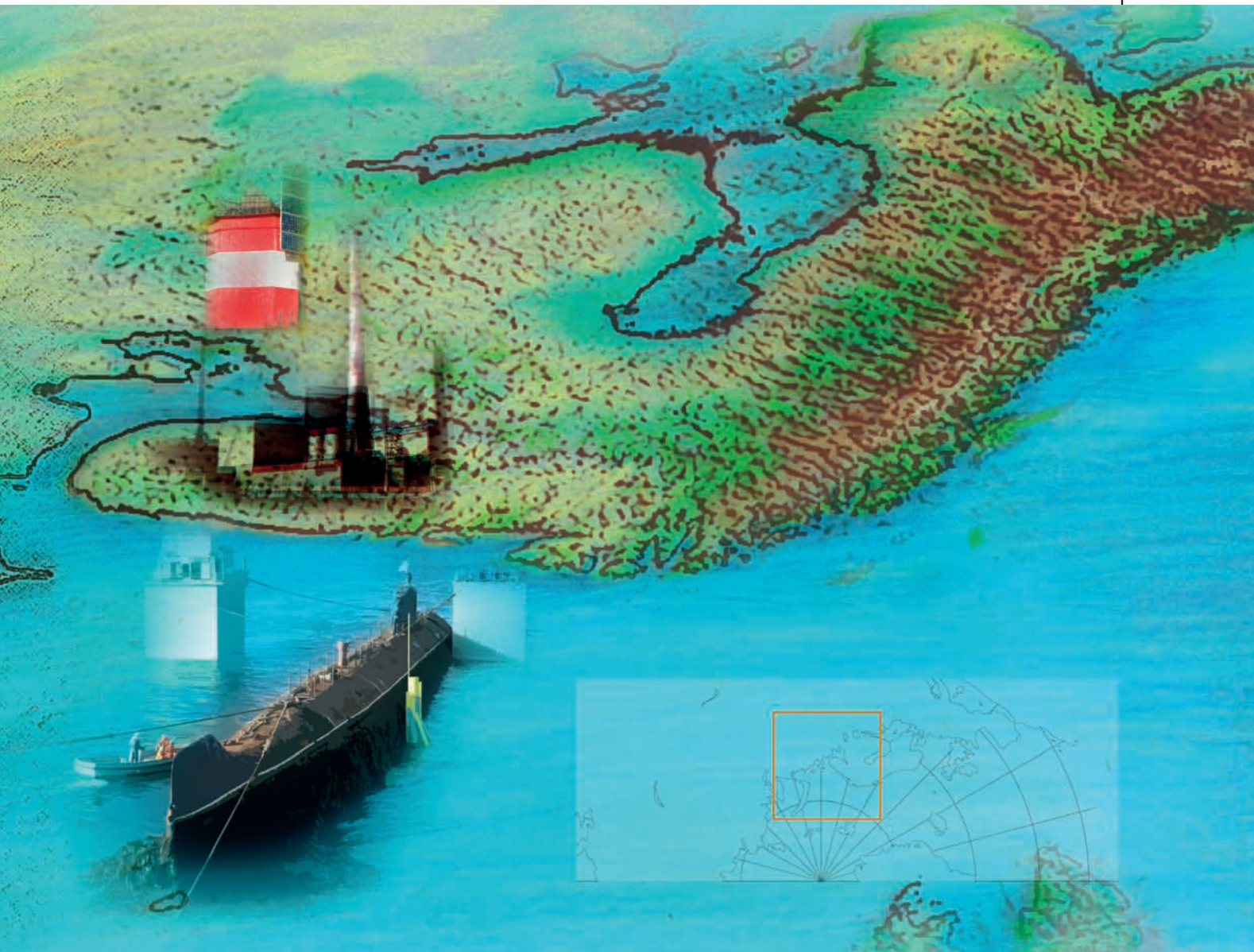




NORWEGIAN MINISTRY
OF FOREIGN AFFAIRS

Report No. 11 (2009–2010) to the Storting

Cooperation with Russia on nuclear activities and the environment in the High North





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*Recommendation of 23 April 2010 from the Ministry of Foreign Affairs,
approved in the Council of State on the same date.
(Stoltenberg II Government)*

1 Introduction

Norway's nuclear safety cooperation with Russia under the Government's action plan for nuclear activities and the environment in the High North (Nuclear Action Plan, see Appendix 1) is largely a success story, which has taken place in a period of great change in Russia. Since the 1990s, Russia's economy has been improving, and this, together with growing awareness of nuclear challenges and willingness to deal with them, is a key reason why the country itself is now making a greater contribution to this nuclear safety work. Nevertheless, it is important for Norway to further develop and strengthen cooperation with Russia on safety, security and emergency response work.

The cooperation between Norway and Russia in this field also faces certain challenges. Norway is a much smaller actor than Russia, and has to deal with many different official Russian bodies. The Russian authorities make decisions on access to nuclear installations and on how the cooperation is organised at the Russian end. We must therefore

be realistic about the level of ambition in all areas of cooperation and have a long-term perspective.

In addition, the nuclear safety challenges in northwestern Russia are numerous and complex. Often the choice lies between solutions that are not optimal, but where postponing measures may prove to be an even less acceptable option. Our nuclear safety cooperation is being developed constantly, and the Norwegian authorities are always seeking to find solutions to administrative challenges and to improve routines for quality assurance and control of projects.

Norway's nuclear safety work in northwestern Russia has also attracted international attention. This was demonstrated by the nuclear safety summit convened by US President Barack Obama in Washington on 12–13 April 2010.

This white paper gives an up-to-date overview of the results Norway has achieved in its nuclear safety cooperation with Russia in the past decade, and sets out priorities for future efforts.

2 Background

Norway's longstanding cooperation with Russia on nuclear safety is an important element of the bilateral relations between the two countries. As far back as in 1992, a group of experts was established under the Joint Norwegian-Russian Commission on Environmental Protection to carry out a survey of radioactive pollution in the northern sea areas. In 1994, the Ministry of Foreign Affairs presented Report No. 34 (1993/1994) to the Storting on nuclear activities and chemical weapons in areas adjacent to our northern borders, which provided a comprehensive overview over identified risks and challenges in this area. It was also the basis for the development of the Government's Nuclear Action Plan, which was launched in April 1995. A joint Norwegian-Russian commission for the implementation of this plan was established in 1998. The Nuclear Action Plan was revised in 1998, 2005 and 2008. In 2005, the Ministry presented the white paper *Opportunities and Challenges in the North* (Report No. 30 (2004/2005) to the Storting), which has a separate chapter about the challenges related to nuclear safety and growing international engagement in this field. Better coordination of international efforts was identified as the main point for future follow-up. The nuclear challenges in northwestern Russia are also discussed in a white paper on the main features of Norwegian foreign policy (Report No. 15 (2008–2009) to the Storting), which specifically states that Norway has a clear interest in reducing the risk of radioactive pollution originating in Russia. According to the white paper, priority should be given to cooperation with Russian regulatory authorities on health, safety and environment activities in all parts of the Russian nuclear industry, and to continuing the efforts to deal with the remaining legacy of the Cold War.

When Norway first engaged in nuclear safety cooperation with Russia in the 1990s, the issue was affected by the political situation in Russia following the collapse of the Soviet Union, limited access, a somewhat variable willingness to cooperate among Russian actors and a weak Russian economy. The Norwegian authorities, for their part, needed to build expertise and gain experience in the field, and a lot of groundbreaking work

was done. Cooperation was challenging, and for some time no major results were achieved. The framework conditions have gradually changed, and both parties' capacity and willingness to cooperate have increased.

Over the course of many years, our cooperation – at both the bilateral and the international level – has yielded concrete results. An important principle of this cooperation has been that the main responsibility for dealing with these issues lies with the Russians. The nature of the cooperation has gradually changed as the Russians have shown more commitment and become more actively engaged. In 2002 the G8 countries established the Global Partnership against the Spread of Weapons and Materials of Mass Destruction. A number of countries contribute heavily to this partnership, which is envisaged to continue until 2012. Several countries are now considering whether to continue their engagement after that. Norway needs to plan and determine the scale of its contribution after 2012. Our future efforts should be guided by Norway's needs and interests, coordinated with other key countries, and aligned with Russia's priorities. All in all, this should give us a basis for setting clearer priorities for projects and areas where Norway has considerable expertise and where much remains to be done.

Major challenges still remain, although a lot has been achieved. We are seeing a gradual shift from large-scale projects on the ground towards closer cooperation between the authorities and cooperation on environmental monitoring and emergency response. Experience shows that cooperation on concrete projects provides the best access to information and knowledge that is necessary for cooperation between the authorities. It is in Norway's interest to have the best possible knowledge of the situation in our neighbouring areas, and our further efforts should therefore take a long-term approach as long as radioactive and nuclear material continues to pose problems. At the same time, the scale of our contribution must take into account the efforts the Russians are making themselves and the actual needs in order to achieve a reasonable degree of burden-sharing between the parties.

The Government presented a white paper on disarmament and non-proliferation (Report No. 27 (2007–2008) to the Storting) in 2007. The purpose of the present white paper is to inform the Storting of the results that have been achieved and the plans for our future follow-up on the Nuclear Action Plan.

2.1 Challenges and priorities

As a result of extensive civilian and military nuclear activity during the Cold War, large quantities of radioactive waste and nuclear material are stored under unsafe conditions in northwestern Russia. This poses a risk to Norway as well, in terms of health, the environment and other important public interests in the north. Poorly secured fissile material is also a threat in a security and non-proliferation perspective. Both operative facilities and ones that have been closed down pose problems.

The Russian nuclear power plants in our neighbouring areas pose a greater risk of radioactive pollution and hazards to health in Norway than any other nuclear facilities in these areas. A serious accident at one of these plants could create an acute health hazard in nearby areas, and the long-term impacts of radioactivity in food chains would be felt at much greater distances from the facility.

An accident involving a reactor on a nuclear-powered vessel would have much less impact, but the high concentration of nuclear-powered vessels in the region also gives cause for concern. So do the large quantities of spent fuel and radioactive waste that are stored in our neighbouring areas. It is therefore essential to give high priority to nuclear emergency response measures and remediation efforts in order to protect the population, the environment and other important public interests against radioactive pollution.

The Norwegian efforts have two main objectives:

- to reduce the risk of serious accidents and pollution from nuclear facilities
- to prevent radioactive and fissile material from falling into the wrong hands.

Norway’s efforts and cooperation with Russia have led to concrete results such as improved arrangements for securing radioactive material and radioactive waste management. The Norwegian-Russian cooperation on nuclear safety is governed by a bilateral agreement. The annual meetings of the Norwegian-Russian Commission for Nuclear Safety are held in accordance with this agreement. At these meetings, matters of common interest are discussed, with a particular focus on the threats posed by radioactive pollution of the external envi-

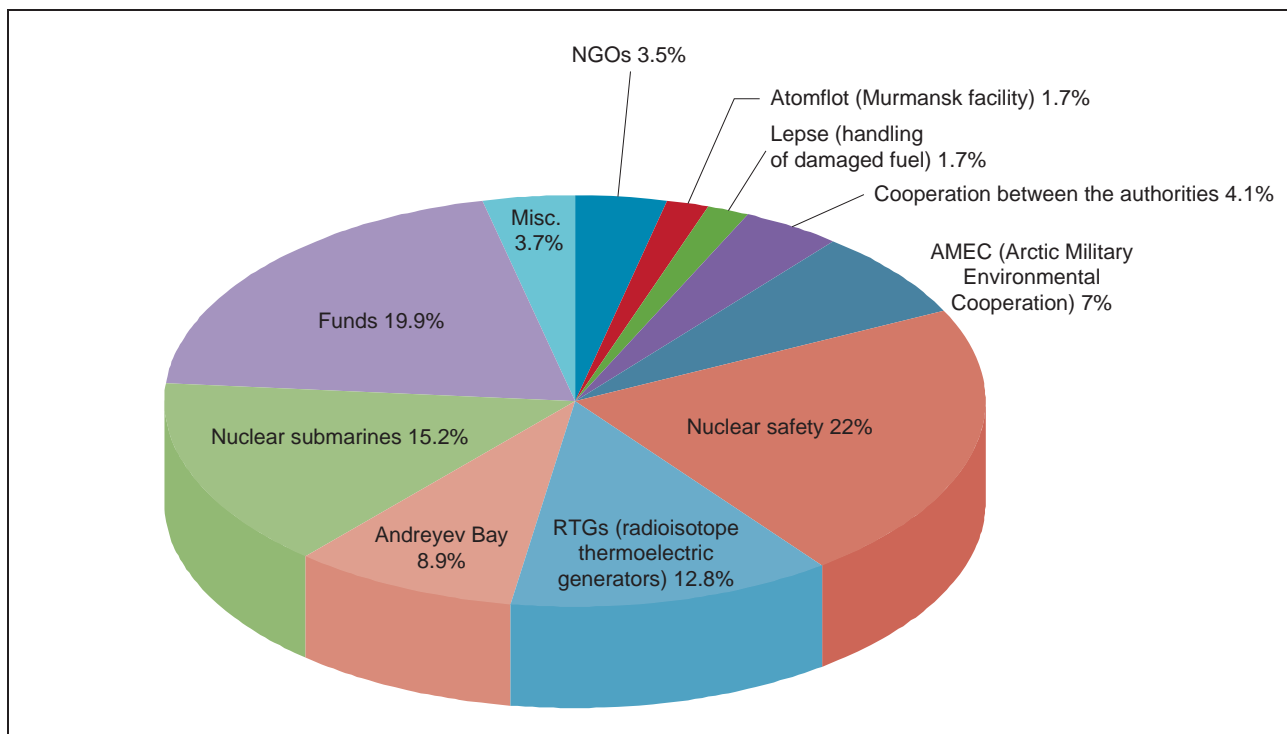


Figure 2.1 Allocation (in per cent) of Norway’s total funding for nuclear safety, NOK 1.5 billion in the period 1995–2009.

ronment, and the status of the various projects is reviewed.

Norway has provided assistance for the dismantling of decommissioned nuclear submarines and the handling of spent reactor fuel from submarines and nuclear icebreakers and other solid and liquid radioactive waste. In the years since this cooperation was established, Norway has gained greater knowledge of the environmental and safety challenges at Russian nuclear facilities. Cooperation between Norwegian and Russian inspection and administrative authorities has been expanded, and there is greater openness about the problems. The assistance Norway has provided since 1992 to improve safety at the Kola nuclear power plant has helped to reduce the risk of serious accidents occurring. This is a good example of how project cooperation has led to more openness and exchange of information.

From the launch of the Nuclear Action Plan in 1995, until the end of 2009, approximately NOK 1.5 billion was allocated over the government budget for efforts to improve nuclear safety. Compared with the situation in 1995, when we did not know the full extent of the nuclear challenges, we are now better able to optimise the use of the Norwegian funding. In recent years the annual allocations have been around NOK 95–100 million, and Norway's efforts have been focused on four main priority areas:

- dismantling of nuclear submarines decommissioned from the Northern Fleet,
- replacement of radioisotope thermoelectric generators (RTGs) in lighthouses and beacons along the Arctic coast of northwestern Russia and along the Baltic coast using photovoltaic technology,
- infrastructure measures in preparation for measures to secure and remove the large quantities of spent nuclear fuel stored at the closed service base at Andreyev Bay, about 60 kilometres from the Norwegian border,
- cooperation between Norwegian and Russian inspection and administrative authorities.

Norway's efforts have led to concrete results and to increased efforts on the part of the Russian authorities and those of other countries. There has been extensive international cooperation on the dismantling of the decommissioned nuclear submarines. Of a total of 120 decommissioned submarines in northwestern Russia, eight have yet to be dismantled as of October 2009. Norway has dismantled five nuclear submarines, one of these together with the UK. According to plan, the last of the decommissioned submarines should be dismantled by the end of 2010.

In September 2009, Norway completed the project of securing and removing the RTGs from 180 lighthouses in northwestern Russia. The valuable experience gained from this project will now be put



Figure 2.2 Relevant Russian nuclear facilities.

to use in similar projects along Russia's Baltic coast.

The efforts to deal with the radioactive waste and spent nuclear fuel stored at the Northern Fleet's former service bases at Andreyev Bay and Gremikha and to clean up the surrounding areas must be seen in a time perspective of 20–30 years. For Norway, Andreyev Bay is a priority area due to the huge challenges associated with securing and removing the large quantities of spent nuclear fuel stored there. Norway's efforts in this area will be stepped up in the years to come.

Norwegian and Russian inspection and administrative authorities have developed constructive cooperation in the field of nuclear safety. This cooperation should be continued, and the plan for Norway's further efforts will be updated as required.

2.2 International cooperation

The framework conditions for cooperation on nuclear safety have changed considerably in the years that have passed since the Nuclear Action plan was launched. From the start, one of Norway's aims has been to mobilise stronger international commitment to resolving the nuclear challenges in northwestern Russia. A broad international commitment is crucial for resolving these numerous tasks, which will require considerable resources. Many countries are now participating in this work, and good coordination and collaboration

arrangements have been put in place. Russia's own efforts have been intensified in recent years and are now quite comprehensive. This applies particularly to the dismantling of submarines, the upgrading of safety at nuclear power plants and the removal of RTGs from lighthouses. In addition, a number of Norwegian and international environmental NGOs have become involved and are making valuable contributions.

Since the terrorist attacks against the US on 11 September 2001, the international community has focused much more on the risk that radioactive and fissile material could fall into the wrong hands and be used in terrorist operations. In 2002 the G8 countries established the Global Partnership against the Spread of Weapons and Materials of Mass Destruction. The countries undertook to set aside USD 20 billion over 10 years for relevant measures throughout Russia. The Global Partnership has defined four priority areas: nuclear and radiological security, dismantling of nuclear submarines, destruction of chemical weapons and employment of former weapons scientists. Norway, which in June 2003 was the first non-G8 country to join the Global Partnership, has pledged to contribute EUR 100 million over a ten-year period. As of 31 December 2009, it had disbursed EUR 80 million. Like the other participating countries, Norway is on schedule to fulfil its commitments.

Table 2.1 Financing provided through the G8 for the period 2002–2012

Country	Financing provided through the G8
Australia	USD 7 million
Canada	CAD 1 billion
Belgium	EUR 8 million
EU	EUR 1 billion
France	EUR 750 million
Germany	EUR 1.5 billion
Italy	EUR 1 billion
Japan	USD 200 million
Norway	EUR 100 million
Russia	USD 2 billion
UK	USD 750 million
US	USD 10 billion

Source: http://www.nti.org/e_research/e3_43b.html and Global Threat Reduction Programme, Fifth Annual Report 2007, Department of Business, Enterprise and Regulatory Reform.

Table 2.2 Financing provided through the Northern Dimension Environmental Partnership (NDEP) for 2010

Contributions to the NDEP Support Fund		
Nuclear Safety	Environmental measures	
EUR 40 million	EU	EUR 30 million
	Russia	EUR 40 million
EUR 40 million	France	
EUR 20 million	Canada	
EUR 10 million	Germany	EUR 10 million
	Sweden	EUR 19 million
EUR 2 million	Finland	EUR 16 million
EUR 16.2 million	UK	
EUR 10 million	Norway	EUR 1.6 million
EUR 1 million	Denmark	EUR 10 million
EUR 10 million	Netherlands	
EUR 0.5 million	Belgium	
	Belarus	EUR 1 million
EUR 149.7 million		EUR 127.6 million
		EUR 277.3 million

Source: <http://www.ndep.org/partners.asp?type=nh&pageid=2>

Norway took the initiative for and led the negotiations on the Multilateral Nuclear Environmental Programme in the Russian Federation (MNEPR), which were concluded with the signing of an agreement in Stockholm in May 2003. The agreement includes provisions on exemption from taxes, customs duties and similar charges for assistance provided under the agreement, and on exemption from liability in the event of accidents during projects. The right of donor countries to inspect project sites and the use of assistance is an important principle of the agreement. This agreement and the bilateral implementing agreements govern the Norwegian-Russian cooperation on nuclear safety.

Norway also contributes to a number of international funds administered by the European Bank for Reconstruction and Development (EBRD) that have been set up to coordinate nuclear safety efforts. The most important of these is the Northern Dimension Environmental Partnership (NDEP) Support Fund, which was established in 2001. The fund has close to EUR 150 million at its disposal, and most of this is earmarked for nuclear safety measures in northwestern Russia. The NDEP Support Fund is set to run until 2017. Norway has paid in its contribution of EUR 10 million. According to the fund's plans, the largest and most urgent task is to remove radioactive waste and secure spent nuclear fuel at the Northern Fleet's service bases at Andreyev Bay and Gremikha on the Kola Peninsula.

In April 2010, US President Obama hosted a nuclear security summit in Washington. Norway and Russia were among the 47 participating countries. The summit adopted a non-binding communiqué and an action plan for enhanced efforts to prevent nuclear terrorism. The International Atomic Energy Agency (IAEA) will play an important role in implementing the action plan, and Norway announced an additional contribution of NOK 20 million to the IAEA's Nuclear Security Fund for the period 2010–2013. The summit communiqué sets out the aim of securing all vulnerable nuclear material within four years. Norway's cooperation with Russia is an important component in our work to this end, as regards civilian and military reactors, spent fuel and radioactive sources. Future cooperation projects in northwestern Russia will be important in reaching the goals set out at the summit, and we will report on the progress made at the next summit, which will be held in South Korea in 2012.

2.3 Quality assurance

For the Norwegian authorities it is important to ensure that all activities financed with Norwegian funding are based on risk and environmental impact assessments, in which both the possible consequences of the work to be performed and the consequences of any accidents have been thoroughly assessed. It is therefore a requirement that such assessments are carried out before Norwegian funding is provided and work is initiated.

There has been close cooperation between the Norwegian and Russian authorities in connection with these assessments. Norway's approach has helped to focus attention on safety among Russian actors, and this has reduced the risk of accidents during the implementation of a number of projects, including some that did not receive Norwegian funding. The Norwegian authorities have noted that this enhanced focus has fostered a better safety culture among actors that have been involved in projects with Norwegian funding.

Our cooperation on nuclear safety was reviewed in 2002 by the Auditor General and the Standing Committee on Scrutiny and Constitutional Affairs (Recommendation of the Standing Committee on Scrutiny and Constitutional Affairs regarding the Auditor General's review of the implementation of the Nuclear Action Plan, Recommendation S. No. 107 (2001–2002)). Several of the points raised by the Auditor General, particularly as regards management, have been followed up and incorporated into the Nuclear Action Plan. These have been addressed for example by making the Norwegian Radiation Protection Authority responsible for improving quality assurance in connection with the implementation of the Nuclear Action Plan. Norway's requirement that risk and environmental impact assessments must be carried was also a result of the 2002 review.

2.4 Cooperation between the authorities

Cooperation between Norwegian radiation protection authorities and the Russian authorities has been at the heart of our nuclear safety cooperation with Russia. This cooperation is a key element of the Government's Nuclear Action Plan, and will play an important role in developing sustainable management in the field of nuclear safety in Russia, and this is something the Russians stress themselves. This will involve increased focus on competence-building, monitoring and emergency

response. An important goal of the cooperation between the Norwegian and Russian authorities has been to foster a safety culture and improve existing Russian legislation, to enable new projects to be carried out in a satisfactory manner. This work has also helped to harmonise routines to ensure more effective notification of nuclear accidents.

Norway is a major international player in the G8 Global Partnership when it comes to cooperation with the Russian authorities. Norway has also contributed substantially to the international

efforts to improve radiation protection and nuclear safety in Russia. Norway has had an influence on other countries' priorities in this field, and a number of countries have chosen to provide expertise for cooperation projects that Norway has initiated with the Russian supervisory authorities. Important factors that have increased Norway's influence have been our geographic proximity to Russia, our engagement in the process at an early stage and our expertise. High priority will continue to be given to further developing our cooperation with the Russian authorities in the years ahead.

3 Results achieved

3.1 Dismantling of nuclear submarines

There are substantial quantities of spent nuclear fuel from nuclear-powered vessels in Norway's neighbouring areas. During the Cold War, the Soviet Union built up the world's largest submarine fleet. Many of these submarines were decommissioned during the late 1980s and the 1990s. In all, 198 of them have now been taken out of service, including 120 located in northwestern Russia. The decommissioned submarines presented an accident hazard and a threat to the terrestrial and marine environment in neighbouring areas, including Norway.

The dismantling of nuclear submarines has been a high priority task in international nuclear safety cooperation, and this has resulted in a major

campaign to dismantle decommissioned submarines. The campaign started up as one of the priorities of the G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction. Norway and other countries, including the US, Canada, the UK, Italy, Japan and Germany, have made significant contributions to this work. Nevertheless, Russia itself has made the largest contribution. By the end of 2010, the serious environmental threat posed by nuclear submarines decommissioned in the early 1990s will have been considerably reduced by a concerted Russian and international effort.

Since 2003, Norway has funded and assisted in the dismantling of five submarines carrying nuclear fuel. The first four of these were dismantled as part of the bilateral Norwegian-Russian coo-

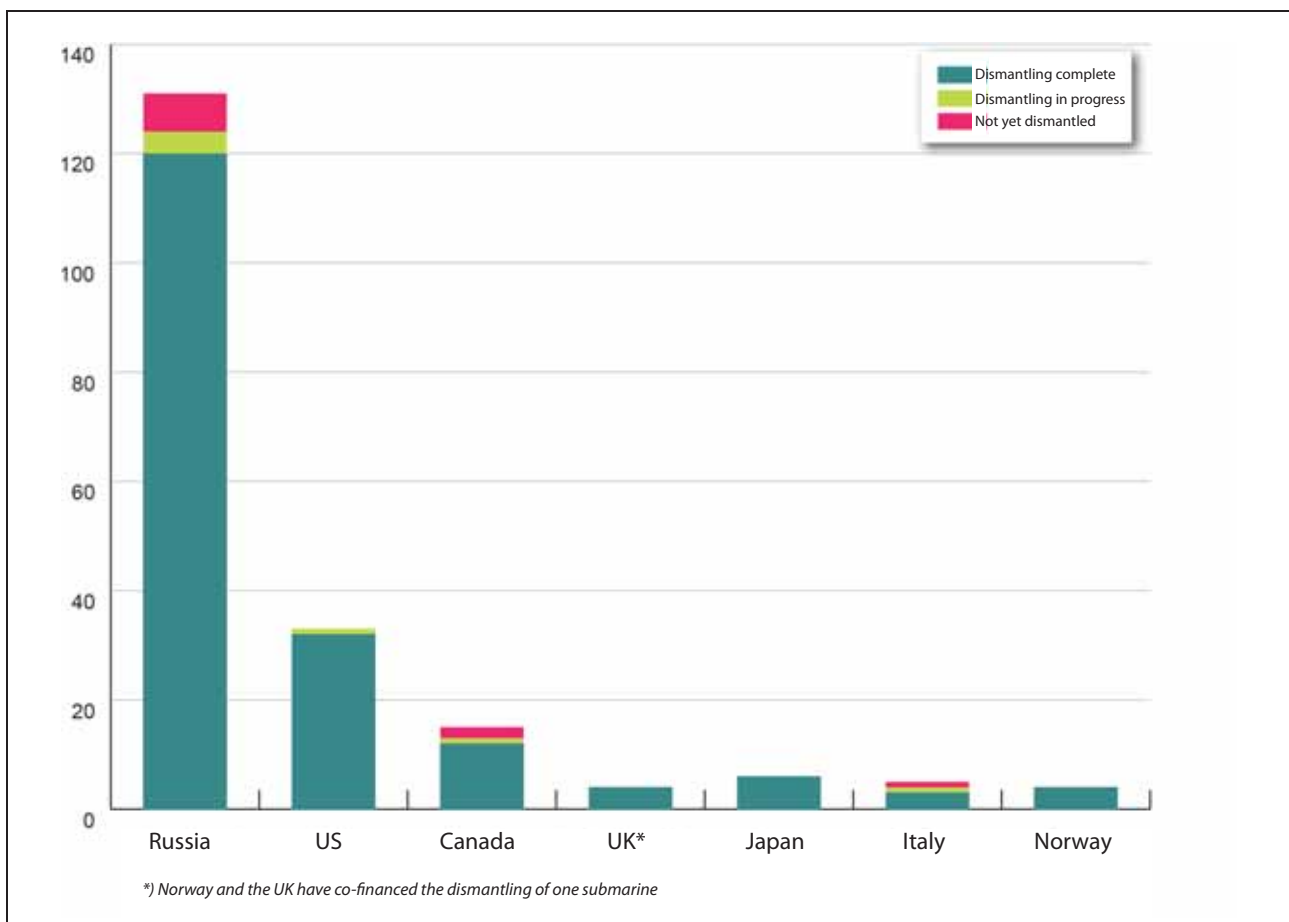


Figure 3.1 Total number of submarines dismantled in Russia, split by country funding the dismantling.



Figure 3.2 Reactor sections from nuclear submarines in storage at Saida Bay.

Photo: Ministry of Foreign Affairs.

peration. To ensure sound management of environmental risk, a heavy-lifting vessel was used in 2006 to transport the fifth submarine, which was the oldest in the Northern Fleet, to a ship-breaking

yard. Norway funded the transport, and the project was carried out within the framework of the Arctic Military Environmental Cooperation (AMEC) between Norway, Russia, the UK and the US. Norway

Box 3.1 Dismantling of nuclear submarines

- In all, 198 Russian nuclear submarines have been taken out of service, 120 of them in northwestern Russia. This process began in the late 1980s due to the age and reduced activity of the submarine fleet.
- The submarines presented an accident hazard. The spent nuclear fuel and radioactive waste were a threat to the marine environment, and there was a risk that radioactive material could be spread and fall into the wrong hands.
- Dismantling nuclear submarines is a complex task, and projects need to be managed so as to ensure that spent fuel and radioactive waste is properly secured and handled.
- Norway has assisted in the dismantling of five submarines, in one case in cooperation with the UK.
- Norway funded the dismantling of four submarines; the work was carried out at the Nerpa shipyard on the Kola Peninsula and the Zvezdochka shipyard at Severodvinsk near Arkhangelsk.
- Spent nuclear fuel from the submarines dismantled at Nerpa was transported by boat to the service base Atomflot (Murmansk) and then by train to the Mayak facility.
- There has been a major international campaign to assist Russia in its efforts to dismantle the submarines.
- According to plan, the dismantling of nuclear submarines will be completed by the end of 2010.

and the UK co-financed the dismantling of this submarine in 2009. In October 2009, only eight of the 120 decommissioned nuclear submarines in north-western Russia were not yet dismantled, and work had begun on five of these. According to plan, dismantling of the remaining submarines will be completed by the end of 2010.

Dismantling of submarines involves removing the spent nuclear fuel and transporting it to the Mayak plant in the southern Urals for waste handling and treatment. The reactor sections from the submarines are stored on land in the new storage facility at Saida Bay. The reactor sections are to be stored for 70 years after removal of the spent fuel.

In connection with funding of the submarine projects, Norway stipulated that risk and environmental impact assessments must be carried out.

This has resulted in greater transparency and the publication of information about these facilities, which has been of great interest to the international actors. The Norwegian project manager has carried out regular inspections to check safety and radiation protection standards during the practical work.

Norway has also taken part in environmental cooperation under AMEC on the sound handling and transport of spent nuclear fuel and treatment, storage and transport of solid radioactive waste from decommissioned submarines, and environmental monitoring of the facilities involved.

There is also a risk of accidents and releases of radioactive substances from newer submarine types and other vessels carrying nuclear fuel that are in use or are being phased in. Russia is respon-

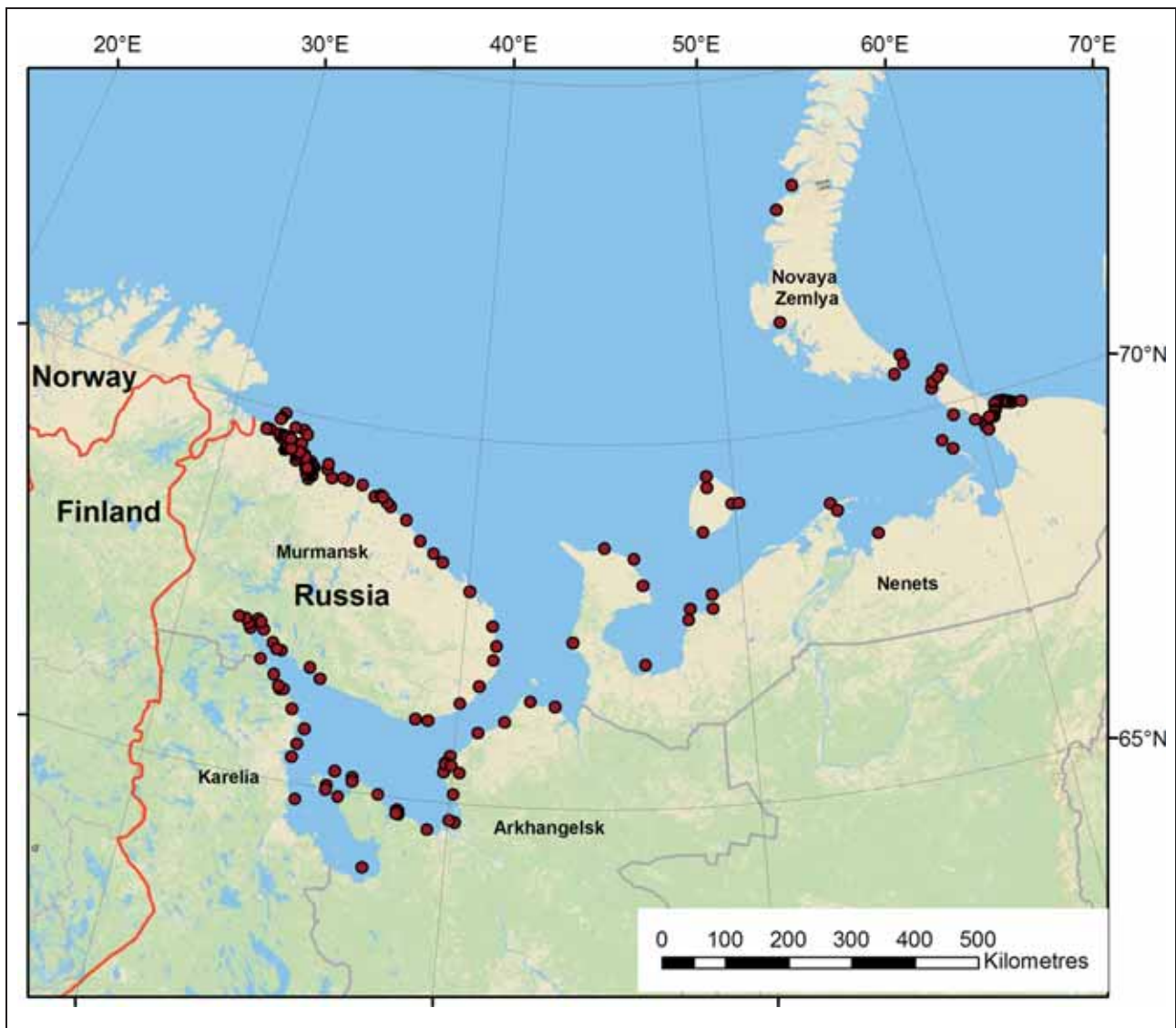


Figure 3.3 Locations of the 180 radioisotope thermoelectric generators (RTGs) removed from lighthouses in northwestern Russia.

Source: Norwegian Radiation Protection Authority.



Figure 3.4 The RTGs have to be removed from inaccessible sites by helicopter.

Photo: County Governor of Finnmark.

sible for the security and proper handling of the radioactive material from newer vessels.

3.2 Removal and securing of radioactive sources from Russian lighthouses

All along the Russian Arctic coast, lighthouses have been supplied with electricity generated by radioisotope thermoelectric generators (RTGs) using highly radioactive heat sources containing strontium-90. The Soviet Union installed about 1000 RTGs, of which 180 were in northwestern Russia. The International Atomic Energy Agency (IAEA) classifies them in the most dangerous cate-

gory of radioactive sources. The radioactive heat source is surrounded by several layers of shielding material to reduce external radiation levels. Securing the RTGs reduces the risk that they will pollute the environment or fall into the wrong hands and perhaps be used in terrorist acts. There have been a number of attempted thefts in recent years. So far, these have been attempts to steal the metal shielding materials, which can be sold on fairly easily. However, lack of control means that also the radioactive heat source material is vulnerable to theft by actors seeking to gain illegal access to material that could be used in radiological weapons.

Since 1997, Norway has been funding removal of the RTGs and their replacement with photovoltaic systems, in cooperation with the Russian authorities. Norway put the issue of RTGs on the international agenda at an early stage, and has been instrumental in achieving international agreement on the importance of removing these radioactive sources. Russia has taken on a coordinating role in the further work that has followed on from Norway's initiative.

Other countries, such as France and Canada, have also joined Norwegian projects. This work is in line with the goal set by the G8 to secure radioactive sources as a contribution to international non-proliferation efforts. The US is another important actor in this work in areas outside northwestern Russia. So far, the international cooperation has resulted in the removal and safe storage of about two-thirds of the RTGs in Russia.

Through the Norwegian–Russian project, all the 180 RTGs in northwestern Russia have been

Box 3.2 RTGs

- RTG stands for «radioisotope thermoelectric generator».
- They generally use strontium-90 as the source of radioactivity.
- The radioactive core of an RTG is well shielded so that there is little external radiation. An unshielded RTG core can deliver a lethal dose of radiation in about 30 minutes.
- The IAEA classifies RTGs in the most dangerous category of radioactive sources due to their high level of radioactivity.
- RTGs are used in a number of countries. About 1 000 RTGs were produced in Russia, mainly for use in lighthouses. About two-thirds of these have now been removed.
- Norway has assisted in the removal of the 180 RTGs in northwestern Russia and their replacement with solar panels. This work is being continued in the Baltic Sea area, where 71 RTGs are to be removed.
- Risk and environmental impact assessments are carried out for all the Norwegian-funded projects before the RTGs are removed.
- The RTGs are transported to a plant outside Moscow for dismantling and then sent to Mayak for long-term storage.

removed and secured. Risk and environmental impact assessments have been carried out for all the RTG projects.

Norway has continued this work in the Russian part of the Baltic Sea area, where 71 RTGs are to be removed, and is making use of the experience gained from the successful RTG projects in north-western Russia. The work in the Baltic Sea area started in 2009 and is scheduled for completion in 2012. Finland has joined in the work, while Sweden has expressed interest. Norway and Finland have concluded an agreement on Finnish co-financing of the Norwegian projects. France is involved in separate projects to remove 16 RTGs in this area. Norway has built up expertise in this field, and has taken on special responsibility for it in the Baltic Sea cooperation and in international anti-terrorism efforts. This is an example of effective international division of labour.

Completion of the projects to replace RTGs around the Baltic Sea in 2012 will be an important milestone for Norway with regard to securing radioactive sources in our neighbouring areas and ensuring that waste is properly dealt with. Norway is also contributing to international non-proliferation efforts through this work. Cooperation between Norwegian and Russian administrative and supervisory authorities has led to the development of Russian regulations on emergency response requirements for the transport of radioactive sources and other rules, guidelines and inspection procedures for the handling of large radioactive sources. The RTG projects have also resulted in the establishment and strengthening of Nordic cooperation to reduce radiation hazards in our neighbouring areas.

3.3 Spent fuel and radioactive waste

Large quantities of spent nuclear fuel and radioactive waste are still a considerable problem in north-western Russia. This material must be properly managed to prevent releases of radioactivity, the exposure of personnel, theft and accidents. Norway's efforts are intended to promote the safe handling, transport, treatment and storage of spent nuclear fuel and radioactive waste in accordance with internationally recognised principles. Although good results have been achieved, a number of unresolved challenges and important questions of principle remain as regards dealing with spent nuclear fuel in Norway's neighbouring areas.

As a result of Norway's efforts, we now have better information on radioactive pollution, the

state of the spent fuel and the bottlenecks that arise during handling and storage. Consequently, transport capacity for spent fuel has been increased, and treatment and storage capacity have been improved.

Norway's main priority in the broad-based international cooperation has been better planning and organisation of nuclear safety efforts as a whole, so that it is possible to set priorities and use resources more efficiently. Russia now has a strategic master plan for nuclear clean-up in north-western Russia, which has been presented to the international community, the local population and environmental NGOs in northwestern Russia (see Appendix 2). This is promoting more effective and better planned use of resources and greater transparency.

Much of the spent nuclear fuel is stored under very unsatisfactory conditions at nuclear power plants, at military and civilian bases and on service vessels. A great deal of attention has been focused on the disused service bases at Andreyev Bay and Gremikha. Norway has also been working to improve conditions on board the *Lepse*, which is being used for storage of spent fuel. This was the first major project that attracted international attention. Through AMEC, Norway has co-funded the development of transport and storage containers for spent submarine fuel and a storage facility at the Atomflot service base, where containers are transferred from boat to train. AMEC has also organised the development and construction of a modern facility for treatment and storage of solid radioactive waste at shipyard no. 10 in Polyarny north of Murmansk. The facility was co-financed by Norway and the US.

Spent fuel and radioactive waste is treated and stored at the Mayak reprocessing plant. However, there are serious problems at Mayak because accidents and releases of radioactivity from the facility in the early decades of operations there have resulted in severe radioactive pollution. In the period 1993–2004, the Norwegian–Russian environmental cooperation included successful collaboration on a survey of environmental conditions at Mayak. The Norwegian authorities wish to cooperate further in this area, for example on assessment of the environmental impacts of current activities at Mayak.

The Russian authorities consider spent fuel and other high-level waste to be a resource that should be reprocessed as far as possible. However, a good deal of the spent fuel in northwestern Russia cannot be reprocessed at present, either because it is damaged or because it is not suitable for reprocessing at existing facilities. The Russian authorities

therefore intend to expand and upgrade the Mayak reprocessing plant and to update national legislation. In the meantime, temporary storage solutions are needed. The Mayak facility takes both spent nuclear fuel from decommissioned submarines and radioactive waste. The Norwegian authorities have considered it important to contribute to improvements in nuclear safety standards in north-western Russia now rather than waiting until better solutions or alternatives to sending waste to Mayak can be found. On the other hand, it has always been a condition that projects financed by Norway should not encourage continued operations at Mayak. This was discussed by the Standing Committee on Scrutiny and Constitutional Affairs in its response to a report from the Office of the Auditor General, which had conducted an investigation into the Government's implementation of the Plan of Action for Nuclear Safety Issues (Recommendation S. No.107 (2001 – 2002)). Norwegian funding for nuclear submarine dismantling has therefore not covered the costs of reprocessing spent nuclear fuel in Mayak.

3.4 Improving safety and security at Andreyev Bay

In the 1960s, a naval service base was established at Andreyev Bay, about 60 km from the Norwegian-Russian border, for storage of spent nuclear fuel from nuclear-powered vessels belonging to the

Russian Northern Fleet. This now houses large quantities of spent nuclear fuel, equivalent to the fuel from about 100 nuclear submarines, and a great deal of other solid and liquid nuclear waste. In the 1980s, the facility stopped receiving new radioactive waste and ceased operations. Since then, only minimal maintenance work has been carried out.

The radioactive material here poses a risk of transboundary pollution, but so far leaks have only resulted in local pollution. Some of the spent fuel is of good enough quality for it to be used for nuclear weapons under certain circumstances. The facility must therefore be under control at all times.

Comprehensive measures have been initiated to improve safety and security and upgrade the Andreyev Bay facility. These will reduce the risk of radioactive pollution. An important goal is to safeguard the spent fuel and facilitate its later removal. Upgrading the Andreyev Bay facility is one of the most important priorities in the Norwegian Government's nuclear action plan. If the current framework is retained, a growing proportion of Norway's funding for nuclear safety efforts will go to work at Andreyev Bay.

Norway was the first country that was allowed to visit Andreyev Bay, and since 1997, we have funded and implemented a range of measures to improve the situation there. More recently, a broad international partnership headed by Russia has been developed to deal with the problems at the facility – a formidable and costly task. Norway and

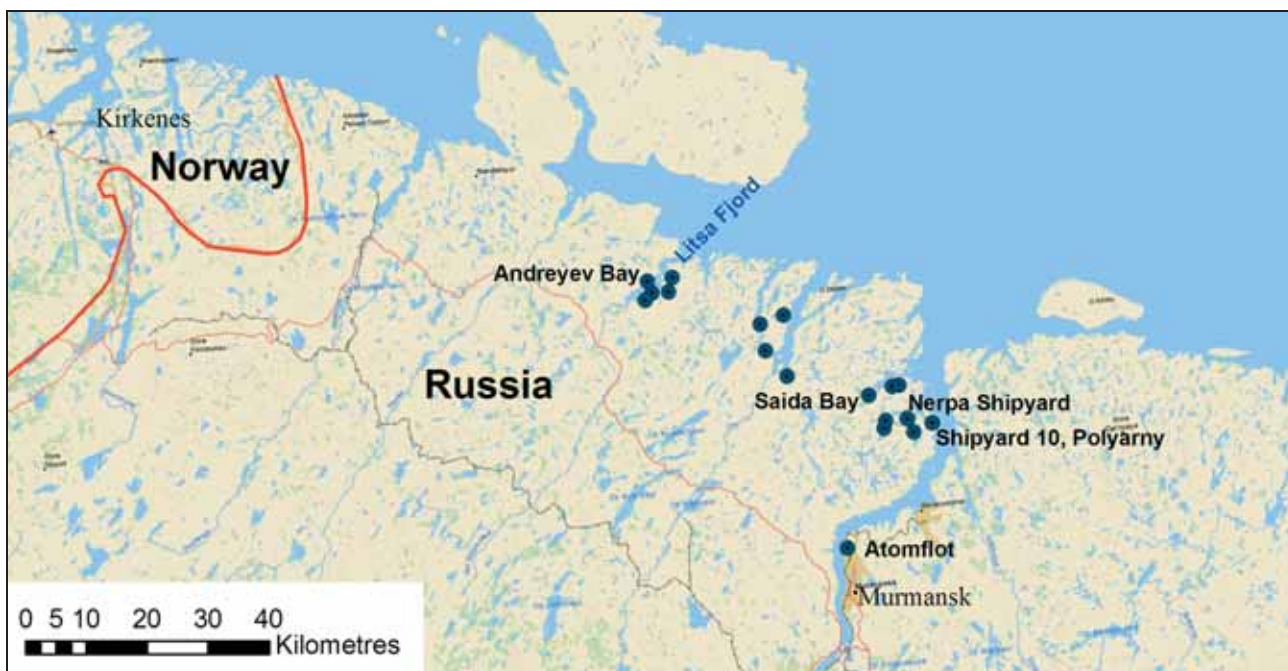


Figure 3.5 Russian naval and nuclear submarine bases near Norway.

the UK are key actors in facilitating the work of securing and removing the radioactive waste. Projects funded by Norway cover areas such as improved physical security at the facility, including setting up fences and alarm systems, construction of guard booths and changing rooms, upgrading of roads and water and waste water systems, and repairs to the quay to be used when the high-level waste is transported away from the facility. Norway has also funded surveys of ground conditions and of existing pollution at the facility.

The UK is working on solutions for removal of the spent fuel, while Italy and Sweden are focusing on the handling of other solid and liquid radioactive waste. Italy is also funding a new specialised ship for transport of spent nuclear fuel and radioactive waste from Andreyev Bay. The Northern Dimension Environmental Partnership (NDEP) Fund is financing cranes and a number of technical installations, and also the demolition of the building previously used to store the spent fuel.

Norway is giving priority to close cooperation with the Russian supervisory authorities on radiation protection for personnel, the local population

and the environment during clean-up operations at Andreyev Bay. It is important that the requirements drawn up by the Russian authorities ensure that operations are carried out in accordance with international rules and guidelines. Ensuring a satisfactory flow of information between the authorities and other parties involved is an important part of the Norwegian-Russian cooperation.

3.5 Safety at nuclear power plants

Nuclear power is an important part of the energy mix in several countries near Norway. All use of nuclear power involves a certain level of risk of accidents and the spread of nuclear material. However, some of the oldest Soviet-type reactors represent a particular problem, as they have design flaws that cannot be corrected. There are reactors of these types at a number of nuclear power plants in the European part of Russia, including the Leningrad and Kola power plants.

In Norway's view, reactors with serious design flaws that cannot be corrected should be closed.



Figure 3.6 Representative of the Norwegian Radiation Protection Authority visiting the Kola nuclear power plant.

Photo: Kola nuclear power plant.

The Russian authorities are well aware of our view on this. It is also in line with the EU's position, which has meant that several countries in the former Eastern bloc have had to undertake to close reactors as a condition for becoming EU members.

There is a possibility of radioactive pollution in Norway from Russian nuclear facilities, and there is most concern about the Kola and Leningrad nuclear power plants. The Kola power plant consists of four reactors, and the two oldest reached the end of their planned operating life in 2003–04, after 30 years. The operating life of these reactors has now been extended, and they hold operating permits that are valid until 2018–19. The permits for the other two reactors at the plant are valid until 2011 and 2014, with a possibility of an extension for a further 25 years. The Leningrad power plant consists of four reactors, which according to plan will be operated until 2019–26.

The Nordic countries have been cooperating on safety measures at the closest nuclear power plants in northwestern Russia and Lithuania. This has resulted in good coordination and effective use of resources. Since this work started up in 1992,

Norway has focused most on the Kola power plant. There has been particularly close cooperation between nuclear experts at the Institute for Energy Technology and the operators at some of Russia's nuclear power plants on upgrades and safety improvements. Some of the most important projects Norway has been involved in have entailed acquiring and installing technical equipment to ensure that critical systems operate properly during emergencies. Examples include the purchase of a mobile diesel generator and upgrading of existing stationary diesel generators to ensure that power supplies are maintained, and automatic diesel-powered water supply systems. Norway has also funded systems for monitoring and remote-controlled inspection of critical components and radio and telecommunications equipment. At the Leningrad power plant, Norway has funded a simulator used for training in fuel handling. The simulator can be used elsewhere when the plant is decommissioned sometime in the future. Similar equipment has been used at the Chernobyl power plant since 2005.

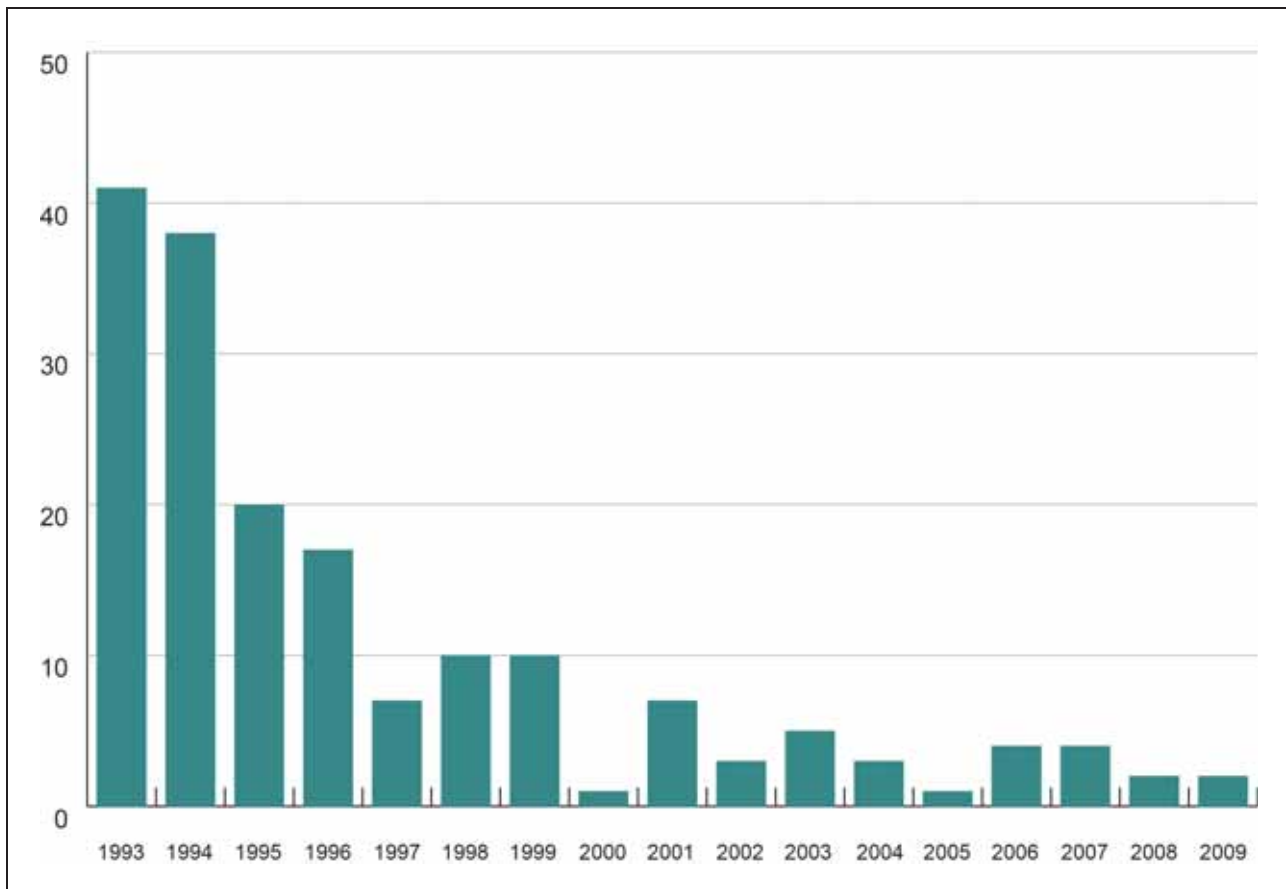


Figure 3.7 Total number of internationally reported irregularities at the Kola nuclear power plant, 1993–2009.

Source: Norwegian Radiation Protection Authority.

Box 3.3 Nuclear power plants

- Russia currently has 32 nuclear reactors at 10 operational nuclear power plants.
- Worldwide, there are 212 nuclear power plants with a total of 437 reactors, in 31 different countries. They supply 15–20 % of the world's electricity consumption.
- The world's most serious nuclear accident was at Chernobyl in Ukraine on 26 April 1986. It resulted in releases of radioactive substances to large parts of the northern hemisphere.
- The Kola nuclear power plant has four VVER-440 reactors.
- The Leningrad nuclear power plant has four RBMK reactors in operation, the same type as at Chernobyl.
- There are problems connected with power plants where there are large quantities of radioactive material and those where safety standards are unsatisfactory.
- In accordance with its Nuclear Action Plan, Norway has funded projects that are designed to reduce the risk of accidents at the Kola and Leningrad power plants, without prolonging the lifetime of the reactors.
- Nuclear power plants account for 75 % of electricity production in France. This is a higher proportion than in any other country in the world. Many countries have now indicated that they intend to construct new nuclear reactors.
- More than 50 nuclear reactors are currently under construction in different parts of the world.
- The Russian authorities plan to increase the share of electricity production from nuclear power from the current 16 % to 25 % by 2030.

It has been an important principle for Norway that projects should not merely provide equipment, but also proper training in the use of the systems supplied. We have noted that Norway's efforts have influenced Russia's priorities and safety culture. The Norwegian–Russian cooperation has also resulted in greater transparency and the availability of more information on plans for the power plants.

There has been a considerable reduction in the number of irregularities reported at these power plants in recent years (see Figure 3.7).

Norway's involvement in safety and security work at Russian nuclear power plants has been scaled down because safety standards are now higher, to a large extent due to Russian efforts. The 2002 report from the Office of the Auditor General and the response by the Standing Committee on Scrutiny and Constitutional Affairs (see section 3.3) focused on the point that some of the measures implemented at the Kola power plant may have resulted in an extension of its operating life. Norway has deliberately targeted its funding at safety measures that would not directly extend the reactors' lifetime, such as training schemes. Since 2008, Norway has been giving more priority to cooperation on preparations for decommissioning old reactors. The issue of reactor lifetime has been raised with the Russian authorities in all relevant forums.

Russia's first floating nuclear power plant is under construction near St Petersburg. In addition, the Russian authorities are planning to expand the use of nuclear power as an energy source in the country's electricity supply system. The Norwegian authorities are following these developments closely and regularly discuss the challenges that these plans entail in the cooperation forums that have been established with the Russian authorities. Questions in connection with future decommissioning of the Kola power plant and the use of alternative energy sources have regularly been raised in our dialogue with the Russian authorities.

3.6 Cooperation with Russian supervisory and administrative authorities

Contact between the Russian and Norwegian authorities has been steadily improving as a result of the extensive cooperation on specific projects. This has provided a basis for closer dialogue on the development of inspection and enforcement regimes in nuclear safety work. One of the Government's main priorities is to step up this cooperation further, because measures that strengthen Russia's own efforts to organise and control nuclear safety work will be most effective and robust over time.

The cooperation on nuclear safety is based on bilateral cooperation agreements between Norway and Russia. It dates back to the bilateral agreement on environmental cooperation that was adopted in 1988 and revised in 1992. Norwegian and Russian supervisory and administrative authorities have been collaborating for many years. The main focus is on emergency response, radiation protection, environmental monitoring, nuclear safety and non-proliferation.

Close contact with the Russian supervisory authorities is needed to maintain and strengthen cooperation on regulation, inspection and enforcement, emergency response and monitoring. This work consists mainly of carrying out threat assessments and impact assessments, and developing effective procedures, methods, regulations and guidelines. International standards in general and the IAEA's recommendations in particular provide a framework for this work. Through this cooperation, Norway is helping to build expertise, develop better management and control systems and improve the safety culture in Russia.

The Norwegian Radiation Protection Authority has been cooperating with the appropriate Russian authorities since Norway's Nuclear Action Plan was first launched in 1995. In the field of emergency response, the main focus is on implementation of the bilateral agreement between Norway and Russia on early notification of nuclear accidents. This agreement is administered by the Norwegian Ministry of Foreign Affairs and the Russian State Atomic Energy Corporation Rosatom. There is also extensive cooperation between the Norwegian Radiation Protection Authority and the Federal Environmental, Industrial and Nuclear Supervision Service, Rostekhnadzor, on the development of legislation, monitoring, inspection and enforcement and emergency response. In 2008, a cooperation agreement was entered into between the Norwegian Ministry of Health and Care Services and the Russian Ministry of Healthcare and Social Development, which regulates cooperation between the Norwegian Radiation Protection Authority and the Russian Federal Medical-Biological Agency. The Radiation Protection Authority also cooperates with the nuclear and radiation safety authority under the Russian Ministry of Defence. In addition, since 2005 there has been cooperation with the Federal Service for Hydrometeorology and Environmental Monitoring, Roshydromet, on monitoring of radioactive nuclides in the marine environment.

There has been a focus on transparency and verifiability in the projects carried out as part of the

cooperation between national authorities. This cooperation has led to greater control of the projects that receive Norwegian funding. This system has also gradually extended to projects funded by other countries, including those where Norway is not financially involved at all.

The Norwegian Radiation Protection Authority has assisted Rostekhnadzor on the development of regulations for dealing with nuclear waste. The Authority has also worked with Rostekhnadzor on management and control routines for the dismantling, removal and transport of RTGs, and the preparation of regulations on emergency response systems in connection with this work. Various regulations, recommendations and procedures related to the clean-up operations at Andreyev Bay have been drawn up within the framework of the bilateral cooperation with the FMBA.

Norway is the only country to have cooperated with the military inspection and enforcement authorities under the Russian Ministry of Defence on the development of guidelines and procedures for handling radioactive waste at facilities that are no longer used by the military but still under military supervision and control.

A number of seminars and working meetings, including visits to various nuclear facilities, have also been arranged in Norway, Russia and other countries. In addition, emergency response exercises with broad participation by Norwegian and Russian organisations have been carried out at former military facilities.

During the 1990s, Russia's efforts within the framework of this cooperation were fragmentary, and there was a lack of willingness or ability to share information and grant access to installations. The picture is very different today, and the Russian authorities participate far more actively. The close cooperation between relevant authorities has probably been conducive to the increase in engagement and capacity.

3.7 Environmental monitoring

Existing and potential sources of radioactive pollution in northwestern Russia include spent fuel and radioactive waste that has been dumped in the Barents and Kara Seas and along the coast of Novaya Zemlya. There is also a risk of pollution from the wrecks of the submarines K-159 and *Komsomolets* and from a number of nuclear waste storage facilities and other nuclear facilities, including those at Andreyev Bay, Gremikha, the Kola Fjord and in the Arkhangelsk area. Fallout from

nuclear testing in the 1950s and 1960s and the Chernobyl accident in 1986 and releases from reprocessing plants in Western Europe, particularly Sellafield, are still causing environmental pollution.

As part of the Norwegian–Russian cooperation, studies have been made of pollution in the Kara Sea and in the fjords along the east coast of Novaya Zemlya. A joint expedition to study dumped radioactive waste lasted from 1992 to 1994. These studies concluded that levels of radioactive pollution in these areas were still low, but that there is a certain risk of pollution in the future. Russian expeditions have been made to some of these areas more recently.

Norway and Russia have formalised cooperation on a monitoring programme for radioactivity levels in the marine environment, both in the open Barents Sea and along the coast. However, the scope of the programme is limited, and it does not provide a full overview of radioactivity levels in the northern seas. It should therefore be expanded and further developed. More extensive cooperation on monitoring and joint expeditions is being developed. Intensification of environmental monitoring of the seas in the High North is important for Norwegian fisheries interests. Any radioactive pollution in these areas could have a serious impact on the reputation of the Norwegian fisheries industry as a whole.

The Norwegian management plan for the Barents Sea–Lofoten area is regularly discussed with the Russian authorities with a view to its possible applicability to the Russian part of the Barents Sea.

In 2009, a joint Norwegian–Russian report on the status of the environment in the Barents Sea was presented at a meeting of the Joint Norwegian–Russian Environmental Commission. This was an important milestone in our cooperation to ensure sound management of the Barents Sea. It has been decided to follow this up by developing a joint environmental monitoring programme for the entire Barents Sea. Monitoring of radioactive pollution in the Barents Sea is to form an integral part of this programme.

3.8 Emergency response

International cooperation is an essential part of a sound, effective emergency response system for nuclear accidents and other serious incidents involving radioactive material. Good notification and communication systems, dialogue with the



Figure 3.8 From the Barents Rescue exercise in Murmansk, September 2009.

Photo: Norwegian Radiation Protection Authority.

Russian authorities and operators and knowledge of the Russian safety and emergency response culture are important in ensuring an effective response in the event of a nuclear accident affecting Norway and Russia.

Norway and Russia are bound by the IAEA Convention on Early Notification of a Nuclear Accident. In addition, there is a bilateral agreement between Russia and Norway on early notification and the exchange of information on nuclear installations, which was signed in 1993. In 2003, agreement was reached on steps to lower the threshold for notification and exchange of information, and Norway will seek to lower this threshold further. The Norwegian and Russian authorities maintain a regular dialogue, and are establishing more detailed routines and procedures for notification, communication and exchange of information.

Through contact with the Russian authorities and NGOs, the Norwegian authorities have gained a better understanding of Russian decision support systems, computer modelling systems and the organisation of their emergency response system. The cooperation has also provided the Norwegian authorities with satisfactory information on Russian nuclear installations and the risks they pose. Contact with the Russian authorities also makes it more likely that Norway will receive early notification of minor incidents. There is also an emphasis on cooperation on exercises. Norway has been a co-organiser of two emergency response exercises at Andreyev Bay and Gremikha in the period 2008–09. These exercises were the first of their kind to be organised by the civilian supervisory authorities at military facilities. Norway and Russia have also cooperated on exercises within the framework

of the Barents cooperation, most recently Barents Rescue 2009 in the Murmansk area. In addition, the Norwegian authorities have sent observers to several exercises, for example at the Kola nuclear power plant.

Norway is involved in international efforts in the emergency response field, and for example chairs the Expert Group on Nuclear and Radiation Safety under the Council of the Baltic Sea States. This cooperation forum, which includes both Norway and Russia, has reached agreement on data exchange between the Council's member states. This gives Norway access to important data from the entire Baltic Sea region, including Russia's national network of measuring stations. This is in addition to the Norwegian notification and measurement network.

The National Competent Authority Coordinating Group under the IAEA is working together with the IAEA Secretariat and other IAEA member states, including Russia, to implement the International Action Plan for Strengthening the International Preparedness and Response System for Nuclear and Radiological Emergencies. Norway has chaired this group. Its purpose is to establish efficient communication systems and harmonised response procedures so that more effective international assistance can be provided in the event of nuclear accidents. This paves the way for closer and more effective cooperation between Norway and Russia in dealing with such incidents.

3.9 Environmental NGOs

Environmental NGOs such as Friends of the Earth Norway, Nature & Youth, and Bellona are involved in dealing with the nuclear problems in northwes-

tern Russia. They play a valuable role in spreading information about the problems in this region and in encouraging debate on various solutions. Through their cooperation with sister organisations in Russia, they also play a part in increasing the focus on environmental and nuclear safety issue in Russia.

The Norwegian authorities consider it important to support their work, which has resulted in good contact with Russian experts and the publication of a number of reports on environmental problems and possible solutions. These reports have increased international awareness of relevant nuclear safety issues. Moreover, it is a goal in itself to support civil society in Russia, which includes environmental NGOs.

Cooperation between Norwegian and Russian environmental NGOs has also resulted in greater acceptance and recognition of the Russian NGOs in Russian society. Their efforts are raising environmental awareness in the Russian population and encouraging participation in discussions of nuclear safety issues. Input from Russian NGOs to the national debate on nuclear power is now being taken more fully into account; public consultations are being held and affected parties involved. Cooperation between Norwegian and Russian environmental NGOs is spreading information on Russian environmental legislation both in Norway and in Russia, and this is also important for close cooperation between relevant authorities in the two countries.

By presenting alternatives to nuclear power and strategies for the closure of unsafe nuclear installations, the environmental NGOs are increasing public support in Russia for phasing out these installations.

4 The way forward

A key goal of Norwegian foreign policy is to further develop our good – though at times challenging – neighbourly relations with Russia. In many cases, the opportunities and challenges Norway is facing in the High North can best be addressed through constructive cooperation with Russia. Nuclear safety is a good example of an area where we have worked together in a sustained effort to improve cooperation, to the benefit of both parties.

It is a joint goal for Norway and Russia to develop this cooperation further, both as a way of finding sound solutions to the remaining nuclear problems in the north, and as a way of developing close permanent cooperation between the authorities in our two countries.

Within the field of nuclear emergency response, the pattern of threats has changed in recent years, as regards the vulnerability of Norwegian society, the safety and security of nuclear installations in Norway's neighbouring areas, and the probability of incidents and accidents. The current nuclear renaissance is also evident in Russia. However, the main problems in this field are still related to facilities that house large quantities of radioactive material and old facilities where safety standards are unsatisfactory. It is also possible that there will be a rise in the quantities of spent fuel and radioactive waste transported by ship along the Norwegian coast. In addition, the number of marine reactors is expected to rise. The Norwegian authorities are following these developments closely.

In the years ahead, contact with Russia is expected to become even closer, partly as a result of increasing economic cooperation. The Barents regional cooperation has laid a sound basis for expanding cooperation in a number of fields. Extensive, broad-based people-to-people cooperation has been developed. This has improved people's knowledge and understanding of their neighbouring country and its people, and can act as a stimulus for example for industrial and commercial development. Russia plans to base its energy supplies even more on nuclear power in the future, and intends to expand this sector considerably. Such

developments will make it essential to have good nuclear emergency response systems, and in addition a thorough knowledge of the state of the environment and of possible future sources of pollution and accident risks. As long as nuclear activity and potential pollution sources exist in our neighbouring areas, it is in Norway's interests to maintain cooperation on nuclear safety with Russia. Norway needs to continue the dialogue on safety in the nuclear power industry and on the lifetime of existing reactors. This cooperation has a long-term perspective and must be revised at regular intervals.

Despite changes of government and different political constellations in the Storting, there has been broad political agreement to give high priority to cooperation with Russia on nuclear safety in the High North. One of Norway's main objectives has been to reduce the risk of serious accidents and radioactive pollution and prevent radioactive and fissile material from falling into the wrong hands. This objective is unchanged. The many projects that have been funded through the Nuclear Action Plan have played an important part in achieving it. In addition, the Norwegian authorities have developed important expertise on the risk of pollution at several of the nuclear facilities in northwestern Russia through these projects. Thus, they have made an important contribution to emergency response efforts in Norway and to cooperation with Russia in this field.

The cooperation has also given us a good insight into Russian nuclear management. As a result, we have developed a better understanding of Russia's priorities, and have been able to have some influence on these priorities through our close cooperation. The Norwegian authorities have had to learn from mistakes that were made in an earlier phase of our nuclear safety cooperation as regards financial management, performance management, and communication and cooperation with Russian partners. One of the main priorities in the time to come will be to strengthen cooperation with the Russian supervisory and administrative authorities on nuclear safety, emergency response systems and environmental monitoring.

The framework for the Norwegian-Russian nuclear safety cooperation has changed considerably since its inception. A number of other countries, especially the G8 group, are now also engaged in this work, and Russia's economic position has made it possible for the country to do much more itself than was expected only a few years ago. These developments have strengthened nuclear safety cooperation with Russia at both bilateral and international level. An important basis for carrying out large-scale, complex tasks effectively is thus in place. Norway's efforts must be viewed in an international perspective to a greater extent than has previously been the case, and they should if possible be coordinated with the priorities of other partner countries. Norway intends to continue the important and constructive cooperation in international forums and coordination groups, and thus assist Russian authorities in drawing up plans for work in this field and coordinating practical tasks.

Transparency, mutual trust and access to closed areas have been important principles for our cooperation with Russia. Bases and installations that used to be closed to foreign citizens are now more easily accessible, the Andreyev Bay facility is a good example. Norway granted funding for the first project there in 1998, but it was not until 2001, after repeated requests, that representatives from Norway were allowed to visit the site. Since then, representatives of the authorities and the media in Norway and other countries have been allowed to visit Andreyev Bay. The important projects on physical security and upgrading at Andreyev Bay will be continued, with a considerable increase in funding by Norway and other countries. Spent nuclear fuel and radioactive waste at Andreyev Bay represents a serious pollution risk. There are major technical problems at the facility, and the time horizon for completion of the work is about 2030.

Another priority area will be the removal of radioactive sources from lighthouses around the Baltic Sea, which is already under way. It should be possible to complete this work in the course of three to four years. In addition, Norway will continue to give priority to safety measures at Russian nuclear power plants in our neighbouring areas. Projects that build up expertise and can contribute to the safe closure of old reactors will be given priority.

Cooperation on health, safety and environment issues has been given high priority in the development of a Norwegian niche in the international nuclear safety cooperation with Russia. Cooperation between the Norwegian and Russian supervisory authorities will therefore be important. This will help to ensure that international guidelines for nuclear safety and radiation protection are integrated into practical work on waste management and nuclear safety, and Russian supervisory authorities have an effective control function. Another aim is to strengthen the role of civil society in Russia. The environmental NGOs play an important part here.

It is natural to consider a continued Norwegian engagement beyond 2012, which is the time frame for the G8 Global Partnership. Other countries that are cooperating with Russia are also discussing their further engagement after 2012. It is in Norway's interest that the international involvement continues as long as there are challenges that need to be addressed in our neighbouring areas. Russia is expected to continue its substantial efforts. If Norway maintains its strong engagement, this will encourage Russia and the international community to do the same.

Norway's geographical situation puts it in a different position from most of the G8 countries. As one of Russia's neighbours, we have a clear interest in maintaining close, open cooperation on the management of nuclear problems. It is a basic principle that the main responsibility lies with Russia. However, as a neighbouring country Norway needs knowledge, insight and access in order to meet its own emergency response needs.

Norway will therefore continue its engagement in the field of nuclear safety, although it will be appropriate to scale this down as important tasks are completed. In the long term, it will be natural to expect Russia to take the main responsibility for continuing nuclear safety work. After 2012, Norway's contribution will therefore focus increasingly on cooperation between national authorities and on environmental monitoring and emergency response. These efforts will be funded within the Ministry of Foreign Affairs' current budgetary limits for nuclear safety work, allocated via budget chapter 118, item 70, measures related to the High North and project cooperation with Russia. Norway's efforts will be most effective if they are targeted towards areas where we are in a position to

make a real difference. In the next few years, Norway will therefore focus on dealing with the problems at Andreyev Bay, completion of the lighthouse project, training and information activities in the nuclear power sector and broad-based cooperation between national authorities on inspection and enforcement, emergency response, environmental monitoring and worker safety.

The Ministry of Foreign Affairs

h e r e b y r e c o m m e n d s :

that the recommendation from the Ministry of Foreign Affairs on cooperation with Russian on nuclear safety and the environment in the High North dated 23 April 2010 should be submitted to the Storting.

Appendix 1

The Government's general guidelines for nuclear safety cooperation with Russia (from the Government's action plan for nuclear activities and the environment in the High North)

The purpose of Norway's nuclear safety cooperation with Russia is to

- reduce the risk of accidents at and pollution from nuclear installations in northwestern Russia and prevent radioactive and fissile material from falling into the wrong hands;
- be based on a coherent approach and thorough risk and impact assessments;
- strengthen Norway's nuclear emergency response system;
- focus on practical measures and ensure cost-effective use of funding;
- improve management and strengthen administrative bodies in the Russian nuclear sector;
- strengthen the dialogue between the competent Russian authorities and civil society on goals and instruments in nuclear safety work;
- be in accordance with Russian legislation and international norms and guidelines, and be carried out in close dialogue with all relevant supervisory authorities in Russia and with other partner countries.

It is now appropriate to focus on the following priority areas:

Emergency response and environmental monitoring

The goals are to:

- maintain an emergency response system that has sufficient capacity to deal with nuclear incidents and accidents that affect Norwegian interests;
- work towards a lower threshold for early notification of nuclear accidents and strengthen the notification system at international, bilateral and regional level;
- compile reliable data on pollution levels and sources of radioactive pollution in the High North and keep this information updated;

- encourage the Russian operators to focus on emergency response work.

Cooperation with relevant Russian authorities

The goals are to:

- support the Russian authorities in their efforts to bring their legislation into line with international guidelines for environmental impact assessments and international standards for nuclear remediation measures;
- assist in strengthening the capacity of the Russian supervisory authorities.

Non-proliferation and physical security

The goals are to:

- support the implementation of measures to improve physical security and control at nuclear facilities, both during normal operations and during environmental and remediation work;
- strengthen cooperation between Russian and Norwegian experts on control and security for nuclear material and nuclear installations;
- seek to strengthen multilateral engagement in non-proliferation work and ensure that International Atomic Energy Agency (IAEA) standards and principles are followed;
- seek to ensure that the international non-proliferation regime under the Nuclear Non-proliferation Treaty (NPT) is implemented.

Nuclear power plants

The goals are to:

- encourage Russia to plan for the decommissioning of nuclear power plants and to make use of experience gained by other nuclear power countries during decommissioning;

- continue the cooperation on improving safety standards, with an emphasis on maintaining the results of previously implemented measures;
- further develop technical cooperation with Russian nuclear power plants and Russian authorities concerning safety at nuclear power plants;
- help to foster a good safety culture at Russian nuclear power plants;
- promote awareness of alternatives to nuclear power, energy efficiency measures and a more efficient energy sector in northwestern Russia.

Spent nuclear fuel

The goals are to:

- support efforts to ensure the safe handling, storage and transport of spent nuclear fuel in the High North;
- support efforts to ensure satisfactory physical protection of the fuel until it can be dealt with safely and securely.

Radioactive waste and other environmentally hazardous waste

The goals are to:

- support efforts to ensure the safe handling and storage of radioactive waste in the High North;

- seek to ensure that international engagement results in a satisfactory solution for removal and storage of radioactive waste in the region, with a focus on using the storage facility at Saida Bay on the Kola Peninsula;
- support efforts to ensure the safe handling of other environmentally hazardous waste that is generated during projects carried out under the Nuclear Action Plan.

Radioactive sources

The goals are to:

- support the removal of all radioisotope thermoelectric generators (RTGs) from Russian lighthouses in Norway's neighbouring areas and their replacement with photovoltaic systems or other electricity sources;
- compile more complete information on other large radioactive sources in northwestern Russia that pose environmental, health and safety risks, and consider steps to reduce these risks;
- support multilateral efforts to secure radioactive sources in other parts of Russia, for example through the IAEA Nuclear Security Fund.

Appendix 2

International cooperation and agreements

The G8

The G8 (or Group of Eight) is a partnership of the world's eight leading developed countries – France, Japan, Germany, the UK, the US, Italy, Canada and Russia. After the terrorist attacks on the US on 11 September 2001, the G8 established the Global Partnership against the Spread of Weapons and Materials of Mass Destruction. The countries undertook to set aside USD 20 billion over 10 years for specific projects. Norway joined the Global Partnership in June 2003, and will make available a total of EUR 100 million over the 10-year period. The Global Partnership has established a working group in which Norway is taking part together with a number of other countries. The working group is an important coordination and discussion forum for the main issues dealt with by the Global Partnership.

The International Atomic Energy Agency (IAEA)

The IAEA plays an important role in international work on nuclear safety and managing radioactive waste. The Contact Expert Group (CEG) for International Radwaste Projects in the Russian Federation was established under the auspices of the IAEA, and is the most important forum for coordination, exchange of information and development of activities for all the parties involved in nuclear safety cooperation with Russia. Cooperation in the CEG has resulted in the establishment of coordination groups for the priority areas Andreyev Bay and radioisotope thermoelectric generators (RTGs), involving the Russian authorities and other countries that are engaged in these fields. In addition, the IAEA is responsible for compliance with standards and conventions regarding remediation, safety, environmental protection, physical security and waste management. In most cases, both Russia and Norway are parties to the agreements in question.

The Northern Dimension Environmental Partnership (NDEP)

Norway contributes to multilateral efforts through the Northern Dimension Environmental Partnership (NDEP) Support Fund, which is administered by the European Bank for Reconstruction and Development (EBRD). Norway has provided EUR 10 million for the fund, which now has a capital of more than EUR 150 million. With funding from the NDEP Support Fund, the EBRD, in cooperation with the Russian authorities, has drawn up a comprehensive, detailed description of the nuclear safety problems in northwestern Russia and a strategic master plan, which is an important basis for Norway's priorities as well. Norway is represented in the NDEP Support Fund's governing bodies. The Fund's priorities are in line with Norway's views on the most important challenges that must be addressed in northwestern Russia.

The strategic master plan

There has been a great deal of concern about spent nuclear fuel and radioactive waste in northwestern Russia. There has been a lack of overall strategies and priorities for handling and storage of radioactive waste. To remedy this situation, Russia, with funding from the NDEP Support Fund, has drawn up a strategic master plan. According to Rosatom, the established Russian strategy for spent nuclear fuel is reprocessing. Spent nuclear fuel from northwestern Russia is to be transported out of the region for reprocessing at Mayak.

Plans for the handling and storage of damaged nuclear fuel and fuel that cannot be reprocessed are still being developed. Spent nuclear fuel that cannot be reprocessed using current technology is to be stored pending the development of new technological solutions. The strategy for solid radioactive fuel is to transport it to Saida Bay in the Kola Fjord, where a regional centre for treatment and storage is to be established.

The MNEPR

Like other countries, Norway has an agreement with Russia based on the Framework Agreement on a Multilateral Nuclear Environmental Programme in the Russian Federation (MNEPR). The MNEPR agreement ensures that partner 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.

Non-proliferation and disarmament

On the basis of IAEA recommendations and international agreements, particularly the Nuclear Non-proliferation Treaty (NPT), the Norwegian authorities have been involved in work to bring more fissile material under satisfactory control. In particular, efforts have been made to control the use of highly enriched uranium (HEU), which can be used directly in weapons. The icebreaker fleet in Murmansk is the world's largest civilian user of highly enriched uranium. Another important part of non-proliferation and disarmament efforts is the IAEA's initiative to reduce the risk that new states start activities involving sensitive stages of the fuel cycle, such as enrichment or reprocessing, which may result in the proliferation of nuclear weapons technology.

The Arctic Monitoring and Assessment Programme (AMAP)

Norway and Russia are heading the work on radioactivity within the Arctic Monitoring and Assessment Programme (AMAP) under the auspices of the Arctic Council. AMAP's functions are to provide information on the Arctic environment and to give scientific advice to the governments of the Arctic countries on how to remove and prevent pollution of the Arctic environment.

The Arctic Military Environmental Cooperation (AMEC)

AMEC was established in 1996 as a formal trilateral cooperation arrangement between the US, Russia and Norway. The UK joined the arrangement in 2003. The purpose of this cooperation arrangement is to ensure safe handling and storage of spent nuclear fuel and radioactive waste from military activities. Norway has previously played an

active part in project cooperation under AMEC, but since autumn 2006 has only had observer status.

The International Scientific and Technology Center (ISTC)

Norway is a member of the International Scientific and Technology Center (ISTC) in Moscow, and provides funding for the Center's efforts to help weapons scientists from CIS countries to find new employment.

The Council of the Baltic Sea States (CBSS)

In 1992, the Council established the Expert Group on Nuclear and Radiation Safety, whose tasks are to promote cooperation between national authorities in the various countries, identify potential sources of pollution, and coordinate measures that will be effective in improving the situation in the region. Norway has chaired this group in the last few years.

Agreements between Norway and Russia in the field of nuclear activity and the environment

- Agreement between Norway and Russia on early notification of nuclear accidents and on the exchange of information about nuclear facilities, Bodø, 10 January 1993
- Agreement between the Norwegian Radiation Protection Authority and the Federal Environmental, Industrial and Nuclear Supervision Service (Rostekhnadzor) on technical cooperation and the exchange of information on safe use of nuclear energy, Moscow, 20 October 1997
- Agreement between the Royal Norwegian Ministry of Foreign Affairs and the Federal Atomic Energy Agency on cooperation in the field of nuclear and radiation safety and security, Moscow, 5 December 2006
- Agreement between the Norwegian Radiation Protection Authority and the Russian Ministry of Defence on cooperation in the field of nuclear and radiation safety, Oslo, 12 December 2007
- Agreement between the Norwegian Ministry of Health and Care Services and the Russian Ministry of Healthcare and Social Development on cooperation on the regulation of the safe use of nuclear energy by carrying out sanitary and epidemiological supervision in

- purpose of securing work involving radiation hazards, Moscow, 28 November 2008
- Framework Agreement on a Multilateral Nuclear Environmental Programme in the Russian Federation (MNEPR agreement), Stockholm, 21 May 2003
 - Agreement between the Government of the Kingdom of Norway and the Government of the Russian Federation on environmental cooperation, 3 September 1992
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