

# THE GOVERNMENT'S ACTION PLAN FOR NUCLEAR ACTIVITIES AND THE ENVIRONMENT IN THE NORTHERN AREA



Statens strålevern  
Norwegian Radiation Protection Authority



NORWEGIAN MINISTRY  
OF FOREIGN AFFAIRS

The Arctic is Norway's most important foreign policy priority. Collaboration on management of the resources in the north will be an important contribution towards protecting health and the environment. The collaboration with Russia regarding nuclear safety and security is an important foundation for this work.

In North West Russia, the most costly part of the work of securing nuclear and radioactive material from the cold war is approaching completion. Although a great deal has been done, there are still issues remaining.

The collaboration has also contributed to close dialogue and collaboration with radiation protection authorities in Ukraine and other former Soviet states. As long as there are nuclear activities and sources of contamination that can affect our neighbouring areas, it is in Norway's interest to maintain close, long-term nuclear safety collaboration in Russia, Ukraine and other former Soviet states.

We can see the focus of our efforts turning from large physical projects towards institution building and collaboration on environmental monitoring and contingency planning. There is at the same time a greater focus on preventing the smuggling of radioactive material that could be used for terrorism and on helping to ensure that no materials and technology go astray and which may be used for nuclear weapons. It has been shown that concrete project work gives the best access to information and the necessary basis for close dialogue. The nuclear safety work provides us with knowledge about nuclear issues of significance for Norway and for Europe. Through the nuclear safety work, we contribute to measures that reduce the risk of accidents and radioactive contamination in Norway, as well as the risk of the material being used for terrorism. Not least, this collaboration enables Norway to maintain and develop the necessary nuclear preparedness and warning systems.

# THE GOVERNMENT'S ACTION PLAN FOR NUCLEAR ACTIVITIES AND THE ENVIRONMENT IN THE NORTHERN AREA

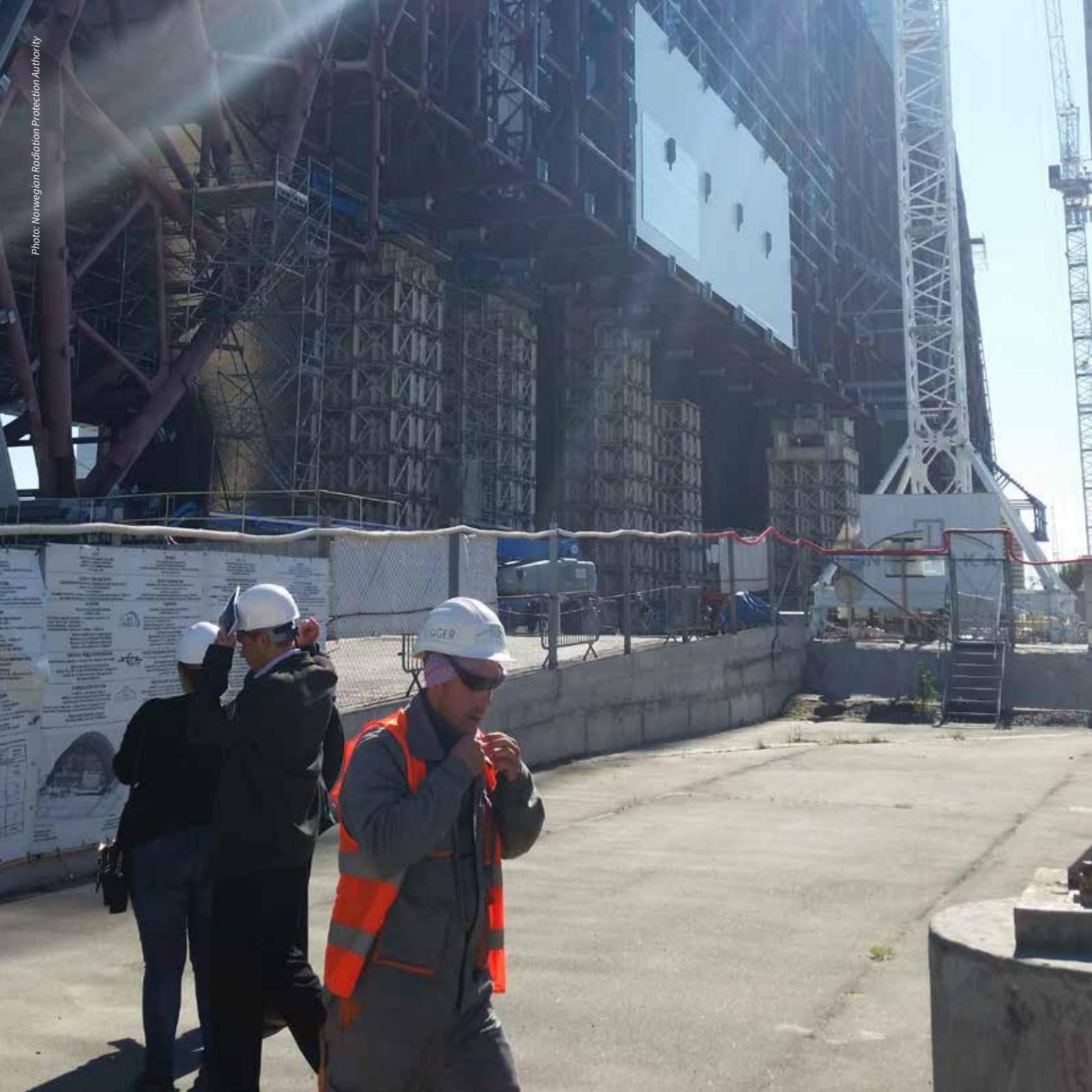
---

The large-scale nuclear activities during the cold war have led to large quantities of radioactive waste and nuclear material being stored under poor safety conditions very close to Norway. Radioactive contamination could have a serious effect on Norwegian interests, with regard to health, the environment and commercial activities. Initially, the most important thing was to gain an overview of the pollution situation and the sources of emissions. In more recent years, the focus has been more on preventing potential contamination, as well as on securing nuclear and radioactive material so that it does not fall into the wrong hands, where it might be used for terrorism.

For 20 years, the Norwegian-Russian collaboration has produced concrete and measurable results that have made life safer for the people of Norway and Russia. The insight and competence that we build up, and the contacts we have made with the radiation protection authorities in Russia, Ukraine and other former Soviet states, put us in a much better position to handle situations that might arise.

The nuclear action plan was established in 1995 and is Norway's most important instrument for collaboration on nuclear safety in North West Russia, Ukraine and other former Soviet states. The nuclear action plan is financed by the Ministry of Foreign Affairs, while the Norwegian Radiation Protection Authority is responsible for administering the funding and quality assurance of the work. The action plan is revised from time to time as targets are reached and measures are completed.

In this booklet, you will find a summary of the Norwegian initiatives in recent years.





## INTERNATIONAL COLLABORATION

---

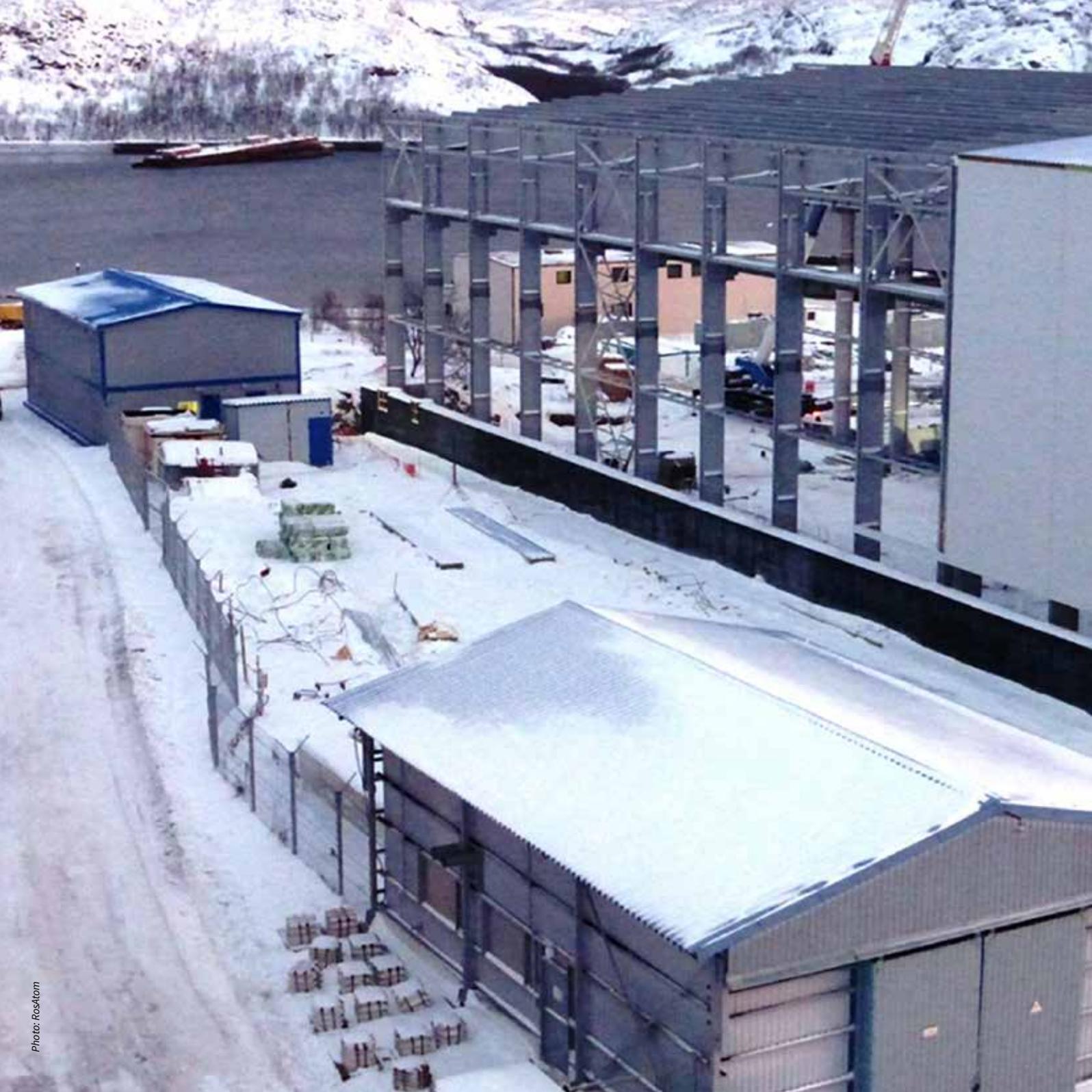
The arms race during the cold war led to the production of large quantities of nuclear materials in the former Soviet Union. A great number of these were stored under poor safety conditions, endangering health and the environment.

Norway was the first country to suggest concrete collaboration projects to the Russians and eventually other countries also started collaborating with Russia in order to clear up the inheritance from the cold war. In recent years there has been substantial international collaboration in Russia, Ukraine and other former Soviet states, which has reduced the risk of accidents, radioactive contamination and terrorism using radioactive material.

Many international stakeholders have contributed to the coordinated efforts and achieved satisfactory results. In 1996 an international group of experts was formed, the Contact Expert Group (CEG), under the International Atomic Energy Agency, in order to assist Russia. Following the terrorist attacks of 11 September 2001, a Global Partnership was formed, to prevent terrorism and the use of weapons of mass destruction. The member countries committed themselves to using 20 billion dollars over a ten-year period, primarily focusing on nuclear safety problems in Russia and the former Soviet states.

Substantial work was done through international collaboration using funds administered by the European Bank for Reconstruction and Development (EBRD). Norway and a number of other stakeholders contribute funding and resources to resolve nuclear safety problems in Russia and Ukraine.

In the course of the last 20 years, Norway has allocated almost NOK 2 billion to nuclear safety work in Russia, Ukraine and former Soviet states. At the same time, it is well known that the countries themselves have made great efforts. International collaboration and coordination has been very important for Norway in order to achieve good results.





## ANDREYEV BAY

---

Andreyev Bay, on the Kola Peninsula just 50 kilometres from Finnmark, is considered to contain one of the largest and most dangerous collections of spent nuclear fuel and radioactive waste in the world.

Andreyev Bay was a Russian military service base that was used to replenish nuclear fuel on atomic submarines and for handling and storage of spent nuclear fuel and radioactive waste. After the facility ceased to be operational, maintenance was minimal and part of the area is heavily contaminated. The spent nuclear fuel comes from approximately 100 submarine reactors, and an accident could have serious consequences. One of the main reasons why Norway has become involved is the risk of contamination across national borders and of radioactive material going astray.

Norway is currently Russia's most important collaborative country for nuclear safety projects in Andreyev Bay. Since 1997, Norway, together with Russia, has implemented a number of projects to reduce the risk of radioactive contamination and to prevent radioactive material from going astray. Others that have been or are active are the United Kingdom, Italy, Sweden, the European Commission and the Northern Dimension Environmental Partnership, which is administered by the EBRD.

Measures that Norway has financed:

- fences, guard huts and alarm systems to ensure that unauthorised persons do not enter the area
- roads, water and sewerage, a power grid and buildings, which are necessary to ensure that the removal of spent nuclear fuel can be done under safe conditions
- a wharf to be used when the waste is transported out of the facility by sea
- ground surveys and mapping of the existing contamination at the site
- radiation shielding for one of the three storage tanks of spent nuclear fuel, in collaboration with the United Kingdom, to enable proper radiation protection for the workers who will remove the spent nuclear fuel
- training of personnel who will remove the spent nuclear fuel
- carrying out contingency exercises
- equipment and facilities for cleaning and preparing equipment to be used to transport out the spent nuclear fuel and radioactive waste

Further Norwegian initiatives will hopefully lead to safe removal and final storage. It is a priority for Norway that Russia keeps to international standards when handling spent nuclear fuel and radioactive waste.

It is in Norway's own interest to monitor work in Andreyev Bay, also after the work of removing nuclear fuel begins, which is due to start in 2017.





## COLLABORATION ON ENVIRONMENTAL MONITORING

---

Up until the 1990s, the former Soviet Union and then Russia used the northern sea areas as a dumping place for spent nuclear fuel and radioactive waste.

17,000 containers of solid radioactive waste have been dumped in the sea areas around Novaya Zemlya, as well as reactors with spent nuclear fuel and reactor components. The danger of contamination from sunken and dumped nuclear submarines in the Barents Sea and Kara Sea is also a cause for concern. Radioactive leakages from these could have consequences for the marine environment and threaten the reputation of the fishing industry.

Joint Norwegian-Russian scientific expeditions have visited the northern sea areas in order to map possible pollution, most recently in 2012 and 2014. The conclusion is that radioactive contamination in the areas investigated was low, but that there is a risk of future contamination. There is also collaboration with Russian institutions on risk and impact assessments relating to dumped and sunken objects containing spent nuclear fuel.

Norway and Russia are collaborating on a joint monitoring programme on land and sea to find out about the level of radioactive contamination in the environment over the course of time.



## UKRAINE

---

The Chernobyl accident in 1986 in what is now Ukraine put the safety of the world's nuclear power plants on the agenda. Norway played an active role in international nuclear collaboration during the years that followed.

When the conflict started in Eastern Ukraine in 2014, the authorities feared that the plants could be exposed to sabotage, accidents and terrorism. Norway and several other countries decided to support Ukraine in the work of safety and security projects at the country's four nuclear power plants.

Norway has contributed to projects that have helped reinforcement of radioactivity checks at the border crossings and prevent the smuggling of radioactive materials. In addition Norway assists in ensuring that approximately 500,000 obsolete radioactive sources from industry, medicine and research do not go astray. There is now particularly close collaboration with the USA, Sweden and Germany on these topics.

Norway and other international partners have established a good cooperation to strengthen nuclear safety and security in Ukraine, which is also important for the safety of Norway and of Europe.



## COLLABORATION BETWEEN AUTHORITIES

---

For more than 20 years, Norway has actively contributed to securing nuclear facilities and radioactive materials in the former Soviet Union. Here the Norwegian Radiation Protection Authority's cooperation with the supervisory authorities in Russia, Ukraine and former Soviet states has been especially important.

The aim of this collaboration is increasing the level of competence, strengthening the safety culture and efficient control by the authorities. This is done by ongoing development of legislation, procedures and inspection routines in the nuclear safety area.

As a result of the Norwegian efforts, the authorities' control of nuclear facilities and waste management in these countries has been strengthened. Cooperation has also made it possible to carry out regular joint emergency response exercises and visits to the nuclear facilities.

Norway's efforts in this area have meant that international stakeholders are better prepared to carry out nuclear safety projects, including in Andreyev Bay. Regulations and guidelines have been developed here to contribute to the safe removal of all spent nuclear fuel and radioactive materials, in line with international standards.

Collaboration between authorities is an important element of Norwegian efforts in the area of nuclear safety.



453  
2911

Радиоактивность !



## COLLABORATION ON EMERGENCY PLANNING

---

Nuclear emergency planning is about preparing for rapid action in order to protect life, health, the environment and other important social interests, in the event of a nuclear accident or incident. Since 1993 and 1994, Norway has had agreements on early warning of nuclear accidents and the exchange of information about nuclear facilities with Russia and Ukraine, respectively. Well-established routines and common procedures for early warning are an important part of the total work of emergency planning.

By means of contact with Russian authorities and organisations, Norway has gained a better understanding of Russian decision support systems, forecasting tools and emergency response organisation. The collaboration has provided the Norwegian authorities with good information about the Russian installations and the risks associated with them. New warning procedures were signed in 2015, and these have been tested in joint emergency response exercises.

It is important to hold emergency response exercises regularly, so as to test out the warning procedures in practice. There will be a continuing focus on this in the future, with both the Russian and the Ukrainian authorities. The regular exchange of information and measurement data also helps to increase both collaboration and knowledge.





## NUCLEAR POWER PLANTS

---

A serious accident at a nuclear power plant could cause acute damage to health in the immediate vicinity and long-term consequences a great distance from the power plant. Russian nuclear power plants represent the greatest risk of the spread of radioactive contamination to Norway. Norway has therefore contributed with the financing of safety measures at the Kola and Leningrad nuclear power plants, so as to reduce the risk of accidents that could have consequences beyond national borders.

There has been good Nordic collaboration on safety concerning the nuclear power plants in North West Russia. This has contributed to good coordination of the work and effective utilisation of resources.

There has been a significant reduction in the number of safety-related incidents at the plants in recent years. For example, the number of incidents at Kola nuclear power plants fell from 41 in 1993 to 4 in 2014, while the seriousness of the incidents also became lower. The risk of core melt-down at the nuclear power plant was about 100 times greater in the early 1990s than it is today.

Norway does not finance safety measures that could lead to an extension of the reactors' lifetime. Many of the Norwegian projects at the Kola and Leningrad power plants are linked to the maintenance and upgrade of the equipment that has been delivered. More recently, Norway has prioritised collaboration on preparations for decommissioning old reactors. The funding from Norway, Sweden and Finland represents only a small proportion of the funds that the Russians themselves are using on safety measures.





## DISMANTLING SUBMARINES

---

During the cold war, the Soviet Union built up the world's largest submarine fleet, and in the 1980s and 1990s many of these were decommissioned. The obsolete submarines contained spent nuclear fuel and were in poor condition. They therefore represented a threat to onshore and marine environments in the north.

In the period from 2003 to 2009, Norway financed and participated in the dismantling of five nuclear submarines with spent nuclear fuel on board. One of these submarines was dismantled in collaboration with the United Kingdom. The spent nuclear fuel was removed from the submarines and is now stored in safe conditions.

Russian and international initiatives for the dismantling of obsolete submarines have led to all of them being successfully dealt with. About 120 nuclear submarines have been dismantled in North West Russia. Russia itself has dismantled the great majority of them.

The project to secure spent nuclear fuel from submarines has now been concluded.





## LIGHTHOUSES

---

The former Soviet Union deployed just over 1,000 radioactive thermoelectric generators (RTG) used to power lighthouses and seamarks. These RTGs contain radioactive sources that are amongst the most dangerous that exist: an unshielded source can give a lethal dose of radiation in about 30 minutes. The lack of physical security made these sources easily accessible to unauthorised persons. Removing and storing these sources has reduced the risk of contaminating the environment and of radioactive material going astray.

Since 1996, Norway, together with the Russian authorities, has financed the removal of all these radioactive sources from lighthouses in North West Russia and the Russian part of the Baltic and replaced them with environmentally-friendly solar cell technology.

The lighthouse project has been an extremely successful measure and Norway has financed the removal of a total of 251 radioactive sources, 180 in North West Russia and 71 in the Baltic Sea region. Russia itself has carried out the removal and securing of most of the more than 1,000 sources. Norway and the USA have been the most important international partners, while France, Canada, Sweden and Finland have also contributed.

The project for removing the highly radioactive sources from lighthouses has now been concluded.



## THE CIVIL SOCIETY

---

Non-governmental environmental protection organisations play an important role in nuclear safety. Friends of the Earth Norway, Young Friends of the Earth Norway and Bellona's work on nuclear issues in North West Russia represent an important link between the authorities and the public.

The presence of the environmental protection organisations in North West Russia is of great significance for Norwegian-Russian collaboration. By working with sister organisations in Russia, the civil society contributes to increasing the focus on environmental and nuclear safety issues, as well as increasing awareness of alternatives to nuclear power, energy economies and streamlining the energy sector. In recent years, there have also been activities to address nuclear safety issues in Ukraine. The work and publications of the non-governmental environmental protection organisations have led to good contact with professional and technical centres and have helped to increase international awareness of current nuclear safety issues.



## THE WAY FORWARD

---

Several initiatives in important areas of the nuclear safety work in North West Russia have now been completed, but a number of issues remain. As long as there are nuclear activities and potential sources of contamination that can affect Norwegian interests, it is in our own interest to maintain close nuclear safety and security collaboration with Russia, Ukraine and other relevant former Soviet states.

There is still a need to remove the spent nuclear fuel from Andreyev Bay. There is also a need to continue the environmental monitoring of dumped radioactive materials in the Barents and Kara Seas and to assess the consequences for health and the environment. Measures are still necessary to improve safety at the Kola and Leningrad nuclear power plants.

While work on the large-scale physical projects in Russia is approaching its conclusion, nuclear safety and security collaboration with Ukraine and former Soviet states has increased in scope, and it is anticipated that this collaboration will be strengthened in the years to come. This will be an important contribution to stability and to safety in Europe. The collaboration will include improved safety and security at nuclear power plants, reducing the risk of radioactive sources going astray and collaboration between authorities.

## KEY STAKEHOLDERS IN THE NUCLEAR ACTION PLAN

---

**The Ministry of Foreign Affairs** is responsible for strategies and priorities and represents Norway in international fora in which nuclear safety is discussed. To ensure broad endorsement of decisions, priorities and measures, all relevant issues are discussed by **an advisory committee for nuclear issues**, chaired by the Ministry of Foreign Affairs.

**The Norwegian Radiation Protection Authority** is the Ministry's technical directorate and is responsible for administering the funding and quality assurance of the work. Applications and reports are processed by the Ministry of Foreign Affairs' nuclear advisory committee before the Norwegian Radiation Protection Authority makes a final decision on finance. Contact and collaboration with Russian regulatory and emergency planning authorities is also a central part of the work of the Norwegian Radiation Protection Authority.

**The Office of the County Governor of Finnmark** is the Norwegian project manager for work in Andreyev Bay and the removal of radioactive sources from lighthouses. **The Institute for Energy Technology** is project manager for safety and security projects at nuclear power plants. The project managers are responsible for ensuring that projects are implemented in a proper manner and within the time frame and cost ceilings that have been set. An important consideration in the selection of project managers is that the knowledge that they develop helps to reinforce the Norwegian competence base for collaboration between Norway and Russia.

Norway contributes to multilateral initiatives, primarily through various funds administered by the **European Bank for Reconstruction and Development, EBRD**. The EBRD administers large nuclear safety projects, including several in North West Russia and Ukraine. Among others, these include Andreyev Bay, the transport and securing of fuel from the service ship Lepse and the building of a new sarcophagus over the wrecked reactor in Chernobyl.

The **non-governmental organisations** Young Friends of the Earth Norway, Friends of the Earth Norway and Bellona are an important link between the authorities and the public and play an important role in information work on the subject of nuclear safety. Collaboration between non-governmental organisations in Norway, Russia and other countries helps to strengthen the development of the civil society.





Statens strålevern  
Norwegian Radiation Protection Authority



NORWEGIAN MINISTRY  
OF FOREIGN AFFAIRS

[www.nrpa.no](http://www.nrpa.no) | [www.mfa.no](http://www.mfa.no) | [www.atomhandlingsplanen.no/#en](http://www.atomhandlingsplanen.no/#en)