

NKS-R Framework

Call for Proposals 2024

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General aspects

NKS activities are sought and carried out under two broad research programmes. The NKS-R programme focuses on reactor safety and technology, whilst the NKS-B programme covers issues related to e.g. emergency preparedness. New NKS activities are sought under annual call for proposals for each programme and decisions on funding are made by the NKS board. Where an activity proposal contains elements of interest to both the NKS-R and NKS-B programmes, the proposal may be treated as a 'cross-over' activity and treated accordingly as per the discretion of the NKS board. NKS activities only receive funding for 1 year at a time and will typically run from January to December. Where the overall scope of an activity is planned to be carried out over more than one year, additional funding must be sought through the annual call for proposals for each subsequent years work. Typically, a proposal for an NKS activity should include participation from at least two, preferably three, Nordic countries. A participant is an organisation that is included in the list of participants receiving funding in the proposal form. The participation could be in either direct involvement or by using the end results. Where applicable, applicants should consider inviting those Nordic countries that may have an interest in participating in the planned activity. In the certain cases where interest is restricted, a bilateral cooperation may be approved.

Aims of the NKS programmes

The main aims of both the NKS-R and NKS-B programmes are:

- To maintain and strengthen Nordic competence in the areas of nuclear safety and research
- To develop close informal networks between scientists, workers and end users from the relevant Nordic authorities, organisations, industries and university departments that are concerned with the various aspects of nuclear safety and research.

Proposals submitted to annual call for proposals for both the NKS-R and NKS-B programmes should primarily address these main aims. Equally, the technical/scientific and pedagogic merits of each proposal will be considered in the evaluation process, as well as whether the proposal will produce distinct and measurable goals. In addition, it is important that a proposal demonstrates that the output from the activity will be of use to at least one relevant end user group. To ensure a consistently high level of Nordic competence and qualification in the areas of nuclear safety and research in the long run, the involvement of young scientists and workers in NKS activities is actively encouraged. The Nordic universities and technical institutes have an important role in this respect and the active participation of PhD and MSc students will be viewed positively by the NKS board. Proposals should also demonstrate (where applicable) how the planned work builds on results from previous NKS activities and/or national and international research programmes. In this connection, NKS activities can be designed as 'pilot' studies before seeking larger funding from national and international research programmes for continuation of the work funded by NKS.

Types of NKS activities and expected output

NKS activities can be knowledge seeking and competence building taking the form of research activities, test exercises and information collation/review exercises or aim to spread and distribute knowledge and results through seminars, workshops and educational/training courses. Whatever the form of the planned activity, a final report will be required at the end of the year's work which will then be published on the NKS website.

Research activities should be based on relevant novel investigations or the development of an area of research towards a Nordic perspective. Final reports for research projects should be produced in line with standards expected for scientific publications. Test exercises can take the form of measurement intercomparisons or activities that test competencies across the Nordic countries. Such activities should seek to address any problems highlighted from the exercise in the final report in order to increase knowledge and competencies where necessary. Information collation and review exercises should be designed to fill knowledge gaps or develop existing methodologies for use within Nordic countries. Final reports from such activities should be in line with standards expected for research activities.

Seminars and workshops should aim to develop or build upon existing informal networks and should be preceded by preparation work by participants. Experts from Nordic and/or non-Nordic countries can be invited to address seminars and workshops to provide additional value to these activities. Final reports for such activities should take the form of conference proceedings, containing extended abstracts from each speaker as well as a final overview of any discussions and conclusions. Presentations (slide shows) from such activities can be hosted on the NKS website but should not be included in the final report. Educational and training courses can contain practical and/or theoretical elements and may include exchange visits between organisations and institutes. Such activities are particularly relevant where they are aimed at young scientists and workers. Final reports for educational and training course should contain all course material presented as well as feedback from the participants.

NKS-R Programme

Proposals for NKS-R activities (research, seminar and education) should fall into at least one of the following seven main categories:

- Thermal hydraulics
- Severe accidents
- Reactor physics
- Risk analysis & probabilistic methods
- Organisational issues and safety culture
- Decommissioning and management of reactor waste and spent fuel (excluding measurements)
- Plant life management and extension

Priority is given to activities in the area of operational reactor safety and to innovations which can be seen as future steps in nuclear technology. Cooperation with national and international research will also be taken into account in assessing activities.

The nuclear industry and authorities have a number of current challenges that are of particular interest under the NKS-R programme. These include safety aspects of the modernisation of old plants, harmonisation of safety requirements and standards, power upgrades, ageing issues, decommissioning and dismantling, waste disposal and new nuclear facilities including next generation plants and small modular reactors.

Examples of possible NKS-R activities

Thermal hydraulics

Examples of research areas:

- Thermal hydraulics and CFD-calculations
- Integration of different models

Severe accidents

Examples of research areas:

- Transport and chemical behaviour of radiotoxic elements in severe accident conditions
- Molten corium and concrete interaction

Reactor physics

Examples of research areas:

- Core instability/oscillation phenomena in BWR fuel
- Effects of higher burnup

Risk analysis & probabilistic methods

Examples of research areas:

- Application of PSA for safety evaluation
- Harmonisation of fundamental definitions and concepts within the safety area

Organisational issues and safety culture

Examples of research areas:

- Models and methods for safety reviews
- The safety culture influence on occurred events

Decommissioning and management of reactor waste and spent fuel (excluding measurements)

Examples of research areas:

- Decommissioning and dismantling of research reactors
- Experiences from decommissioning projects

Plant life management and extension

Examples of research areas:

- Thermal or mechanical fatigue
- Radiation damage on the reactor pressure vessel

The list of examples given above is not comprehensive, and other proposals that can be associated with any of the seven categories above will be considered in the evaluation process.