Norwegian Roadmap for Research Infrastructure 2023

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Recommendations

Recommendations to the ministries:

The large number of applications submitted to the National Financing Initiative for Research Infrastructure, and the excellent assessments that many of these applications have received, show that there is a great need and potential for national research infrastructure in Norway. In some areas, there is a need to establish new infrastructure, and there will be a continuous need to upgrade existing infrastructure to ensure that Norwegian research groups have the equipment required to achieve sufficient quality and efficiency.

It is important that Norway maintain the investment volume in national research infrastructure over the next few years. Some of the investments are expected to be used to cover operations. A long-term approach to funding is crucial for maintaining strategi room for maneuvering to the benefit of Norwegian research over time.

Sharing and reuse of FAIR research data requires special research infrastructure and expertise. The long-term plan uses the recommendations of the Data Infrastructure Committee9 as a basis for further work on data infrastructure. The committee recommends a high, but realistic level of ambition where, by 2030, all subject areas should be offered expertise, guidance and curation of research data, either in the form of national solutions or wholly or partly through participation in European or international infrastructure cooperation. As of 2023, the annual allocation from the Ministry of Education and Research is close NOK 800 million. Based on its long-term ambition to maintain this annual level of funding, the Research Council has proposed a increase in its input to the update of the Government's Long-term Plan for Research and Higher Education to cover increased expenses for tools for handling research data.

Recommendations to R&D institutions:

Have clear plans for how the role as host will be managed

Hosting a national research infrastructure entails a great responsibility and, in many cases, financial consequences. Host institutions should have clear, long-term plans for how they will manage, operate and make available the infrastructures they establish. The institutions should ensure that qualified personnel have special responsibility for day-to-day operations and that tl infrastructure is available to all relevant users, including users outside their own institution.

The establishment and operation of data infrastructures entails a national responsibility for access to and secure storage of research data, and an obligation to develop and facilitate the infrastructure for the relevant user groups. Furthermore, it is important to ensure that data can be safeguarded and handled in a long-term perspective. This requires that the institutions consider how they can commit financially and that business models are established for long-term and sustainable operations where relevant user groups and/or user institutions contribute to the funding. To ensure sustainability and anchoring in the research community, it is often important to establish relevant institutional cooperation nationally and/or internationally. Data infrastructures that are established or further developed should strive to build on existing solutions, technology and networks whenever possible.

Good management of the role as host role includes user dialogue and mobilisation of users/the research community to use anc utilise the infrastructures. In order to ensure good and sustainable operation of the infrastructures, it is important that the service developed respond to the needs of users.

Highlight infrastructure costs

Research institutions are encouraged to have financial systems that highlight all costs associated with research infrastructure, including operating costs and depreciation of procured infrastructure. As far as possible, these costs should be allocated to the R&D projects that use the infrastructure and be highlighted in the project budget. Thus, those who fund research activities, including the Research Council, can cover infrastructure costs incurred under the projects. Expenses for the use of research infrastructure are legitimate costs in applications for research funding from the Research Council. Research institutions are

encouraged to take advantage of this opportunity.

Prioritise research infrastructure within the basic allocation

The institutions must continue to focus on the need for new investments, upgrades and operation of research infrastructure in their budgets.

Clear guidelines and competence in data sharing and reuse

Research institutions are encouraged to have clear guidelines and good routines for sharing and reusing data that are in line wit national and international guidelines. In addition, the institutions should have solid expertise in sharing and reusing data, both through good support services, but also close to researchers in the research communities. Clear guidelines, good routines and solid expertise in sharing and reusing research data contribute to increased quality, ethical integrity and transparency in researc and promote cooperation and innovation.

The Research Council will:

Further develop national research infrastructures

Through the National Financing Initiative for Research Infrastructure, the Research Council has established a tool to further develop the Norwegian research infrastructure landscape. Quality assessments and a comprehensive strategic assessment will clarify which investments will benefit Norwegian research. The Research Council is working to ensure that this funding scheme works well with other Research Council instruments and funding schemes to ensure that the strategic perspective is safeguarde in the best possible way. The Research Council will also provide research policy advice on investments in research infrastructur

Follow up Norway's participation in international cooperation on research infrastructure and data management

Norway participates in European cooperation on research infrastructure to give Norwegian research access to infrastructures that Norway alone cannot fund. At the same time, European cooperation could contribute to increased use of our national research infrastructures. The decisions will be directed towards international cooperation that supports the priorities of the Long Term Plan. Norway's participation in the distributed ESFRI infrastructures is of greatest strategic importance where we already have research infrastructures that can be coordinated and further developed in cooperation with other European countries.

Stimulate optimal use of infrastructures

The centralised allocation process at the Research Council provides an overview of the research infrastructures that exist at an given time. The requirement to make national research infrastructure available will also improve utilisation of the infrastructures.

Increase innovation capacity in the private and public sectors

The Norwegian business sector consists largely of small and medium-sized enterprises. The Research Council wants research efforts in these companies to be increased – and for more results to be useful. The Research Council wants an innovative business sector that increases research efforts together with the public sector and sees the sector as an important partner and market for the development of innovative solutions. The Research Council wishes to encourage companies and public entities t collaborate more with Norwegian and international researchers in order to better utilise research results for innovation and development. Updated research infrastructure is a crucial factor in achieving this goal, and the Research Council's infrastructure investments are intended to support such cooperation.

Contribute to access to research data

Access to high-quality research data can contribute to increased innovation and knowledge-based management. The Research Council will contribute to increased access to and reuse of research data for industry and the public sector, as well as for research itself, through requirements and guidelines for R&D projects, and through funding of data infrastructures of national importance. The Research Council also has an important advisory role when it comes to sharing and reusing research data and data infrastructures for this.

Contribute to good management, operation and accessibility in line with international principles

Through the call text, application processing and follow-up of the projects, the Research Council will attach importance to the organisation and operation of the infrastructures. The infrastructures shall be established in accordance with international principles for, among other things, user access, proper processing and access to data and results.

Contribute to raising awareness of the consequences the geopolitical situation may have for access t and operation of research infrastructures and responsible sharing of data

Changes in the geopolitical situation have a significant impact on research and research collaboration. The ideals of openness and accessibility face challenges because security policy considerations can limit the sharing of data and make infrastructure

available to users. The Research Council has an important advisory role in raising awareness of good safety practices and protection of infrastructure and research results against unauthorised access and misuse, when funding national research infrastructures.

Obviously, there must be limits to the sharing of personal data, but there are also other types of data we must be careful about sharing. The possibilities for data collection are increasing in line with technological developments, including remote sensing fro space, sensor technology and autonomous vehicles. The data volumes are large, the accuracy is increasing, and a significant p of the research effort is naturally shifted to the analysis of collected data. The data is a goldmine for those who are good at exploration. It will sometimes happen that sensitive information is hidden in the data as a kind of bycatch, perhaps also informati of a non-civilian nature.

There will be a number of cases where it is necessary to restrict access to research data, particularly raw data. This may also apply to access to the research infrastructure that generates the data. Greater attention to these challenges is necessary, and t practice of the ideals of openness and accessibility must be adapted to the specific assessments. The changes in the geopolitic situation require increased attention to these issues.

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