



Norwegian Ministry of Foreign Affairs



# NUCLEAR SAFETY AND SECURITY

The Norwegian Government's Action Plan  
2018–2022



# The Norwegian Government's Action Plan for Nuclear Safety and Security in Russia, Ukraine and other countries in Eurasia, 2018–2022

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## Explanations and relevant organisations and institutions

Geographical scope of the Nuclear Action Plan	The Action Plan's main geographical focus is Russia and Ukraine. Activities in Belarus and other countries in Eurasia may also be included in the Action Plan if they are in line with its overall objectives. These countries are: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan and Uzbekistan.
Nuclear Action Plan	The Norwegian Government's Action Plan for Nuclear Safety and Security 2018-2022 (also used to refer to earlier versions from 1995 onwards)
(Nuclear) Safety	The achievement of proper operating conditions, prevention of accidents or mitigation of accident consequences, resulting in protection of workers, the public and the environment from undue radiation hazards. (IAEA definition)
(Nuclear) Security	The prevention and detection of, and response to, theft, sabotage, unauthorised access, illegal transfer or other malicious acts involving nuclear material, other radioactive substances or their associated facilities. (IAEA definition)
<b>Relevant institutions and organisations</b>	
<u>European Bank for Reconstruction and Development (EBRD)</u>	An international financial institution that uses investment as a tool to build market economies. Provides support to more than 30 countries from central Europe to central Asia.
<u>Global Initiative to Combat Nuclear Terrorism (GICNT)</u>	International partnership of 88 countries to strengthen global capacity to combat nuclear terrorism.
<u>Global Partnership against the Spread of Weapons and Materials of Mass Destruction</u>	Launched at the G8 Summit in 2002 and continued by the G7, now with 31 members.
Group of seven (G7)	Consists of the world's seven largest advanced economies: Canada, France, Germany, Italy, Japan, the UK and the US.
<u>International Atomic Energy Agency (IAEA)</u>	A UN organisation whose mission is to promote the safe and peaceful use of nuclear energy.
<u>Multilateral Nuclear Environmental Programme in the Russian Federation (MNEPR)</u>	A multilateral legal framework for nuclear-related projects carried out by Western countries in northwestern Russia. The right of donor countries to inspect project sites and the use of funding is an important principle of the programme.
<u>Northern Dimension Environmental Partnership (NDEP)</u>	International framework under the EBRD for effective implementation of complex and costly environmental projects in the region around the Barents and Baltic Seas, such as dealing with radioactive waste and spent nuclear fuel.

<u>Treaty on the Non-Proliferation of Nuclear Weapons (NPT)</u>	International treaty that aims to prevent the spread of nuclear weapons and weapons technology, to foster the peaceful uses of nuclear energy and to further the goal of disarmament.
<u>Nuclear Security Contact Group (NSCG)</u>	Informal group of countries that have participated in the Nuclear Security Summit process. Other interested countries are also welcome to participate.
<u>Nuclear Security Summit</u>	International cooperation forum for state leaders with the aim of improving the security of nuclear and other radioactive materials and preventing nuclear terrorism.

# 1 Introduction

Norway's Nuclear Action Plan provides the basis for its cooperation on nuclear safety and security with Russia, Ukraine and other countries in Eurasia. The Norwegian Government first adopted a nuclear action plan in 1995. It has since been revised in 1998, 2005, 2008, 2013 and now again in 2018. In all, the Storting (Norwegian parliament) has allocated close to 2 billion Norwegian kroner to this cooperation between 1995 and 2017. This revised Nuclear Action Plan is designed to ensure political backing for, and continuity in, Norway's cooperation on nuclear safety and security and to provide guidelines for the cooperation for the next five years. Successive Norwegian governments and parliaments have given high priority to Norway's cooperation on nuclear safety and security and it is also mentioned in the current Government's political platform.

The measures implemented to date have helped to secure nuclear and other radioactive material, and have reduced the risk of accidents and incidents. Norway's cooperation with Russia is the cornerstone of these efforts and for years has provided an important channel for building trust and exchanging expertise. Norway's efforts are highly regarded internationally. International cooperation and coordination is crucial for achieving good results. Norway's cooperation with Ukraine on nuclear safety and security has been expanded in recent years.

The most important intergovernmental forum nuclear safety and security is the International Atomic Energy Agency (IAEA), of which Norway is a member. Norway's Nuclear Action Plan is in line with IAEA guidelines and standards. A detailed description of Norwegian policy work within and vis-à-vis the IAEA falls outside the scope of this Action Plan. A number of nuclear safety and security projects are financed under the EEA and Norway Grants. These are closely coordinated with activities carried out under the Nuclear Action Plan.

Chapter 2 describes the objectives of Norway's cooperation on nuclear safety and security, Chapter 3 deals with the current situation and Chapter 4 identifies focus areas and priorities and discusses what we want to achieve and why this work is important. Appendix 1 looks back at nuclear safety cooperation over the past 20 years. Appendix 2 provides an overview of the results that have been achieved in this area to date. Appendix 3 describes how Norway's cooperation on nuclear safety and security is organised and mentions the key actors in this work. Some useful explanations and the names of relevant organisations and institutions are listed at the beginning of the document.

## 2 Objectives of the Nuclear Action Plan

### Primary objectives:

There are two primary objectives for activities under the Nuclear Action Plan:

- To reduce the risk of serious accidents and radioactive contamination;
- To prevent nuclear and other radioactive material from falling into the wrong hands.

A nuclear accident or incident can easily have impacts beyond national borders. The international community has therefore set strict safety standards and requirements for notification, preparedness and response and transparency in this area, partly in response to several serious nuclear incidents in the last 10 years. The risk of nuclear and other radioactive material falling into the wrong hands and being used in terrorist attacks underlines the importance of securing this material.

The aim of Norway's nuclear safety and security efforts is to protect human health and the environment. As long as there are nuclear activities and potential sources of contamination that could affect Norwegian and global interests, it will be vital to maintain close, long-term cooperation on nuclear safety and security. This is reflected in the geographical and thematic priorities for our work in this area.

To be successful, cooperation on nuclear safety and security must take place at all levels, including national authorities, scientific experts and civil society. It is this broad-based cooperation that has led over the years to the development of a wide-ranging network of contacts and expertise. Through the measures that have been implemented, large quantities of nuclear and other radioactive material have been secured and the risk of accidents has been reduced. The trust that has been built up through cooperation in this field is important in ways that go far beyond the reduction in the risk of nuclear accidents and radioactive contamination. There is much greater openness about nuclear issues and security assessments today than there was 20 years ago. Cooperation in this area enhances our preparedness and our understanding and knowledge of the risks associated with radioactive contamination.

**Geographical scope:** The Nuclear Action Plan focuses mainly on Russia and Ukraine. Activities in Belarus and other countries in Eurasia may also be included if they are in line with its overall objectives.

### Secondary objectives:

Funding for the Nuclear Action Plan will be used cost-effectively to achieve the following secondary objectives:

- To enhance safety and security at nuclear facilities;
- To ensure a coherent approach based on thorough risk and impact assessments;
- To prevent radioactive contamination of ecosystems;
- To promote awareness and first-hand knowledge of issues relating to nuclear safety and security, including environmental issues, through cooperation and participation in relevant fora;

- To maintain and strengthen dialogue between relevant authorities and civil society in partner countries on the objectives of nuclear safety and security efforts and the tools to be used in this work;
- To strengthen Norway's nuclear emergency preparedness and response system;
- To strengthen monitoring of radioactivity in the atmosphere and the marine and terrestrial environment;
- To improve management regimes and strengthen administrative agencies in the nuclear sector in partner countries, in line with international guidelines;
- To ensure that activities are implemented in line with national legislation and international guidelines, and in close dialogue with relevant supervisory authorities in partner countries and other countries that are providing funding.

### 3 Current situation

The security landscape is changing. Norway is facing complex and unpredictable security threats, including increased military activity in neighbouring areas. There are concerns at the international level that nuclear and other radioactive material could fall into the wrong hands and be used in warfare and terrorist attacks.

**Russia:** The Government gives high priority to nuclear safety and security in its cooperation with Russia. Cooperation on nuclear safety and security is an important area for dialogue and for building trust with the Russian authorities, both now and in the longer term. It is therefore in our interests to maintain our contact in this area. Norwegian-Russian cooperation on nuclear safety and security is highly regarded internationally.

To a large extent, Russia now deals with its nuclear problems itself, providing both the necessary funding and technical expertise. Significant results have been achieved in cooperation with international partners. However, the concentration of nuclear facilities and nuclear material in northwestern Russia continues to pose risks to human health and the environment. Given the proximity to Norway, it is in our interests to ensure that the Norwegian and the broader international engagement in the area continues. There is still broad political consensus in Norway that close cooperation with Russia on nuclear safety and security is an important element of Norway's Arctic policy and of our bilateral relationship with Russia.

**Ukraine:** Russia's illegal annexation of Crimea and destabilisation of the Donbass region, for example through its support for the separatists, has had a major impact not only on Ukraine, but also on the relationship between NATO and Russia. There have also been consequences for nuclear safety and security in Ukraine. As a result of the conflict in eastern Ukraine, large amounts of nuclear and other radioactive material are no longer under the authorities' control. This has increased the risk of theft, smuggling and other illegal activities involving radioactive material in Ukraine. In addition, Ukraine has lost an important centre of nuclear expertise in Sevastopol in Crimea. Norway has strengthened its cooperation with Ukraine. Steps are being taken to enhance safety and security at nuclear power plants and

strengthen border controls. The latter is a priority area for the international community, with the aim of preventing terrorism and the smuggling of nuclear and other radioactive material.

At the Nuclear Security Summit in the Hague in March 2014, Norway announced that it would establish closer cooperation with Ukraine on safety and security at Ukraine's nuclear power plants and pledged to support a major US-led programme to secure radioactive sources and strengthen border controls. In November 2014, Norway signed both a bilateral agreement with Ukraine on cooperation between nuclear authorities and a trilateral declaration with Sweden and Ukraine on nuclear safety and security.

**International engagement:** Norway has built up a strong position internationally through its nuclear safety and security cooperation. The measures that have been implemented in northwestern Russia are an important contribution to global efforts to secure fissile material and Norway's work has attracted considerable attention at the four Nuclear Security Summits held between 2010 and 2016. Norway's reputation in this area was one reason why Norway was given a role in implementing the Iran agreement in December 2015. Norway is also contributing to efforts to promote a culture of safety and security internationally through cooperation between national authorities and dialogue on the development of legislation, emergency response exercises and environmental monitoring. In 2016, Norway was asked to lead a new IAEA network (the European and Central Asian Safety Network or EuCAS), which is intended to strengthen cooperation between Eastern European and Eurasian countries.

Norway's efforts in Russia and Ukraine are providing key contributions towards the goals of the Nuclear Security Summits: to prevent nuclear terrorism globally and strengthen nuclear security through action at the national level. This work is now being followed up in other relevant fora, including the IAEA and the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction. One of Norway's key aims is to play a part in ensuring that we have accurate knowledge of the threats posed by nuclear and other radioactive material. Our efforts in northwestern Russia and Ukraine are helping to make both our neighbouring areas and Europe safer. Norway was behind the proposal to establish an information-sharing initiative for nuclear security in Ukraine to promote coordination and exchange of information in line with the Global Partnership's guidelines.

Norway works closely with other key countries that provide funding and takes partner countries' local priorities into account. This makes it possible to set clear priorities for projects and focus areas based on real needs and Norwegian expertise.

**Civil society:** Norwegian NGOs such as Friends of the Earth Norway, Nature and Youth, and Bellona have cooperated with Russian environmental NGOs for many years. In recent years, they have also developed cooperation with Ukrainian NGOs. Through this cooperation with their counterparts, Norwegian NGOs have raised awareness of environmental and nuclear safety issues and of alternatives to nuclear power.

Since 2012, Russian NGOs that receive funding from abroad and are engaged in 'political activity' have been required by Russian law to register as 'foreign agents'. This has made it more difficult for many partner NGOs in Russia to continue their activities relating to nuclear safety and security. Nevertheless, cooperation between Norwegian, Russian and Ukrainian

environmental NGOs is helping to sustain and develop civil society. One of Norway's aims is to ensure that cooperation between Norwegian NGOs and their project partners continues, as this is necessary to achieve good results. Through its cooperation on nuclear safety and security, Norway will promote transparency and will seek to involve environmental NGOs and other stakeholders. It is important for civil society to have the best possible access to information on, and opportunities to influence decisions on, the handling and storage of nuclear and other radioactive material.

## 4 Focus areas

Norway's project cooperation with relevant authorities and other centres of expertise in Russia and Ukraine makes it possible to build up first-hand knowledge of security challenges that are important for Norway's security and security at global level. There are still nuclear activities and contamination sources in these countries that could affect Norwegian and global interests. Norway will therefore maintain its cooperation with Russia and Ukraine. Activities in other countries in Eurasia may also be continued.

The Nuclear Action Plan has three focus areas, which are described below.

### 4.1 Cooperation with relevant authorities and organisations

Robust and accountable nuclear authorities and institutions are essential for reducing the risk of serious accidents, preventing radioactive contamination and preventing nuclear and other radioactive material from falling into the wrong hands.

Through its cooperation with relevant authorities and organisations, Norway is able to gain a better understanding of the decision support systems and forecasting tools used in the different countries and how their emergency preparedness and response systems are organised. The cooperation also provides the Norwegian authorities with useful information about nuclear facilities and the risks associated with them. In addition, the cooperation is encouraging national authorities to adopt more transparent administrative practices and improving their level of expertise. Effective nuclear emergency preparedness and response systems and adequate knowledge about the state of the environment and possible contamination sources are essential for sound management of the marine resources in the Barents Sea and of other activities in the Arctic.

#### 4.1.1 *Emergency preparedness and response*

Priorities:

- Maintain an up-to-date overview of possible sources of radioactive contamination;
- Promote the development of effective nuclear emergency preparedness and response systems at regional and national level in partner countries, particularly at facilities where there is a possibility of transboundary contamination or releases of radioactive substances that could affect Norwegian interests;

- Cooperate with emergency preparedness authorities in partner countries in order to strengthen Norway's preparedness and response system, for example by participating in exercises;
- Play a leading role in efforts to strengthen the system for early notification of nuclear accidents at the regional, bilateral and international levels;
- Carry out regular exercises to test bilateral notification agreements and procedures;
- Carry out emergency response exercises.

Reliable information on potential sources of radioactive contamination provides the basis for effective crisis management and enables the rapid implementation of measures to protect life, health, the environment and other important public interests. This includes information about nuclear-powered icebreakers, nuclear power plants and other nuclear facilities, and about how spent nuclear fuel and radioactive waste is handled.

Joint emergency response exercises with Norway's partner countries play an important part in strengthening our cooperation, improving the exchange of information and testing how notification procedures function in practice.

#### 4.1.2 *Environmental monitoring*

Priorities:

- Strengthen cooperation on environmental monitoring and further develop cooperation on the exchange and quality assurance of samples and data;
- Help to strengthen authorities and institutions involved in environmental monitoring;
- Investigate dumped nuclear submarines, reactors and other objects containing radioactive waste to determine their condition and the environmental status of the sites and surrounding areas, in close dialogue with Russia, and contribute to impact assessments of various measures for dealing with this issue;
- Maintain an up-to-date overview of levels and time trends for radioactive contamination of the environment.

Surveys of submarines and other objects containing spent nuclear fuel and radioactive waste that have been dumped or sunk in the Arctic are essential to gain an overview of the potential for radioactive contamination. Reliable information on contamination sources is needed in order to assess the possible impacts of any future releases of radioactivity. Any decisions on measures to be taken must be based on risk and impact assessments. The Joint Norwegian-Russian Expert Group for Investigation of Radioactive Contamination in the Northern Areas under the Joint Norwegian-Russian Environmental Commission has been devoting attention to this issue for over 25 years. The Expert Group established a joint monitoring programme in 2006, which is providing valuable information on the marine and terrestrial environment in the Barents region. This, together with impact assessments, can provide a basis for assessing whether submarines or other radioactive objects should be retrieved from the seabed.

#### 4.1.3 *Legislation and administration*

Priorities:

- Support relevant authorities in their efforts to bring national legislation into line with international guidelines, for example guidelines on impact assessments and international standards for nuclear safety and security;
- Promote the development of legislation, procedures, inspection routines, and management regimes and foster a culture of safety and security at supervisory authorities that are responsible for nuclear safety and security, and encourage transparent administrative practices.

More than 20 years' experience of cooperation on nuclear safety and security shows that close contact with supervisory authorities in partner countries on developing legislation, procedures and a culture of safety and security has yielded results in the form of better administrative regimes and preparedness and response systems. Norway intends to continue its support to strengthen the capacity of supervisory authorities in partner countries. Through concrete cooperation projects, we are seeking to promote a predictable and transparent administrative regime. This includes ensuring access to information about public projects that are being planned. In this way, we can improve knowledge of environmental protection, radiation protection and nuclear safety and security issues in partner countries. Cooperation between countries' administrative and supervisory authorities and centres of expertise on nuclear safety and security will continue to be important as long as there are nuclear activities and potential sources of contamination that could affect Norway and neighbouring areas.

## 4.2 **Enhancing safety and security at nuclear facilities**

The safe handling and removal of spent fuel and radioactive waste is still one of the most important priorities in the Government's Nuclear Action Plan. Norway's aim is to reduce the risk of accidents that could have transboundary impacts by funding measures to improve safety and security at nuclear facilities. Spent nuclear fuel and radioactive waste pose a major threat to health and the environment, and this is one of the reasons why Norway first began its engagement in nuclear safety and security cooperation.

### 4.2.1 *Nuclear power plants*

Priorities:

- Encourage partner countries to plan and implement the decommissioning of nuclear power plants, and to make use of experience gained by other countries during this process;
- Maintain cooperation on improving safety and security, with an emphasis on following up previously implemented measures. Experience gained from accidents and incidents in recent years shall be incorporated into decision-making processes;
- Foster a strong culture of safety and security at nuclear power plants in partner countries;
- Further develop technical cooperation with nuclear power plants and national authorities in partner countries on safety and security at these power plants;

- Promote transparency as regards safety and security issues at existing nuclear power plants and when new reactors are constructed;
- Improve physical security at nuclear power plants to prevent unauthorised access to facilities and sensitive material and to prevent nuclear and other radioactive material from falling into the wrong hands;
- Raise awareness of alternatives to nuclear power and of the importance of energy efficiency measures.

The main aim of the safety and security measures funded under the Nuclear Action Plan is to reduce the risk of accidents that could have consequences for Norway and Norwegian interests. The accidents at the Chernobyl and Fukushima nuclear power plants have shown that such accidents can cause acute health problems in nearby areas and have long-term impacts over much wider areas.

Given that a large proportion of the electricity supply in Norway's partner countries comes from nuclear power plants, safe and secure operation of their reactors is vital. Norway does not provide funding for safety and security measures aimed at extending the lifetime of nuclear reactors. High priority is given to cooperation on preparations for decommissioning old reactors. Projects dealing with maintenance and with upgrading previously implemented safety and security measures may also receive support.

It is important to enhance transparency when new reactors are constructed, so that possible cross-border impacts on people and the environment can be identified. International processes under the IAEA Convention on Nuclear Safety and the Espoo Convention on environmental impact assessment in a transboundary context can play an important part in this context.

#### 4.2.2 *Spent nuclear fuel and radioactive waste*

Priorities:

- Support projects to ensure the safe and secure handling, storage and transport of spent nuclear fuel and radioactive waste;
- Play a part in ensuring the safe, secure and cost-effective handling and removal of spent nuclear fuel from Andreyev Bay through targeted safety and security, environmental and emergency preparedness measures implemented within the framework of international cooperation in this area. The aim is for all the fuel to be dealt with properly so that it no longer poses a threat;
- Establish safe, satisfactory working conditions for personnel responsible for removing spent nuclear fuel and radioactive waste.

The large quantities of spent nuclear fuel and radioactive waste stored under unsatisfactory conditions at nuclear facilities could have adverse health and environmental impacts across national borders. Moreover, the quality of some of the spent fuel is such that it could, under certain circumstances, be suitable for use in nuclear weapons. Norway will do its part to ensure that this waste is dealt with in a responsible manner and is kept under control at all times.

The operation at Andreyev Bay is the most important component of our nuclear safety and security cooperation in the north, and will continue to be a high priority for Norway for many years to come. Norway intends to maintain its bilateral cooperation with Russia in this area and to continue its participation in international cooperation under the European Bank for Reconstruction and Development (EBRD). Norway considers it vital that spent nuclear fuel is handled and transported safely and securely, in line with international standards. The operation must be organised in a way that allows the removal of the spent nuclear fuel to continue without delays. A long-term approach is essential, since it is unlikely that all the fuel will have been removed before 2024 at the earliest. Through the EBRD, Norway will also continue its involvement in the process of removing spent nuclear fuel from the *Lepse* service vessel.

The FSUE Atomflot service base two kilometres from Murmansk is an important hub for the transport of nuclear spent fuel from Andreyev Bay and the *Lepse*. Fuel is transported to Atomflot by special vessel, and then transferred to rail for transport to the Mayak nuclear facility in the Urals, southeast of Yekaterinburg, where it is to be reprocessed and stored. Russia is responsible for carrying out this work in a safe and secure way. During temporary storage of nuclear fuel at Atomflot, requirements for physical protection must be met and there is a need for environmental monitoring. Norway is seeking to continue its engagement at the Atomflot base. In addition, Norway hopes to resume its dialogue and cooperation with Russia on the environmental situation in and around Mayak.

#### **4.3 Nuclear security and non-proliferation**

Special measures are needed to secure nuclear and other radioactive material, and to prevent it from falling into the wrong hands. This type of material can be used to produce radiological dispersion devices «dirty bombs», and some of it is suitable for use in the production of simple nuclear weapons. There is also a need to retrieve and secure material that has fallen outside regulatory control or that has been used for criminal purposes.

Combating the smuggling of nuclear and other radioactive material is another key task that requires international cooperation. The International Atomic Energy Agency (IAEA) is at the centre of these efforts. Cooperation between authorities that are responsible for preventing nuclear and other radioactive material from falling into the wrong hands is vital.

Priorities:

- Support the implementation of measures to improve control of nuclear and other radioactive material;
- Compile a more complete overview of radioactive sources that constitute environmental, security and health hazards and consider measures to deal with them;
- Support efforts to strengthen border controls in order to prevent smuggling of nuclear and other radioactive material;
- Promote dialogue between the authorities in partner countries and in particular between national authorities that are responsible for combating the smuggling of nuclear and other radioactive material;

- Provide support for training relevant personnel in the detection of nuclear and other radioactive material;
- Strengthen cooperation between expert groups and relevant authorities in Norway and partner countries on improving the control and security of nuclear material and nuclear facilities;
- Support multilateral efforts to secure nuclear and other radioactive material and radioactive sources.

Norway will play a part in efforts to prevent nuclear and other radioactive material from falling into the wrong hands. This will involve engaging in bilateral cooperation, carrying out joint projects with authorities in other countries and participating in international cooperation fora. The latter include the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, the Global Initiative to Combat Nuclear Terrorism and the Nuclear Security Contact Group. Norway is advocating stronger cooperation between the various authorities and organisations that are responsible for uncovering smuggling activities. Norway will also promote measures that strengthen border controls and prevent nuclear and other radioactive material from being smuggled into the Schengen area. There is a need to improve administrative procedures, provide more training for personnel and purchase better radiation detection equipment. Weaknesses in national inspection and enforcement systems for nuclear and other radioactive material could result in material falling into the wrong hands.

Further efforts to develop techniques to determine the origin and history of nuclear material (nuclear forensics) are vital in exposing criminal activities. Norway is encouraging more exchange of information at the international level, particularly between countries where smuggling is a problem.

# Appendix 1: History and background

## *The Soviet Union's nuclear legacy*

After the Second World War, the Soviet Union developed an extensive nuclear programme, both military and civilian. The years up until the fall of the Soviet Union saw the large-scale development of nuclear infrastructure, but the sector was also plagued by accidents, poor maintenance, irresponsible handling of waste and a lack of transparency. In the 1990s, the rest of the world also became aware of many of these problems. An accident at a nuclear facility in the former Soviet states could affect areas beyond the region, and could thus have implications for Norway and Norwegian interests.

The disused naval base at Andreyev Bay, only about 50 kilometres from Finnmark county in Norway, is one of the largest and most dangerous storage sites for spent nuclear fuel and radioactive waste in the world. The base was established in 1960 and was taken out of active use in 1984. It was used for refuelling nuclear submarines and nuclear icebreakers, and for handling and storing large quantities of solid and liquid radioactive waste. The area is highly contaminated, and the spent fuel represents a risk of contamination of the terrestrial environment and of marine ecosystems that could have impacts on fish stocks in the Barents Sea. Norway has played a part in facilitating the safe transport of spent nuclear fuel away from the area.

Until the 1990s, the former Soviet Union, and later Russia, used the northern sea areas as a dumping ground for spent nuclear fuel and radioactive waste. Some 17 000 containers of solid radioactive waste were dumped in the waters around Novaya Zemlya, in addition to reactors containing spent nuclear fuel, reactor components and at least one nuclear-powered submarine.

In 2013, the former nuclear service vessel *Lepse*, carrying large quantities of spent nuclear fuel, was put into dry dock at the Nerpa shipyard on the Kola Bay, as part of a project carried out under the auspices of the EBRD. According to plan, the work of dismantling the vessel and removing the spent nuclear fuel will be completed in 2020. Norway is following this work closely.

## *Key policy documents on Norway's nuclear safety and security cooperation with Russia*

The first account of nuclear problems in Russia, in particular the problem of nuclear waste from the arms race, was provided in 1994 in a white paper on nuclear activities and chemical weapons in areas adjacent to Norway's northern borders (Report No. 34 (1993–1994) to the Storting). In 1995, the Norwegian Government adopted a Nuclear Action Plan to address the situation. It has since been revised in 1998, 2005, 2008, 2013 and now again in 2018. In all, the Storting has allocated close to NOK 2 billion to this cooperation between 1995 and 2017.

In 2010, the Government presented a white paper entitled *Cooperation with Russia on nuclear activities and the environment in the High North* (Meld. St. 11 (2009-2010)), which provided an overview of the results of Norway's nuclear safety and security cooperation with Russia. The white paper concluded that concrete results had been achieved through cooperation at both bilateral and international levels. These included improvements in safety and security at Russian nuclear power plants in areas close to Norway and successful efforts to ensure the

safe and secure handling, transport and storage of spent nuclear fuel and radioactive waste. One important principle of the cooperation has always been that Russia bears the main responsibility for dealing with its nuclear problems. The nature of the cooperation gradually changed as our Russian partners became more actively engaged. When the Storting considered the 2010 white paper, there was broad political consensus on the importance of this work.

#### *Investigation by the Office of the Auditor General*

In 2008, Norway and Russia initiated a parallel audit of Norwegian-Russian cooperation on nuclear security and safety in the north. The report from the Office of the Auditor General of Norway supported the conclusions of the 2010 white paper, namely that cooperation with Russia on nuclear safety and security had yielded good results and that the funds had been used as intended. The investigation indicated that control procedures could be further improved, particularly those designed to combat corruption. In addition, the report indicated that higher priority should be given to cooperation on nuclear emergency preparedness and response and environmental monitoring. The Standing Committee on Scrutiny and Constitutional Affairs considered the Auditor General's report and confirmed the broad political consensus on the main principles of Norway's cooperation with Russia on nuclear safety and security.

#### *New phase in Norway's cooperation with Russia*

Following Russia's annexation of Crimea in 2014, the subsequent exclusion of Russia from the G8 and the introduction of restrictive measures against Russia, fewer Western countries are participating directly in nuclear safety and security cooperation with Russia. Norway has condemned Russia's violations of international law in Ukraine, and will continue to stand together with allies and like-minded partners in responding to Russia's illegal actions in Crimea and eastern Ukraine. At the same time, it is in Norway's interests to seek to maintain good neighbourly relations with Russia, as a neighbouring country. Effective, open channels of communication are crucial for addressing challenges that require joint solutions. Norway is also seeking to strengthen Nordic cooperation on nuclear safety and security efforts in Russia. In 2017, Norway's close dialogue with the Russian authorities resulted in alterations to Russian plans for the transport of the floating nuclear power plant *Akademik Lomonosov* along the Norwegian coast, so that there will be no nuclear fuel on board when the plant is transported.

Nuclear safety and security efforts in Russia are entering a new phase. Construction of the necessary infrastructure at Andreyev Bay is nearing completion, and priority will now be given to the removal of spent nuclear fuel. Safety and security, emergency preparedness and response, and decommissioning of the nuclear power plants on the Kola Peninsula and near St Petersburg will also continue to be important. It should also be noted that there are risks associated not only with nuclear power plants, but also with research reactors, the Mayak reprocessing plant, waste management facilities (like the one at Andreyev Bay), the transport of nuclear material, nuclear-powered vessels and nuclear weapons facilities.

#### *Global Partnership Against the Spread of Weapons and Materials of Mass Destruction*

Following the terrorist attacks on the US on 11 September 2001, the G8 countries established the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction. They undertook to provide USD 20 billion over the period 2002-2012 to support

concrete projects in the field. The Global Partnership identified four priority areas for this period: nuclear and radiological security, dismantling of nuclear submarines, destruction of chemical weapons and employment of former weapons scientists. Norway joined the Global Partnership in June 2003, and between 2003 and 2012 provided more than NOK 950 million for these efforts through the annual allocations from the Storting for the implementation of the Nuclear Action Plan.

The G7 countries have extended the work of the Global Partnership, but without the same financial commitments as in the previous 10-year period. It now has a global reach and does not give special priority to nuclear problems in Russia and the former Soviet states.

### *Ukraine*

The Chernobyl accident in 1986 had far-reaching, long-term consequences for Ukraine. An area with a radius of approximately 30 kilometres around the nuclear power plant is still closed to public access. Radioactive fallout reached many other countries, including Norway. The accident has shown how vulnerable the Norwegian environment, and particularly uncultivated areas, are to radioactive contamination. Although it is over 30 years since the accident, countermeasures are still needed in the agricultural sector in parts of Norway to reduce levels of radioactive caesium in milk, goat's cheese, and meat from sheep and reindeer to ensure these products are safe to sell to consumers. Contamination of this kind has long-term effects and is costly for countries to deal with.

Norway has provided substantial funding for clean-up operations since the Chernobyl accident, and has also provided close to NOK 80 million as its contribution to the construction of a new shelter at the Chernobyl nuclear power plant under the EBRD's Shelter Implementation Plan to allow for the safe dismantling of the reactor.

Nuclear safety and security cooperation with Ukraine was initiated following the Chernobyl accident, and has been expanded in the wake of Russia's annexation of Crimea and the ongoing conflict in eastern Ukraine. Closer cooperation was established at the Nuclear Security Summit in the Hague in 2014, and this was followed up in Washington in 2016. Ukraine still faces considerable challenges as regards its four operational nuclear power plants and ensuring effective border controls to secure and prevent smuggling of radioactive material.

### **Useful links:**

- [Cooperation with Russia on nuclear activities and the environment in the High North Meld. St. 11 \(2009-2010\)](#)
- [The Office of the Auditor General's investigation \(summary in English\)](#)

## Appendix 2: Results achieved

Over the past 20 years, Norway has allocated close to NOK 2 billion to nuclear safety and security cooperation. Cooperation in this area has produced tangible and measurable results, and has played an important part in safeguarding health, the environment and security in the north. Norway was the first country to initiate joint cooperation projects with Russia in the field of nuclear safety and security. A number of other countries followed suit and established cooperation with Russia to reduce the risk of accidents and clean up the legacy left behind after the Cold War. In Norway's view, international cooperation and coordination have been crucial to achieving good results.

Extensive international cooperation in Russia, Ukraine and certain other countries in Eurasia has reduced the risk of nuclear accidents, radioactive contamination and terrorism involving the use of radioactive material. A number of countries and international organisations have provided funding and resources and have coordinated their efforts to address nuclear safety and security problems in these countries. However, it is important to stress that the largest share of the work has been done by the partner countries themselves. The most important results achieved through cooperation in this area are described below, grouped under the same headings as in Chapter 4.

### **Cooperation with relevant authorities and organisations**

Cooperation between nuclear authorities is an important element of Norway's work on nuclear safety and security.

#### *Emergency preparedness and response*

Norway has agreements with Russia and Ukraine on early notification of nuclear accidents and exchange of information on nuclear facilities dating from 1993 and 1994 respectively. Well established routines and joint procedures for early notification are an important part of an overall emergency preparedness and response system. Through its contact with Russian authorities and organisations, Norway has gained a better understanding of Russian decision support systems and forecasting tools and of how Russia's emergency response system is organised. The cooperation has also provided the Norwegian authorities with useful information about Russian nuclear facilities and the risks associated with them.

In 2015, Russia and Norway signed an agreement on new notification procedures. These were used as basis for establishing notification procedures for Russia and Sweden and Russia and Finland in 2017. Exercises are held regularly to test these procedures in practice, and Norway and Russia have conducted large-scale joint exercises at Andreyev Bay and Gremikha.

Norway recognises the importance of close coordination with other countries, particularly those with which Norway maintains cross-border cooperation. In September 2016, the nuclear regulatory authorities in Norway, Sweden and Finland signed an agreement on cooperation with the corresponding authorities in Belarus on nuclear safety and security and nuclear emergency preparedness and response.

### Environmental monitoring

Norway's cooperation with Russia on radioactive waste dumped in the Kara and Barents Seas began in the 1990s, with several joint Norwegian-Russian expeditions. After the *Kursk* submarine accident in August 2000, Norway assisted by taking part in three separate expeditions to the accident site. Since 2006, Norway and Russia have been cooperating on a joint environmental monitoring programme in the Barents and Kara Seas.

In 2012 and 2014, joint Norwegian-Russian research cruises were carried out to survey possible radioactive contamination from two sunken Russian nuclear submarines, K-27 and K-159 respectively. They concluded that levels of radioactive contamination at the sites concerned were low, and no indications of releases of radioactivity from the sunken submarines were found. However, there is a risk of contamination in the future. In 2016-2017, several reports were published assessing the potential for releases of radioactivity from K-27 and K-159 and describing the consequences of worst-case scenario, for example an accident during an operation to raise a submarine. In 2016, Norway's interest and expertise in this area prompted the EU to launch a feasibility study to identify which of the nuclear submarines, reactors and other objects containing radioactive waste dumped in northern waters pose the greatest environmental threat, and to assess the feasibility of recovering them.

### Legislation and administration

Norway has played an active role in efforts to secure nuclear facilities and radioactive material in the former Soviet Union, for example through close cooperation with the regulatory and supervisory authorities in Russia, and later in Ukraine and other countries in Eurasia. Through this cooperation, legislation, procedures and inspection routines have been further developed. As a result, inspection and enforcement by national authorities and the management of nuclear waste have been improved and a culture of safety and security has been fostered.

Norway's cooperation with partner countries has made it possible to carry out joint emergency exercises, environmental monitoring and visits to nuclear facilities on a regular basis. Norway's efforts in this field have enhanced the ability of international actors to implement nuclear safety and security projects, for example at Andreyev Bay, where rules and guidelines have been developed to enable the safe removal of spent fuel and radioactive waste, in line with international standards.

## **Enhancing safety and security at nuclear facilities**

### Nuclear power plants

An accident at an operational nuclear power plant in Norway's neighbouring areas represents the greatest risk of radioactive contamination in Norway. This is why Norway has provided funding for safety measures at the Kola and Leningrad nuclear power plants that are intended to reduce the risk of accidents that could have transboundary impacts. The Nordic countries have cooperated closely on safety measures at the closest nuclear power plants in northwestern Russia, and this has resulted in good coordination and efficient use of resources. There has been a considerable reduction in the number of safety-related incidents at these power plants in recent years. For example, the number of incidents

reported at the Kola nuclear power plant fell from 41 in 1993 to 3 in 2017, and the incidents have also decreased in severity. The risk of core meltdown at the Kola power plant was 100 times higher at the beginning of the 1990s than it is today. Through cooperation with the Kola and Leningrad power plants, Norway has gained an insight into radiation-related threats at the power plants and has been involved in the purchase and upgrading of equipment for use in emergencies. At the Leningrad and Chernobyl power plants, Norway has provided funding to purchase VR simulators to be used in training for dealing with serious accidents and handling spent fuel.

Norway has deliberately provided funding for safety measures that are not intended to extend reactor lifetime, for example training schemes. Norway gives priority to cooperation on preparations for decommissioning old reactors. The funding provided by Norway, Sweden and Finland only makes up a small proportion of the total and is much less than the amount Russia itself has spent on safety measures.

Norway has funded projects to enhance safety at Ukrainian nuclear power plants and to improve safety in connection with the work being done on the reactors at the Chernobyl power plant.

Norway and Australia were the main advocates for the inclusion of a passage in a resolution from the IAEA General Conference in September 2017 calling for greater attention to be given to the safety and security aspects of transportable nuclear power plants.

#### *Spent nuclear fuel and radioactive waste*

The removal of spent nuclear fuel from the Northern Fleet's former base at Andreyev Bay on the Kola Peninsula began in June 2017. The Norwegian Foreign Minister attended an event to mark the first shipment of spent nuclear fuel out of Andreyev Bay. This was an important milestone in efforts to reduce risks to human health and the environment in the north. Norway has provided funding for projects to improve physical protection of the Andreyev Bay site, to upgrade roads, water and sewage systems and buildings, construction of a new pier and also for surveys of ground conditions and contamination levels at the facility. Norwegian funding has also been used to provide the personnel responsible for removing the spent fuel with adequate radiation protection and training, to carry out emergency exercises and for the equipment and facilities needed to clean and prepare the casks in which spent nuclear fuel is transported.

### **Nuclear security and non-proliferation**

A number of measures have been implemented to prevent nuclear and other radioactive material from falling into the wrong hands and to improve security at nuclear facilities. During the Cold War, the Soviet Union built up the largest submarine fleet in the world. Many of its nuclear submarines were taken out of service in the 1980s and 1990s. They still contained nuclear fuel and were in poor condition and therefore posed a threat to the terrestrial and marine environment in the north. From 2003 to 2009, Norway provided funding and assistance for the dismantling of five submarines containing nuclear fuel. The UK co-financed the dismantling of the last of these submarines in 2009. The nuclear fuel from the submarines has been removed and stored safely. As a result of work by Russia and its international partners, all the out-of-service submarines in northwestern Russia – some 120 in total – have now been dismantled. Russia itself has been responsible for dismantling

most of these. The project to remove and secure the spent nuclear fuel from the submarines has also been completed.

Norway has funded the removal of a total of 251 highly radioactive power sources (RTGs) from lighthouses in Russia, 180 in northwestern Russia and 71 in the Baltic Sea region. Over 1 000 of these radioactive power sources have now been removed and secured. Russia itself has been responsible for carrying out most of this work. Norway and the US have been the main international partners, and France, Canada, Sweden and Finland have also contributed. This project has now been completed.

Norway has also provided funding for security projects at Andreyev Bay, for example physical protection and access control measures, thus helping to secure spent nuclear fuel pending its removal. In addition, Norway has funded projects to improve security on the nuclear fuel carrier *Serebryanka* and at Atomflot, where spent nuclear fuel is reloaded for further transport or if necessary stored temporarily before being transferred to purpose-built wagons for onward transport by rail.

In Ukraine, Norway has helped to strengthen border controls to prevent smuggling of nuclear and other radioactive material. Norway has also been involved in efforts to prevent radioactive sources used in industry, medicine and research from falling into the wrong hands. Norway and other international partners have established close cooperation to strengthen nuclear safety and security in Ukraine. This is important both for Norway's security and for the security of the rest of Europe.

Norway has established cooperation with the US on nuclear non-proliferation and nuclear security in Ukraine and signed MoUs with the US Department of Energy and the US Department of State in 2014 and 2016 respectively. In 2014, the regulatory authorities in Norway, Sweden and Ukraine signed a joint statement on nuclear safety and security cooperation in Ukraine. Norway has assumed responsibility for coordinating international efforts relating to nuclear safety and security in Ukraine. Two meetings have been held under this initiative, one in Oslo in 2016, the other in Ukraine in 2017, at which this cooperation has been formalised.

The work of the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction and the Northern Dimension Environmental Partnership has strengthened international participation and engagement in nuclear safety and security efforts, which in turn has promoted progress on complex and costly projects. Norway's efforts have played a key role in making it possible to achieve the goals of the Nuclear Security Summits.

### **Civil society (NGOs)**

Environmental NGOs play a key role in nuclear safety and security efforts. The work being done by Friends of the Earth Norway, Nature and Youth, and Bellona to address nuclear problems in northwestern Russia creates an important arena for contact between the authorities and the general public.

Norwegian environmental NGOs that are active in northwestern Russia make an important contribution to Norwegian-Russian cooperation in this area. Working with their Russian counterparts, Norwegian NGOs are helping to raise awareness of environmental and nuclear

safety issues, of alternatives to nuclear power, and of the importance of energy efficiency measures. In recent years, Norwegian environmental NGOs have also been addressing nuclear safety and security challenges in Ukraine. They have established contact with key centres of expertise, and their activities and publications have increased international awareness of nuclear safety and security issues.

**Useful links:**

- <http://www.atomhandlingsplanen.no/#en>
- <https://www.nrpa.no/filer/9ef5d90ff8.pdf>
- <https://www.nrpa.no/en/publications>

## **Appendix 3: How nuclear safety and security cooperation is organised**

Nuclear safety and security cooperation under the Nuclear Action Plan is funded by means of earmarked allocations in the Ministry of Foreign Affairs' budget. The funding is used to carry out specific projects at both bilateral and multilateral level.

### **Responsibilities at national level**

The Ministry of Foreign Affairs has overall responsibility for drawing up strategies and setting priorities for efforts under the Nuclear Action Plan, and represents Norway in international fora that deal with nuclear safety and security. To ensure broad political backing for strategic decisions and priorities, all relevant issues are discussed by the Ministry's advisory committee for nuclear issues. The committee has a wide range of members, including representatives of other ministries that are involved in nuclear safety and security and emergency preparedness efforts. The committee is chaired by the Ministry of Foreign Affairs.

Since 2013, administration of the entire portfolio of grants allocated under the Nuclear Action Plan has been delegated to the Norwegian Radiation Protection Authority. This means that the Authority has independent responsibility for assessing grant applications and reports, within the framework of the annual authorisation from the Ministry of Foreign Affairs. The Authority can seek advice from relevant ministries and agencies.

The Radiation Protection Authority is responsible for implementing the Nuclear Action Plan on behalf of the Ministry. It has special responsibility for quality assurance of individual projects. Maintaining contact and cooperation with supervisory and emergency authorities in partner countries is also a key part of its work.

### **Bilateral cooperation agreements**

In 1993, Norway and Russia signed an agreement on early notification and the exchange of information on nuclear facilities. Joint notification procedures under the agreement were established in 2015. Norwegian-Russian cooperation in this area is based on the Multilateral Nuclear Environmental Programme in the Russian Federation (MNEPR) Framework Agreement, which was signed in 2003. Under the MNEPR Framework Agreement, donor countries are exempt from taxes and customs duties and are not liable in the event of accidents during project implementation. The Agreement also regulates financial controls and the right to carry out inspections, and provides the basis for Russia's bilateral implementation agreements with countries that are providing funding. Norway entered into a new bilateral implementation agreement with Russia in December 2006.

Norway has an agreement with Russia's Federal Environmental, Industrial and Nuclear Supervision Service (Rostekhnadzor) dating from 1997 and a cooperation agreement with the directorate of the Russian Ministry of Defence responsible for oversight of nuclear and radiation safety, which was renewed in 2013. Norway signed a cooperation agreement with the Russian Federal Medical-Biological Agency, acting on behalf of the Russian Ministry of

Healthcare, in 2008. These agreements form the basis for cooperation between the two countries.

The Norwegian-Russian Commission for Nuclear Safety meets once a year to review the status of specific projects and the cooperation as a whole. Nuclear safety and security and radioactive contamination are also discussed as part of the bilateral environmental protection cooperation under the Joint Norwegian-Russian Environmental Commission.

Norway and Ukraine signed a bilateral notification agreement in 1994. Under the agreement, the two countries are obliged to notify each other of any nuclear accidents and to exchange information about nuclear facilities. In November 2012, Norway and Ukraine entered into a cooperation agreement on nuclear safety and security, with a particular focus on cooperation to ensure the safe decommissioning of the Chernobyl reactors. In 2014, a bilateral agreement was signed on renewed cooperation between Norwegian and Ukrainian authorities. In 2015, Norway entered into a cooperation agreement with Energoatom, the state enterprise that operates all Ukraine's nuclear power plants. In 2016, the two countries entered into a general agreement on technical and financial cooperation.

### **Multilateral cooperation**

Norway's main contribution to multilateral efforts is through the Northern Dimension Environmental Partnership (NDEP) Support Fund. The NDEP Support Fund was established in 2001 and is administered by the EBRD. The EBRD administers a number of major projects in Russia and Ukraine. These include the removal of spent nuclear fuel from Andreyev Bay and the construction of a sarcophagus over the damaged Chernobyl reactor. With funding from the NDEP Support Fund, a Strategic Master Plan was drawn up containing proposals for projects to address the nuclear problems in northwestern Russia. The NDEP Strategic Master Plan has provided the basis for deciding how to target multilateral and bilateral efforts in the region.