

## Norwegian Roadmap for Research Infrastructure 2023

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#### International cooperation on research infrastructures

Participation in international research organisations gives Norwegian researchers access to research infrastructures and the opportunity to participate in innovative and resource-intensive research that would be impossible to achieve with national funding alone. This may be important in order to safeguard and further develop national expertise in subject and technology areas where it is not obvious that Norway should have a leading role with regard to the establishment of research infrastructure. Participation also provides considerable potential for technology transfer and development of Norwegian industry. National research infrastructures also help to make Norwegian research groups attractive partners for international projects (e.g. increased opportunities under Horizon Europe) and for Norwegian and international companies. At the same time, a cost-benefit assessment must be made of membership in major new international research infrastructures and of the need to maintain existing membership.

More information about the international research infrastructures Norway participates in is provided in part 3 of the roadmap.

#### ESFRI's roadmap and Norwegian participation

The European Strategy Forum on Research Infrastructures ([ESFRI](#)) was established in 2002 by the research ministers of the EU as an advisory forum for research infrastructure. ESFRI has participants from all member states and from associated countries to the EU Framework Programme for Research and works for pan-European policy development and cooperation on investments and operation of research infrastructures. ESFRI develops [a strategic roadmap](#) on Europe's need for new or upgraded research infrastructure in most research areas. ESFRI also prepares landscape analyses in its roadmaps describing the national and international research infrastructures that are established and open to European researchers and industry actors. This thus constitutes an important knowledge base for where there are good opportunities for Norwegian research groups to initiate international cooperation related to existing or future research infrastructures. ESFRI published its latest roadmap in September 2021.

#### Localized or distributed research infrastructure.

Research infrastructure can either be located in one location or distributed – which means that different countries have complementary sub-infrastructure (called nodes) in a common infrastructure. In the first case, the infrastructure's investment and operating costs are usually relatively high – which is why several countries join forces to finance the infrastructure. Distributed research infrastructure, as defined by ESFRI, is organised as a separate legal entity owned and controlled by the participating countries jointly and with nodes in national ownership. The nodes undertake to make parts of their capacity available to users in the other participating countries. It is important that the national nodes establish a long-term business model that covers operating costs. As a rule, investment and operating costs for the common legal entity will be covered by a membership fee from the participating countries. The vast majority of research infrastructures on the ESFRI Roadmap are distributed.

#### Principles for Norwegian ESFRI membership

The Ministry of Education and Research has asked the Research Council of Norway to follow up the Norwegian participation in ESFRI. This includes preparing a basis for decision-making and submitting recommendations on Norwegian membership of relevant infrastructures on ESFRI's roadmap. In cooperation with the Ministry of Education and Research, the Research Council has also established principles for the establishment, continuation and eventual termination of membership, how the institutions and the Research Council should relate to membership funding, and to Norwegian representation in the governing bodies of the infrastructures (see fact box). The Research Council's recommendations are drawn up on the basis of the assessment of applications for INFRASTRUKTUR. This means that Norwegian research groups planning to participate in international cooperation on research infrastructure, including membership of the infrastructures in ESFRI's roadmap, must, as a general rule, apply for INFRASTRUKTUR on an equal footing with other Norwegian projects of national importance. This is to ensure that the projects of the highest quality and relevance to Norwegian research are awarded funding. The Research Council prepares its recommendations on Norwegian participation to relevant sectoral ministries that make the final decision on Norway's membership after each application review process in INFRASTRUKTUR.

It is common practice in most countries for a national authority, usually a ministry or research council, to have a representative in the governing body for the international infrastructure. In most of the international infrastructures in which Norway participate, it is the Ministry of Education and Research (KD) or another ministry that has signed the membership agreement.

#### Norwegian participation in international research infrastructure

##### Establishment of membership

- It is normally a ministry that formally applies for Norway to become a member of an international research infrastructure and can later withdraw Norway from the collaboration.
- Research groups must apply to the Research Council for new membership. The application will be included in the ordinary application review process in the same way as other applications to the National Financing Initiative for Research Infrastructure. This will ensure that projects of the highest quality and national relevance are awarded. The Research Council will assess the long-term financial obligations that membership entails and whether the membership will constitute added value for Norwegian research, which means that the grant application should be given priority over other national or international grant applications.
- After assessing the grant application, the Research Council will advise the relevant ministry on whether Norway should become a member.

##### Membership fees

- For localised infrastructures, operating costs will usually be financed through an annual membership fee. The National Financing Initiative for Research Infrastructure could help finance such membership fees. Any commitment is only given for a period of time, usually five years. Any continued funding must be based on regular applications to the National Financing Initiative for Research Infrastructure or evaluations.
- For distributed research infrastructures where one or more Norwegian nodes exist, the Research Council considers membership fees to be part of the national node(s)'s operating costs.
- The National Financing Initiative for Research Infrastructure funds membership fees in the EOSC Association for Norwegian Institutions and is based on annual applications to the Research Council.

##### Norwegian representation in governing bodies in projects on the ESFRI Roadmap

- In order to anchor membership in Norwegian research institutions, the institutions should be involved in the management of Norwegian memberships.
- In ESFRI projects in the planning and implementation phase where Norway have decided to become a member or recommended by the Research Council, the Research Council must, as a rule, participate in the governing body. However, the Research Council may, after consultation with the relevant ministries, choose to appoint a resource person from a Norwegian research institution to take the Research Council's place in the governing body.
- In ESFRI projects that have entered a well-functioning operational phase, the Research Council will, in consultation with the relevant ministries, consider replacing its own representation on the governing body with a resource person from one of the participating Norwegian research institutions.

Read more about which infrastructures on the ESFRI roadmap Norway participate in under part 3 of the roadmap.

## European Open Science Cloud and Norwegian participation

The European Open Science Cloud (EOSC) is an ambitious initiative for open science, launched by the European Commission. The vision for EOSC is a common digital framework to give researchers in Europe access to an integrated and secure data infrastructure and seamless services to manage, analyse, share, collaborate and reuse research data, across disciplines and borders. This will help to promote open research in practice.

To achieve this vision, it is necessary to ensure that the EOSC is useful and relevant to researchers, adapted to their needs and challenges. It is therefore important that these are represented in the organisation and involved in the implementation of the EOSC. Members of the EOSC-Association (EOSC-A) consist of organisations and the growing membership base includes European research performing and research funding organisations as well as research infrastructures and service providers. ESFRI infrastructures have had and continue to play a particularly important role in the implementation of the EOSC, and cooperation with ESFRI is ensured at several levels of the organisation. The Research Council is a member of EOSC-A and is a mandated organisation, given by the Ministry of Education and Research, as a representative of the interests of the Norwegian research system. EOSC-A also has several Norwegian research institutions as members, and their participation helps them to take an active role in the development of the EOSC and promotes cooperation with other research institutions across national borders. This collaboration is of great importance to ensure that the EOSC is relevant and adapted to the needs of researchers in different countries and within different disciplines.

## EuroHPC Joint Undertaking and Norwegian Participation

Norway is a member of the EuroHPC Joint Undertaking (hereinafter [EuroHPC JU](#)) since 2019, whose purpose is to develop, acquire, operate and make available European high-performance computing technology and infrastructure for research and innovation across sectors and national borders. The membership gives Norwegian actors the opportunity to apply for funding through the calls administered by EuroHPC JU. A prerequisite for Norwegian actors being awarded funding under these calls is that Norway is associated with the EU framework programmes that provide funding for the various EuroHPC JU calls. EuroHPC JU manages funds from Horizon Europe, Digital Europe and the Connecting Europe Facility-2. Norway is associated only with the first two framework programmes.

The Research Council represents Norway in the steering group of EuroHPC JU, with one delegate. In addition, a number of Norwegian experts from relevant actors in Norway with expert advice are used when deciding matters of particular interest.

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