b>					
<b>Grant funding from other national sources</b>					
<b>International funding e.g. NIH, NSF, EU framework programmes</b>					
<b>Other</b>					

## 1.5 Research group's infrastructures

Research infrastructures are facilities that provide resources and services for the research communities to conduct research and foster innovation in their fields. [These](#) include major equipment or sets of instruments, knowledge-related facilities such as collections, archives or scientific data infrastructures, computing systems communication networks. Include both internal and external infrastructures.

- a) Describe which national infrastructures the research group manages or co-manages.
- b) Describe the most important research infrastructures used by the research group.

## 1.6 Research group´s cooperations

**Table 3.** Reflect on the current interactions of the research group with other disciplines, non-academic stakeholders and the potential importance of these for the research (e.g. informing research questions, access to competence, data and infrastructure, broadening the perspectives, short/long-term relations).

<p><b>Interdisciplinary (within and beyond the group)</b></p>	<p>About 1/3 page</p>
<p><b>Collaboration with other research sectors e.g. higher education, research institutes, health trusts and industry.</b></p>	<p>About 1/3 page</p>
<p><b><u>Transdisciplinary</u> (including non academic stakeholders)</b></p> <p><i>Transdisciplinary research involves the integration of knowledge from different science disciplines and (non-academic) stakeholder communities with the aim to help address complex societal challenges.</i></p>	<p>About 1/3 page</p>

## 2. Research quality

### 2.1 Research group's scientific quality

Describe the research profile of the research group and the activities that contribute to the research group's scientific quality. Consider how the research group's work contributes to the wider research within the research group's field nationally and internationally.

Please add a link to the research group's website:

Short version

**Table 4. List of projects**

**Instructions:** Please select 5-10 projects you consider to be representative/the best of the work in the period 1 January 2012 – 31 December 2022. The list may include projects lead by other institutions nationally or internationally. Please delete tables that are not used.

<b>Project 1 -10:</b>  <i>Project title/Project period (year from – year to)</i>	<b>Project owner(s)</b> (project leaders organisation)	
	<b>Total budget and share allocated to research group</b>	
	<b>Objectives and outcomes</b> (planned or actual) <b>and link to website</b>	

**Table 5. Research group's contribution to publications**

**Instructions:** Please select 5-15 publications from the last 5 years (2018-2022) with emphasis on recent publications where group members have a significant role. **If the publication is not openly available, it should be submitted as a pdf file attached to the self-assessment.** We invite you to refer to the Contributor Roles Taxonomy in your description: <https://credit.niso.org/>.

*Cf. Table 1. List of personell by categories:* Research groups up to 15 group members: 5 publications. Research groups up to 30 group members: 10 publications. Research groups above 30 group members: 15 publications.

Please delete tables that are not used.

<b>Publication 1 -15:</b>  <i>Project title/Journal/Year/DOI/URL</i>	<b>Authors</b> (Please highlight group members)	
	<b>Short description</b>	
	<b>Research group's contribution</b>	

**Table 6. Please add a list with the research group's monographs/scientific books.**

Please delete lines which are not used.

1	Title - Authors (Please highlight group members)- link to webpage (if possible)
2	

## 2.2 Research group's societal contribution

Describe the societal impact of the research group's research. Consider contribution to education, economic, societal and cultural development in Norway and internationally.

**Table 7. The research group's societal contribution, including user-oriented publications, products (including patents, software or process innovations**

**Instructions:** Please select 5–10 of your most important user-oriented publications or other products from the last 5–10 years with emphasis on recent publications/products. For each item, please use the following formatting. Please delete lines which are not used.

### **3. Challenges and opportunities**

Information about the strengths and weaknesses of the research group is obtained through the questions above. In this chapter, please reflect on what might be the challenges and opportunities for developing and strengthening the research and the position of the research group.

Short version



## Scales for research group assessment

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### 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 <a href="https://credit.niso.org/">https://credit.niso.org/</a>
5	Quality that is outstanding in terms of originality, significance and rigour.	5	The group has played an outstanding role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
4	Quality that is internationally excellent in terms of originality, significance and rigour but which falls short of the highest standards of excellence.	4	The group has played a very considerable role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
3	Quality that is recognised internationally in terms of originality, significance and rigour.	3	The group has a considerable role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
2	Quality that meets the published definition of research for the purposes of this assessment.	2	The group has modest contributions to the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
1	Quality that falls below the published definition of research for the purposes of this assessment.	1	The group or a group member is credited in the publication, but there is little or no evidence of contributions to the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.

## Societal impact dimension

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

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