

Review of research in Earth Sciences in Norway (2010)

Mandate for the evaluation committee

I INTRODUCTION

The Board of the Division for Science, The Research Council of Norway, has decided that an evaluation of research activities in Earth Sciences in Norwegian universities and relevant contract research institutes should be conducted. The report of the evaluation committee will become a part of the basis for the future strategy of the Research Council within the area. It is furthermore intended to point out strategic directions for the institutions being the objective for the evaluation.

The objective of the evaluation

The objective is to review the overall state of basic research in Earth Sciences in Norwegian universities and relevant contract research institutes.

More specifically, the evaluation process should:

- Provide a critical review of the strengths and weaknesses of basic research in Earth Sciences in Norway, both nationally and at the level of individual research groups and academic departments. The scientific quality shall be reviewed in an international context and related to internationally accepted benchmarks.
- Identify research groups that have achieved a high international quality level or have the potential to reach such a level.
- Identify fields of research that need to be strengthened in order to establish the necessary competences in strategic fields of importance for the nation. An assessment of the impending situation regarding recruitment in important fields of Earth Science should be included.

The long-term purpose of the review

The evaluation should provide the involved institutions with the knowledge, advice and recommendations they need to enhance their own research standards.

The evaluation should improve the knowledge base for strategic decision-making by the Research Council, constitute a platform for future work on developing the basic research in Earth Sciences, and represent a basis for determining future priorities, including funding priorities, within and between individual fields of research.

The evaluation should improve the knowledge base needed for the Research Council's advice on research policies to the Norwegian Government and ministries.

Methods

An international Evaluation Committee will be appointed. The Evaluation Committee should base its assessments on self-evaluations provided by the departments/research groups, as well as on meetings with the involved departments/research groups giving oral presentations. The Evaluation Committee may also perform selected site visits to the institutions. Facts on the organisation and resources will be included in the self-evaluations, as well as future plans, CVs, and publication lists of the scientific staff. The Committee should address both the scientific quality of the research and quantitative aspects based on bibliometric analyses of the scientific publications. The Committee is requested to write a report with a set of specific recommendations. A preliminary report will be sent to the departments/research groups to check the factual information. The Committee's final report will be submitted to the Board of the Division for Science for final approval.

II MANDATE

Based on the self-evaluations provided by the involved institutions, meetings with representatives from these institutions, and site visits, the Evaluation Committee is requested to present the evaluation in a written report. This report should include a set of specific recommendations for the future development of the area, as well as suggestions of means for improvement when required. The Committee is requested to evaluate scientific activities with respect to their quality, relevance and international and national collaboration. The Committee is also requested to evaluate the way in which Earth Science research is organised and managed.

The conclusions of the committee's report should lead to a set of recommendations and possible scenarios concerning the future development and prioritization of Earth Science research in Norwegian universities and relevant contract research institutes, including challenges related to recruitment and possible reductions in the number of permanent scientific positions.

Specific aspects to be considered and described:

1. General aspects

- Which fields of research in Earth Sciences have a strong scientific position in Norway and which have a weak position? Is Norwegian research in Earth Sciences being carried out in fields that are regarded as important and relevant by the international research community? Is Norwegian research in Earth Sciences leading the scientific developments internationally within specific fields?
- Is there a reasonable balance between the various fields of Earth Science research in Norway, or is research absent or underrepresented in any particular field? Are any fields overrepresented, in view of the scientific quality or relevance of the research being carried out?
- Is there a reasonable degree of division of research activities at the national level, or should this aspect be improved?
- Is there an adequate degree of national and international mobility?

- Are there any particular differences between Norwegian research in Earth Sciences and research carried out in other countries?
- Is there a reasonable balance between field based research and theoretical research?
- Is the Earth Science research of today in Norway relevant to the needs of industry and society? Do research groups maintain sufficient contact with industry and/or the public sector?

2. Academic departments

- Are the academic departments adequately organised?
- Is scientific leadership being exercised in an appropriate way?
- Do individual departments carry out their research as part of an overall research strategy?
- Is there sufficient collaboration between research groups within individual departments?
- Are there satisfactory policies in place guiding the recruitment and handling of employees?
- Are the efforts to increase gender balance in academic positions satisfactory?
- How has the previous evaluation of research in Earth Sciences (1997/1998) and the associated national strategic plan been used by the departments in their own strategic planning?

3. Research groups (all institutions)

3.1. Strategy, organization and research leadership

- Have research groups developed satisfactory strategies for their research, and are these implemented?
- Is the size and organisation of the research groups reasonable?
- Is research leadership being performed in an appropriate way (e.g. in execution of project management), and is there in place an effective distribution of tasks and responsibilities within the research group?

3.2. Research activities, staff and scientific production

- Do the research groups represent a high scientific quality judged by the significance of contributions to their field, prominence of the leader and team members, and scientific impact of their research?
- Is the scientific production, e.g. the number of scientific publications and Ph.D. theses awarded, reasonable in terms of the resources available?
- How is the long term viability of the staff and facilities evaluated in view of future plans and ideas, staff age, facilities, research profile, and new impulses through recruitment of researchers?

- Do they play an active role in dissemination of their own research and new international developments in their field to industry and/or public sector?

3.3. *Research collaboration (national, international, industry)*

- Is there sufficient contact and co-operation among research groups nationally, in particular, how is the co-operation between the academic departments and the contract research institutes?
- Do the research groups have contracts and joint projects with external partners at a satisfactory level?
- Do the research groups take part in interdisciplinary/multidisciplinary research activities at a satisfactory level?
- Do they play a satisfactory role in creating and establishing new industrial activity? What roles do Norwegian research groups play in international co-operation in individual subfields of Earth Science?
- Is the international network satisfactory, e.g. in terms of contact with leading international research groups, number of guest researchers, and number of joint publications with foreign colleagues?
- Do research groups take satisfactorily part in international programmes?
- Is their participation in international professional committees, peer review, work on standardization, and other professional activities satisfactory?

4. **Research infrastructure (RI)**

- How is the current situation and the future needs with regard to modern RI?
- Is there sufficient national co-operation related to the use of expensive equipment?
- Is the use of facilities abroad satisfactory, or should utilisation be improved by introducing special measures?
- Is there sufficient awareness of new RI opportunities in Europe and globally, and are there plans for active participation in such RI projects?

5. **Training**

- Does the scientific staff play an active role in stimulating the interest for their field of research among young people?
- Is recruitment to doctoral training programmes satisfactory, or should greater emphasis be put on recruitment in the future, including strategies aimed at improving the gender balance?
- Are there sufficient educational and training opportunities for Ph.D. students?

The Committee's written report is expected to be based on the questions above. The assessments and recommendations should be at research group, departmental, institutional (universities only) and national level.

Please feel free to address any other aspects of Norwegian research in Earth Sciences that you mean deserve consideration.