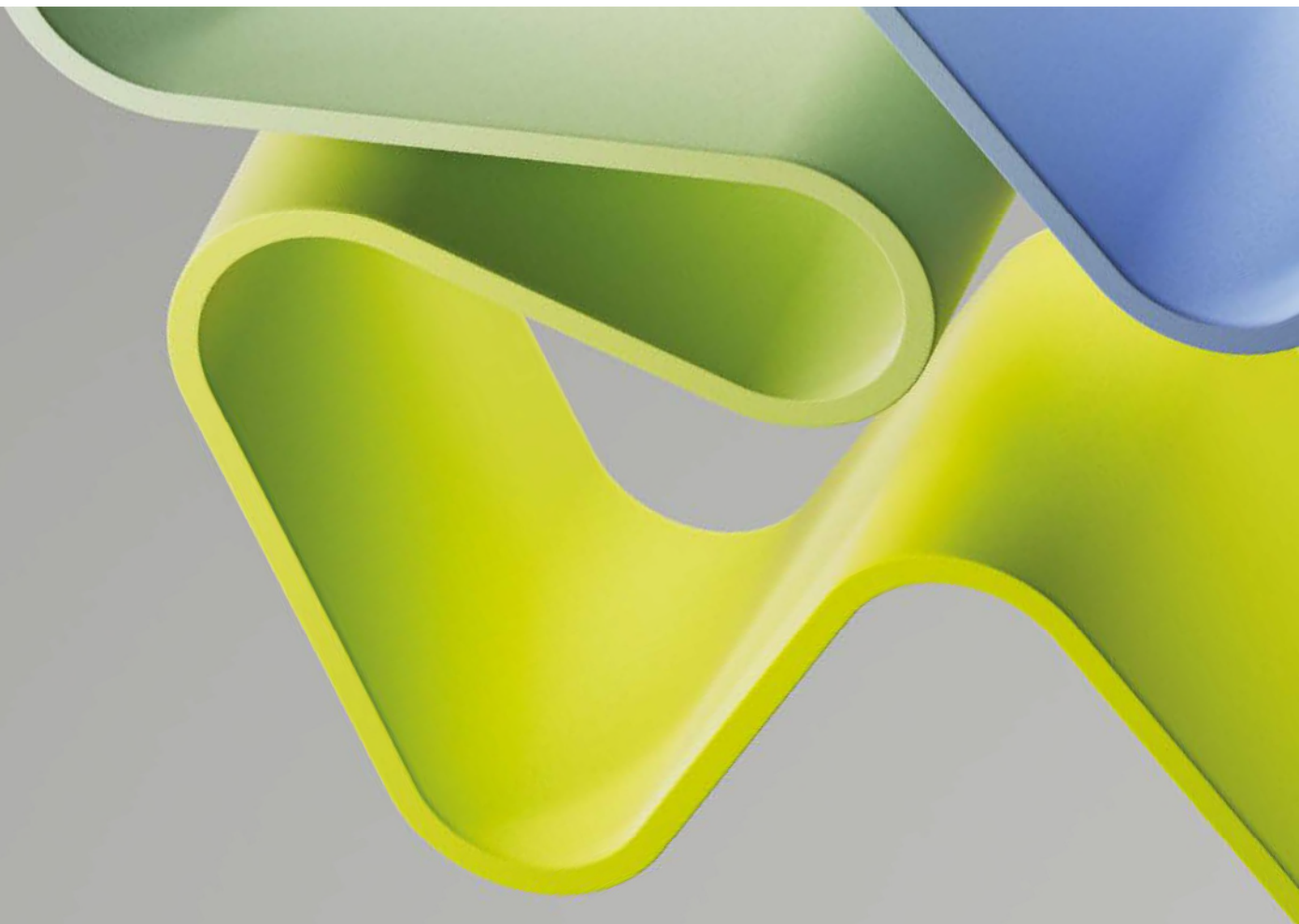


# Evaluation of Natural Sciences 2022-2024

## Evaluation report INSTITUTION NORSUS

January 2024



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## Statement from Evaluation Committee – Institute II

The members of this Evaluation Committee have evaluated the following administrative units at the research institutes within natural sciences in 2022-2023 and submitted a report for each administrative unit:

- CICERO Centre for Climate Research
- Norwegian Meteorological Institute – Weather and Climate (MET)
- Norwegian Institute for Sustainability Research (NORSUS)
- Norwegian Research Centre (NORCE) – Climate and Environment
- Norwegian Institute for Air Research (NILU) – Environmental Chemistry Department
- Norwegian Institute for Air Research (NILU) – Atmospheric and Climate Research Department
- Norwegian Water Resources and Energy Directorate (NVE)
- Nansen Environmental and Remote Sensing Centre (NERSC)

The members of the Evaluation Committee are in collective agreement with the assessments, conclusions and recommendations presented in this report. None of the committee members has declared any conflict of interest.

The Evaluation Committee has consisted of the following members:

Professor **Mat Collins**, (Chair)

University of Exeter, United Kingdom

Professor **Dorthe Dahl-Jensen**,

Niels Bohr Institute, Denmark

Professor **Hayley Fowler**,

Newcastle University, United Kingdom

Professor **Martin Siegert**,

Imperial College London, United Kingdom

Professor **Thomas Jung**,

Alfred Wegener Institut, Germany

## Description of the administrative unit

NORSUS represents both the research group and the administrative unit. In 2021, there were 31 employees: five researchers with leadership status, 15 senior researchers, eight researchers, one senior advisor and two administrative staff members.

In the case of NORSUS, the research group and the administrative unit are one and the same.

In their self-assessment report and in the *strategy document 2020-2023*, NORSUS lists several strategic goals that include: (1) the employment of 28 researchers, (2) one publication point per FTE, (3) at least one scientific staff member employed 20% at a partnering academic institution, (4) 60% of staff with a doctoral degree, (5) participation in at least three international projects and lead one or two national projects at all times, (6) no research proposals with less than a score of five via RCN scoring, and (7) all scientific staff are involved in peer reviewed publications, scientific conferences, proposal writing and dissemination. In their self-assessment form, NORSUS report that they do not participate in any national infrastructure.

In their self-assessment form, NORSUS states that one of their goals is to help companies in Norway with green and sustainable transitions. They suggest that their work on the reduction of greenhouse gases and sustainable management of ecosystems is hard to quantify as they work in partnership with companies and other actors. NORSUS reports that they have worked with NORCEM, Hydro, Statoil, and other large industrial actors to become more resource efficient and reduce negative environmental impact, as well as many individual SMEs and SMEs in industrial network. They also report examples of their indirect impact, which includes contributions to building the EPD system (Environmental Product Declarations) in Norway and the Nordics and building up the current governance system for food waste measurement and reduction in Europe and Norway. NORSUS explains that they are a member of a consortium led by Karlsruhe Institute of Technology that has had a framework contract with the STOA committee of the European Parliament.

In their self-assessment form, NORSUS reports a number of strengths from their administrative unit that include: (1) a strong, collaborative culture where colleagues support each other, and leadership that follows up on individual staff needs, (2) permanent positions and low staff turnover that enable long-term academic staff development within prioritised areas, and (3) a strong network of collaborators from Norwegian and European Universities, as well as with Norwegian public and private enterprises. However, NORSUS reports that the institute has limited career options for scientific staff with a doctoral degree, which may lead to staff looking for career development opportunities outside the institute. Additionally, they report a significant portion of their work is contracted directly through SMEs that primarily request Norwegian language reports that have a tight budget and deadlines that do not allow for scientific publications. Taken together, this may limit NORSUS' position in the future. Therefore, actions are taken to revise the career development paths at the institute and clear prioritisation guidelines are implemented to ensure that projects with too limited scope is avoided.

## Overall assessment

NORSUS is a relatively small research organisation, that is very much working at the interface between scientific methodologies and their application broadly in environmental work. Its strength is that it is focused on providing business and regions with environmental information and analyses to help reduce their climate and environmental footprints. There is a weakness related to its size (it is small), however, and the understanding that the area of work is likely to expand in terms of both urgency and demand, and in the provision of services. NORSUS is therefore concerned that by remaining small it may lose market share. It clearly needs a plan to understand its future – whether to expand to retain its share, to focus on issues it works on at the highest level, to collaborate with potential competitors or to continue as it is now.

It's clear that NORSUS is operating effectively, but the evaluation committee thought a business case for how it may look in future is needed, especially if it wishes to raise its core funding from 15%.

## Recommendations

1. The committee recommends undertaking an assessment of how NORSUS should grow to meet the demand for sustainability solutions over the coming 10 years. At present NORSUS looks too small to have the impact it wishes and is needed.
2. The committee recommends undertaking a review of how NORSUS can translate its methodology to others, to maximise impact while ensuring its necessity as a driver of change.
3. The committee recommends working on how to integrate the approach of NORSUS nationally and internationally, to identify the most obvious partners and partnerships.
4. The committee recommends developing a business case on what investment above 15% core funding would deliver in terms of impact, (economic, business, sustainability, human etc).

The table below presents the specific aspects of the evaluation the administrative Unit requested the evaluation explore and indicated where these are addressed in more detail in the subsequent report.

Specific Request from the Unit's Terms of Reference	Where it is addressed in the report
NORSUS vision: <i>The vision of NORSUS Norwegian Institute for Sustainability Research (formerly Ostfold Research) is to provide knowledge for sustainable societal development. We apply and develop knowledge and methods to understand and implement sustainable solutions in society. Together with a wide range of public and private clients, we undertake projects locally, nationally and internationally to enhance environmental performance, often also generating economic benefits.</i>	Addressed throughout section 1.
The efficiency and effectiveness of the use of the limited administrative resources at NORSUS.	Addressed in Section 1.1 and 1.6.
NORSUS strategy: assess the extent to which NORSUS is on track to achieve strategic choices and goals for the period (Jan 2020 – Dec 2023).	Addressed in overall assessment and recommendations.

a. Work satisfaction, work environment and good leadership and management.	Addressed in section 1.6 and section 3
b. NORSUS activities' ability to strengthen the economic performance and sustainability of the institute.	Addressed in section 1.3
c. Internationalisation	Addressed in section 1.5
d. Success in building/participating in knowledge networks among societal actors, including public and private institutions, NGOs, industry organisations, and academic actors.	Addressed in sections 1.4 and 1.5
e. Agility and ability to respond to changing societal/research needs	Addressed in sections 4 and 5
f. Communication of our research and sustainability related knowledge to the public, stakeholders, public authorities, and others.	Addressed in sections 1.4 and 1.5
g. NORSUS support of policy making, nationally and internationally	Addressed in sections 4 and 6
h. The work related to sharing of LCA data in NorEnviro ( <a href="http://www.norenviro.no">www.norenviro.no</a> )	Addressed in section 5

## 1. Strategy, resources, and organisation of research

NORSUS is a relatively small organisation (31 staff), which has a focus on helping organisations (businesses, regions) in decarbonising through understanding the benefits of efficiencies and life cycle analyses. It undertakes work that some may consider 'consultancy', but its uniqueness is that it develops assessment techniques alongside their deployment and use. This is applied research in a useful sense, and the approach has had several notable successes. Because it is small there is a risk that, given the growing need of its services, it may be unable to meet demand and others less focused on methodological advances may move in. This presents a medium-term issue for NORSUS, and a plan for, expansion, networking and/or collaboration is required.

### 1.1 Research Strategy

NORSUS undertakes research that will lead to impacts on issues relating to sustainability. Its focus is to work with industrial and regional partners to deliver outcomes that drive net zero and reduction in waste (material, fuel, water etc).

A large part of NORSUS' work looks like 'consultancy' rather than research, but during the interview this approach was explained as necessary – NORSUS can undertake such work because of its firm link to state-of-the-art knowledge around sustainability, which allows it to provide unique services to partners.

The evaluation revealed some good examples of project outcomes and take-up of research findings by regional authorities, such as the Oslo Council. Also, some evidence of influencing policy through engagement with ministers. Given NORSUS' success in forming decision makers locally, NORSUS has the potential to scale nationally and internationally in collaboration with partners.

NORSUS states that it works on 'impact' rather than 'policy', but its three impact case studies look to have policy outcomes. Perhaps NORSUS might reconsider the divide between 'impact' and 'policy'. Policy development is a theme that is useful and important within sustainability and, indeed, NORSUS already has a good record on this measure.

In its SWOT analysis, NORSUS highlights a threat "from HEIs and businesses growing their life cycle work with more finance behind them." The threat is interesting, and is likely to become stronger through time, as more organisations look for help, and more groups aim to provide that help. Hence, a form of national integration of sustainable work may be helpful, perhaps led by NORSUS, to share best practice and to offer sector-wide projections and influence. This is exemplified in the statement that "an important rationale for the whole institute sector in Norway is to help companies with green and sustainable transition." One way to approach this issue is to form a 10-year plan, using horizon scanning principles, to understand the role that NORSUS must play in Norway if it is to drive sustainability at the necessary levels.

For example, NORSUS could take the lead in the development of international standards for life cycle assessments, which could be translated nationally and internationally within an umbrella of stakeholders and partners. Such a move would require a 10-year plan and would be exciting to consider. The evaluation committee considers LCA to be an area of considerable global growth, and NORSUS could consider how it needs to look in 10 years to drive the change if that is its plan.

In 2015, NORSUS started a commercial company, but sold it in 2020 to focus on research rather than the commercialisation of work. This was explained as the unit being small and unable to cope with both research and commercialisation, suggesting a major limitation to their programme and potential because of its size.

## 1.2 Organisation of research

NORSUS is a "small institute" (28 researchers) that has narrowed its focus on sustainability research, with life cycle analysis at its core. While this number is quite small for an organisation, NORSUS can demonstrate tangible successes with its approach. However, its size may limit what might be achieved aside from niche activities.

The evaluation committee noted a concern that staff may leave due to a lack of career development, and that such people are difficult to replace. Can NORSUS be more involved in supervising PhDs' and master students' research work? This would allow NORSUS to train staff to a high level and draw interest in the organisation from a wide pool of talent.

In 2020 the name was changed from Øsjold to NORSUS, to reflect the national significance and relevance of the work, rather than local/regional (name after Øsjold county council, now Viken county council).

NORSUS stated ahead of the review that "It must be noted that NORSUS does not fit well into Evalnat. We also don't fit well into the other evaluation groups. Therefore, we ask to be assessed based on premises that are relevant for us." There was no immediate explanation for why this is – but when interviewed it seems the focus on 'impact' through the application of science, rather than scientific advancement was the main reason for concern.

NORSUS has three research leaders, but only one group to foster collaboration and integrated work. There are nine research area leads, in various sectors such as textiles, energy, construction, food etc. Given the small size of the organisation it may be that the NORSUS focus is too broad.

As noted above, policy related work is clearly important to NORSUS, and there have been successes, but there are no dedicated staff to help with this aspect – perhaps that is something that may be considered in future.

### 1.3 Research funding

NORSUS has realised some successes in collaboration and EU grant winning. However, NORSUS states “In our opinion, we have succeeded in our aspirations for collaboration - simply because otherwise we would not still exist” There needs to be a more positive reason to undertake collaboration in sustainability science.

NORSUS would like more base funding, which is currently reported as 15%. A quantitative rationale for more funding is needed, and for specific reasons other than ‘financial comfort’. Examples could be providing a wider service for Norway or building policy work. However, it is currently uncertain what the positive outcome of greater government investment would be. Obviously, a business case for additional funding is needed, and should be considered by NORSUS in line with a strategic review.

### 1.4 Use of infrastructures

An important focus of NORSUS is NorEnviro Norwegian Centre for LCA (life cycle analysis) Data. This is a national centre and database that will function as a national library for environmental and resource data.

NORSUS’ methodological approach to sustainability impact is excellent, and is seen as a USP. The institutional risk now is that by translating the power of the approach nationally, others will step in, potentially squeezing out NORSUS. The risk can be seen positively, however, if NORSUS grows its central role in driving sustainability for the country, and indeed internationally. A firm vision and plan is needed for a transition from a small organisation to one that is fit for the growing challenge.

### 1.5 National and international collaboration

NORSUS is very good on national collaboration, and its three impact cases demonstrate this extremely well. NORSUS is seen as an organisation that can provide tangible impacts to businesses and regions, through the application of a strong scientific approach to consultancy. NORSUS is less visible internationally, though there are some examples of EU funding.

Perhaps a greater emphasis on how their approach can be translated overseas is needed. A review of this would be in order, and there are several institutions, such as EIT Climate KIC, that may be able to support such work. Its work on food waste is an excellent example of working both in Norway and internationally.

### 1.6 Research staff

NORSUS is a “small institute” (28 researchers) that has narrowed its focus on sustainability research, with life cycle analysis at its core. It has three research leaders, but only one group to foster



collaboration and integrated work. It focuses on nine research area leads, in various sectors such as textiles, energy, construction, food etc. The size (small) and breadth (large) of NORSUS, coupled with the increasing need for sustainable solutions in Norway and globally is a problem – NORSUS in its present form cannot deal with the likely growth in demand for its services. It understands this and notes it within its SWOT analysis. However, a pro-active approach to the issue is needed, to best understand the size and configuration of NORSUS in 10 years, and its integration nationally/internationally, if it is to offer the services necessary to drive change.

## 2. Research production, quality and integrity

NORSUS undertakes research on methodological advances in life cycle analyses and other comparable aspects of sustainability, and their deployment in real-life situations. The quality of the work is excellent and their integrity is highly regarded. The evaluation committee was impressed by the research focus maintained by NORSUS, making it rare – perhaps unique – compared with other organisations undertaking consultancy in this space.

### 2.1 Research quality and integrity

#### Research group overall assessment

The group, and institution itself, appears well-organised, with strong competences within the field and an ability to produce high-quality outputs. The group has demonstrated an ability to publish research in high-ranked journals within the topic area, the acquisition of research funding from a variety of national and EU sources, and research collaboration with a wide range of national and international partners. Broad stakeholder interaction, through commissioned projects and otherwise, demonstrates widespread societal reach and potential for significant impacts. The methodological focus on LCA is applied to a wide range of topic areas, possibly indicating “width rather than depth” with respect to coverage. This could represent potential limitations to research quality as detailed domain knowledge may depend on external partners. The applied nature of the research suggests that contributions to methodological advancements within the field are limited.

### 2.2. Open Science

NORSUS offered a brief section to indicate **compliance** on Open Access but perhaps it does not yet understand the **merits** of promoting and advancing open access. It scored 3/5 on this measure, which indicates room for improvement. The evaluation committee was supportive of the approach built by NORSUS on Open Science.

## 3. Diversity and equality

NORSUS understands the need for EDI, and for firm action, policy, and decisions. Women constitute 70% of their employed staff, noting in the interview that it was “difficult to hire men”. It is good to see a target-driven assessment on EDI, and a link to the EDI policy was provided to the evaluation committee. The evaluation committee noted NORSUS’ EDI strategy, and its record in terms of hiring staff, and noted the performance as satisfactory.

## 4. Relevance to institutional and sectorial purposes

NORSUS' remit is to support sectoral responses to sustainability. It is therefore generally good on collaboration and external connections. However, NORSUS is small and so its impact will be quite limited relative to the needs of the sector and the problem. Its impact case studies on Foodwaste and Biogas demonstrates how effective this approach can be, and scaling this should be a focus for the leadership of NORSUS.

## 5. Relevance to society

NORSUS has an excellent record on impact – indeed ensuring impact is very much its reason for working. The issue with NORSUS isn't the excellence of the work, but rather the scale and scalability of the organisation relative to the sector and seriousness of the issue.

During the interview, NORSUS confirmed that the main challenge for them wasn't achieving impact, but instead to do with publishing work. Perhaps that could be a focus for the future. There are journals that now focus on policy-related work and NORSUS could seek to publish there.

### Comments to impact case 1

On food loss and waste, NORSUS shows how their contribution has led to a Norwegian Policy framework on food waste prevention. To focus research on policy outcomes is important, and this is something that NORSUS presently states it doesn't focus on (impact vs policy) but it may wish to focus on this more in the coming years.

### Comments to impact case 2

NORSUS' work on Biogas has had a notable impact on the Norwegian Biogas industry. They have offered consultancy services to build a biogas factory at Tonsberg and have developed regulation and economic support systems to drive the sector. NORSUS uses its Life Cycle Assessment tools, adapted specially for Biogas, to support the biogas industry. For example, economic chain modelling was used for key actors in the supply chain to understand their role and potential. NORSUS deployed quite many staff to this project, which is an indication of its importance, but also demonstrates the fragility of the approach, given the size of NORSUS.

## List of research groups at the Administrative Unit

Institution	Administrative Unit	Research Groups
Norwegian Institute of Sustainability Research (NORSUS)	Norwegian Institute of Sustainability Research (NORSUS)	Norwegian Institute of Sustainability Research (NORSUS)

## 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 (see appendix 3 Evaluation Protocol) that guided the process
- Terms of Reference
- Administrative Unit's self-assessment report
- Administrative Unit's impact cases
- Administrative Unit's research groups evaluation reports
- Bibliometric data
- Personnel and funding data
- Data from Norwegian student and teacher surveys

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 hourlong 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 virtually without adjustments.

### Limitations

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

## Appendices (link to website)

1. Description of the evaluation of EVALNAT
2. Invitation to the evaluation including address list
3. Evaluation protocol
4. Self-assessment administrative units
- 5. Grading scale for research groups**

Website: <https://www.forskningsradet.no/tall-analyse/evalueringer/fag-tema/naturvitenskap/>

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