Nuclear Security, Safety and Non-Proliferation: Sweden’s International Cooperation in 2014
Foreword

This report summarizes the results of the work carried out by the Swedish Radiation Safety Authority (SSM) in 2014, together with partners in the Russian Federation, Ukraine, Georgia and Moldova. These efforts are related to Sweden’s international commitments as established in various international fora, such as the Nuclear Security Summit, the EU Action Plan on Weapons of Mass Destruction, UN Security Council Resolution 1540, the G-7 Global Partnership, the MNEPR Agreement, as well as other undertakings in Nordic settings.

Important issues on the agendas of these institutions address the cooperation in the fields of nuclear security, safety and non-proliferation and the links between these areas.

We believe that our holistic approach to security, safety and non-proliferation, which is reflected in the results presented in this report, is very useful and important for promoting peaceful developments, security and a safe environment.

We welcome comments and suggestions from cooperation partners and other readers as feedback is an important tool for our ongoing improvement work.

Fredrik Hassel
Deputy Director General, SSM
Partnerships and frameworks

Since the early 1990s and the collapse of the USSR, Sweden has been engaged in international cooperation to ensure that radioactive and nuclear materials and activities are safe and secure.

Sweden has been active for more than twenty years in the nuclear and radiological areas of international cooperation and several hundred projects have been implemented in states that once were republics of the Soviet Union. The demise of the Soviet Union between 1991 and 1992 initiated this form of international cooperation. When 15 new states replaced the USSR, it became a strenuous task to ensure that nuclear weapons and former Soviet military and civilian activities in the nuclear field were channelled into new structures of ownership and responsibility in the successor states. More than twenty years later, much work still needs to be completed in order to ensure a transition from the old to the new.

Sweden’s project work has been carried out and implemented with reference to the political objectives stated in the Nuclear Security Summits since 2010, in addition to the objectives of the G-7 Global Partnership and its Declarations from Kananaskis in 2002 and Deauville in 2011. Moreover, the legal framework established through UN Security Council Resolution 1540 (UNSCR 1540) sets a legal basis for requirements on all states as concerns measures to secure materials and facilities that could be used for the manufacture of weapons of mass destruction, as well as for defining international interaction and assistance among UN Member States.

Swedish cooperation partners today

SSM’s projects are run in accordance with what is becoming an accepted standard for responsible international behaviour: 28 states are members of the G-7 Global Partnership, 57 states and international organizations are parties and partners in the Nuclear Security Summit process, and all Member States of the UN are required to comply with obligations set out in UNSCR 1540.

Sweden also works on the basis of goals and procedures established in the MNEPR Agreement (Multilateral Nuclear Environmental Programme in the Russian Federation), a framework for enabling external partners to implement projects in the nuclear and environmental fields in Russia. Last but not least, many activities are defined and specified by Sweden and its cooperation partners, also together with other donors, primarily in Norway, Finland, the United States, the United
Kingdom, Germany, Italy and Japan. As far as concerns the G-7 Global Partnership, a major change occurred in 2014. Following the Russian occupation of Crimea in February-March 2014, the Russian Federation was ousted from the G-8, which then continued as the G-7. This has also affected the groups working under the G-7, of which the Global Partnership has the largest membership and broadest global representation.

With this development, the Global Partnership no longer has a G-7 or G-8 member as the prime object of attention and investment in security improvement. Instead, the focus for the “new Global Partnership” has been moved to Ukraine, a country that is not in the G-7. This transformation will be a challenge for the G-7 and the Global Partnership in working outside their own core members. It will also be a challenge for Russia and countries cooperating with Russia, as there is no longer a multilateral umbrella giving direction and legitimacy to the cooperation.

On behalf of Sweden, it is the Swedish Radiation Safety Authority, SSM, that implements international cooperation efforts. Since 2010, Sweden’s cooperation partners have been the Russian Federation, Ukraine, Georgia and Moldova. Prior to this, projects were also implemented together with Kazakhstan, Belarus, Armenia, Estonia, Latvia and Lithuania. SSM implements projects and activities based on government instructions and budget allocation. Moreover, in 2014, SSM concluded implementation of three major multi-year projects on radiation protection and environmental protection in Ukraine based on agreements with the Swedish International Development Cooperation Agency, Sida.
Cooperation principles
The funding available to SSM for the cooperation activities is transformed into a range of activities listed and described briefly in the appendix. From Sweden’s and SSM’s perspective, it is crucial for all projects to serve the interests and objectives of the recipient organization and country as well as be beneficial to Sweden in some way. An improvement in the level of safety and security at a location in a given country is a net contribution to safety and security for people and the environment in that country, as well as to Sweden.

This approach has the advantage of strengthening the interest and involvement of all the countries and partners in a given project. The broad involvement from all parties leads to better projects. In a similar vein, co-financing is also becoming more and more pronounced in the cooperation with Russian authorities and organizations. As regards the cooperation with Georgia, Moldova and Ukraine, co-financing has hitherto been less pronounced, but is now developing favourably.

Results
The results and outcomes of the projects are summarized in the appendix under individual headings depending on the overall effort and the objectives set for each project. Many projects are continuations of earlier efforts and this is reflected. In many cases, the projects contribute to the objectives in several areas. For instance, a barrier that aims at reducing emissions of radioactivity also constitutes a barrier to access and intrusion, thus also serving as a security or non-proliferation measure. However, the projects are only described under the heading showing their main significance.

We present the results and outcomes in various areas of cooperation on the following pages. The appendix provides detailed information about each project.
Locations
The map shows the locations in Russia, Ukraine, Georgia and Moldova where SSM and its cooperation partners implemented projects in 2014.
Results 1: Reactor safety and security at Ukrainian nuclear power plants

In March 2014, at the Nuclear Security Summit in The Hague, the Swedish Foreign Minister and the Norwegian Prime Minister offered to jointly cooperate with Ukraine on security and safety work at Ukrainian nuclear power plants as a response to the increased risks arising from the conflict between Russia and Ukraine.

The position of Sweden was based upon its pre-existing cooperation with Ukraine in the areas mentioned. In this way, SSM and the Norwegian Radiation Protection Authority, Strålevernet, have developed cooperation in several projects together with Energoatom, the owner of the Ukrainian nuclear power plants, as well as with the State Nuclear Regulatory Inspectorate of Ukraine (SNRIU).

The results of the projects are that the SNRIU and the licensee have increased their competence within various aspects of nuclear safety work and physical protection. These actions will contribute to increased safety and security regarding operation of the nuclear power plants in the current situation.

Within the framework of the projects, the SNRIU received software and tools in order to be able to monitor safety levels at the nuclear power plants. In 2014 steps were taken to develop regulations in the area of ageing of these plants and the effect on safety. The SNRIU has also received support in developing the regulations so that Ukraine can diversify its nuclear fuel import.

Furthermore, within the framework of the cooperation with the SNRIU, SSM and Strålevernet have initiated an evaluation of the SNRIU’s body of regulations on physical protection at the nuclear power plants in order to be able to deal with crises and actions of war. Towards the licensee Energoatom, SSM and Strålevernet have strengthened nuclear safety by establishing systems and requirements for certification of staff and equipment.
Results 2: Illicit trafficking of nuclear and radioactive materials in the Black Sea region

SSM is continuing its work with a focus on developing regional cooperation between the countries of the Black Sea region. The main purpose is to strengthen the capacity of national and regional institutions, as well as achieve increased border control and prevent smuggling of nuclear and radioactive materials to countries that could use them for terrorist purposes.

In 2013, SSM and its cooperation partners from the US, the UK and Norway organized a conference in Chisinau, Moldova in order to create an agenda and a long term plan on fighting illicit trafficking of nuclear and radioactive materials in the Black Sea region. In 2014 SSM continued its work within the framework of this plan together with Ukraine, Georgia and Moldova. Other kinds of work are accomplished by authorities from the US, UK and EU, which SSM has continuous coordinating contacts with.

The various activities carried out by SSM on its own or together with the parties mentioned above have strengthened the national ability to deal with challenges connected to spreading and smuggling of radioactive and nuclear materials in the countries that SSM cooperates with, and have contributed to developing regional cooperation.

SSM and NARNRA, the Moldovan radiation safety authority, have initiated work in Moldova on strengthening the authority’s control and handling of a large number of radioactive sources at closed factories and companies. In this area, it is important that SSM has contributed to establishing a nuclear security education centre at the technical university in Chisinau, and has through this promoted development of national competence in this field. Together with NARNRA and the UK, SSM has initiated planning of a regional exercise on illicit trafficking of nuclear and radioactive materials. The exercise will be carried out at the Giurgiulesti Free Port in southern Moldova in 2015.

Over the past few years, SSM has cooperated with the Georgian Civil Council on Defence and Security and financed a research report on Georgia’s nuclear past during the Soviet era. This report was presented at the Nuclear Security Summit in The Hague in March 2014. An essential part of the cooperation is to support dialogue between governments and civil society organizations on radiation safety and non-proliferation issues. In order to contribute to the development of journalist competence on non-proliferation and safety issues, SSM held a training course for journalists who cover issues in this field.

Moreover, two seminars were held with authorities that combat illicit trafficking of radioactive and nuclear materials. As a consequence of these seminars, an international conference on regional non-proliferation and safety issues will take place in 2015. It will be hosted by Georgia’s Foreign Office and Ministry of the Interior, financed by Sweden, the United States and United Kingdom.
Results 3: Safety improvements at Russian nuclear power plants

SSM has, during the past decade, cooperated with the Russian nuclear power plants that are closest to Sweden, i.e. the Kola nuclear power plant (south of Murmansk) and the Leningrad nuclear power plant (west of St. Petersburg). The cooperation is carried out through bilateral projects, also together with Norwegian and Finnish authorities, which have similar action programmes.

The aim is to manage and solve specific technical safety issues. This work helps to give SSM an insight into the safety assessments and safety work at both of the plants, and at Rosenergoatom, the owner and licensee of all Russian nuclear power plants.

From a Swedish (and Nordic) perspective, there are challenges in the foreseeable future connected to having these reactors in operation in Sweden’s geographic proximity. The reactors at Kola are of VVER design but are nevertheless regarded by many international experts as not fulfilling modern safety requirements.

The projects that SSM and its Nordic partners carried out and financed together with the two Russian nuclear power plants in 2014 have led to a better capability for identifying anomalies and safety risks at an early stage. Projects are ongoing for establishing better systems for dealing with radioactive waste.

SSM has also initiated activities that will contribute to and highlight various possibilities and principles for decommissioning old reactors, above all the reactors at the Leningrad nuclear power plant. Cooperation with the Barsebäck nuclear power plant regarding decommissioning has been established.
Results 4: Non-proliferation and nuclear security education for universities

For more than ten years, Sweden has supported non-proliferation education at universities with the objective of establishing this area within university programmes and research in Eastern Europe. The efforts have among other things been directed at universities in Siberia (Tomsk), in the Urals region (Novouralsk and Ekaterinburg), as well as in St. Petersburg.

This cooperation has led to an established research group and a number of postgraduate students in Russia who have a diversified view on non-proliferation and disarmament in the nuclear weapons field. This is a major change considering the former university focus on teaching technicians and economists for the nuclear weapons complex. In 2014 the cooperation also included establishing a non-proliferation centre for teachers and students at the technical university in the “closed city” of Sarov.

Other efforts have been achieved at universities in Ukraine and Moldova regarding the knowledge and ability to carry out research on nuclear disarmament and non-proliferation. In Moldova, SSM has established a training centre dealing with nuclear security. It is now being used by the national authorities and the IAEA for various purposes in the field of nuclear security. In Ukraine, work is continuing on nuclear non-proliferation, security and disarmament at the Odessa National University. This year the fifth consecutive summer school took place including participants from Georgia and Moldova. Moreover, the first steps were taken to establish a non-proliferation centre at the university.

The conflict between Russia, the EU and other Western countries affects the way that Russian authorities look upon SSM’s presence and cooperation within the above-mentioned fields. Therefore, certain activities can no longer be carried out and there are others that have been cancelled by Russian authorities.
Results 5: Management of legacy nuclear and radioactive waste in Russia

Russia and its international cooperation partners still have a major task to ensure that nuclear and radioactive waste from the Soviet era is taken care of and stored properly so that security and safety are maintained.

On an overall level, Russian cooperation has become more difficult following Russia’s having left the Contact Expert Group, CEG, a working group within the IAEA where issues regarding Russian nuclear and radioactive waste were coordinated. On project level, however, Sweden’s practical work has hardly at all been affected. The outcome of the Swedish contribution is that safety and security at the sites with large amounts of radioactive and nuclear materials have been strengthened due to Russian authorities and licensees getting better tools for controlling and detecting nuclear and radioactive materials.

SSM has, together with Russian authorities, carried out three activities that are connected to the work done by the European Bank for Research and Development, EBRD, in northwestern Russia. Through this, SSM has contributed to strengthening the physical protection at the Nerpa Shipyard west of Murmansk. With this protection in place, the EBRD’s work on dismantling the vessel Lepse, which contains large amounts of spent fuel, can continue within the established security margins.

SSM has, together with Norway, finalized physical protection work on the vessel Serebryanka, which is used for transporting spent fuel. At the closed down naval base Andreeva Bay near Murmansk, where 22,000 fuel rods of highly enriched uranium are stored, SSM has contributed to improving the infrastructure so that the fuel can be removed from the site.

Results 6: Radiation protection and emergency preparedness

SSM’s work on radiation protection and emergency preparedness is mainly directed at actions in Russia and Moldova. The result of the actions in Moldova will contribute to a national structure for emergency preparedness with measuring stations and increased analytical capacity, whereas the work in Russia creates useful contacts as well as common standpoints on radiation safety among the Swedish, Nordic and Russian emergency preparedness organizations.

From an SSM perspective, the major risk for Sweden is an accident or major event in the Russian nuclear power sector affecting Swedish territory. Well established points of contact in the Russian emergency preparedness system are essential for Sweden and its Nordic counterparts.

In 2014, SSM invited participants from Rosatom and Rosenergoatom to the emergency preparedness exercise “Havsörn” in Sweden, which was followed by the Russian authorities inviting SSM to an exercise on a nuclear powered
icebreaker in Murmansk. The contacts have since then been extended and now Finnish and Norwegian authorities also participate. SSM has, together with Rosatom and Rosenergoatom, established plans to disseminate more information, and within three to five years an intention is to organize a joint emergency preparedness exercise.

SSM has, together with Moldovan authorities, initiated the delivery and installation of infrastructure for measurement of radioactive releases. Moldova is situated in a region where all neighbouring countries have nuclear power plants, and thus far the country has had only limited analysis capabilities regarding radioactive releases.

Results 7: Management of radiation sources and radioactive waste in Ukraine

International experts estimate that there are half a million radiation sources in Ukraine at research institutions, industrial sites, closed down military bases and at other sites that are part of the Ukrainian national system for registration and control of radiation sources. The result of the activities that SSM carries out in Ukraine, together with other countries such as the US, Germany and the UK, has to some extent strengthened the national control of radiation sources, and has reduced the risks posed to people and the environment by nuclear radiation.

SSM’s efforts in this field are part of a larger plan. The basis is that the US and UK are establishing a central store, VEKTOR, for radioactive material near Chernobyl. In 2014 the store was completed, but prior to starting operations, licensing has to be completed. SSM has also contributed to an information campaign. This includes a website regarding a “national amnesty programme” on locating and handing in nuclear sources to the authorities. SSM initiated work on preparing a plan for how nuclear sources, which during the Soviet era were put in wells, are to be dealt with and kept in the store at Chernobyl. SSM is contributing to an upgrade of Ukraine’s register for nuclear sources, and has also held courses and a national conference for authority personnel working in the physical protection field.

Although the overall situation and international support might enable Ukrainian authorities to establish a more frequent and improved control over the radioactive sources in the country, Ukraine is still facing tremendous challenges due to the ongoing conflict with Russia. There are stores for radioactive material in Crimea, Donetsk and Lugansk which the Ukrainian authorities no longer have control over.

It is currently unclear what kind of control is exercised in the conflict regions. Ukraine’s territorial integrity is severely challenged and this affects the authorities’ possibilities to control illicit trafficking of nuclear and radioactive materials. Therefore it is likely that Ukraine will need cooperation with international partners within the radiation safety field for many years into the future.
Appendix: Projects implemented in 2014

**Russian Federation**

5010014–04 – Installation of gas chromatograph equipment at the Leningrad NPP, SSM2009–2669; payments in 2014: 10 kSEK

The objective of the project is to, by means of more precise instruments, be able to control the gaseous composition in the reactor cavity atmosphere. The gas composition is crucial to assess the condition of the graphite stack and the channels, and also to act as an early warning system for explosion risks. The equipment was tested and approved for shipment in late 2012 and delivered in the spring of 2013. Due to the complexity of the installation works, commissioning of the complete system has been postponed until 2015.

5010014–18 – Overarching meetings and strategy development with Rosenergoatom (REA) and the Finnish (STUK), Norwegian (NRPA/IFE) and Swedish (SSM) counterparts, SSM 2104–828; payments in 2014: 230 kSEK

Meetings are arranged twice a year between SSM and its Russian, Finnish and Norwegian partners to gain a general overview of safety work in the Russian nuclear power sector and to present the frameworks and priorities of the Nordic and Russian partners. The meetings review all ongoing projects at the Kola NPP and the Leningrad NPP and discuss future projects. In 2014, the first meeting was arranged in May by REA in Moscow and the second in October by STUK in Helsinki. At the meeting in October, REA proposed alternative forms for future cooperation. It was agreed to establish a technical working group, headed by REA, with representatives from the involved parties where cooperation projects would be proposed, discussed and prioritized. REA indicated further that future projects should focus more on knowledge and experience exchange rather than on procurement of hardware. The importance of having common projects, not only on the management level but also on engineering and expert level, was underlined.

5010014–31 – Swedish cooperation with the Khlopins Radium Institute, Str. Petersburg, SSM2013–2543; payments in 2014: 7 kSEK

The project aims at supporting the Khlopin Radium Institute’s work related to environmental assessments in the Baltic Sea, specifically related to studies of fallout from the Chernobyl accident. In late 2013, a simplified agreement between SSM and the Khlopin Institute was signed. After signing the agreement, equipment for taking samples from bottom sediments in the Baltic Sea was ordered. Delivery and testing were performed in 2014.

5010014–331 – Cooperation on emergency preparedness issues, SSM2014–2991; payments in 2014: 112 kSEK

The project aims at exchanging emergency preparedness experiences between Russia and Sweden in the form of workshops and participation in exercises. As a response to Russian participation in the Swedish exercise “Havsörn” in December 2013, participants from SSM were invited to Russia to participate as international observers at the exercise “Arctic 2014”, which was performed on board a nuclear icebreaker at Rosatomflot in Murmansk in June 2014. In connection with the exercise, a separate meeting was arranged between Rosatom and SSM in order to outline a common plan for cooperation on emergency preparedness and response between Russia and its Nordic counterparts from Sweden, Norway and Finland in the area of nuclear safety and security.

5010014–02 – Equipment for thickness measurement of feedwater pipe systems at the Leningrad NPP, SSM2011–3142; payments in 2014: 73 kSEK

The project was initiated in 2011 and a contract was established in 2012 with a Swedish supplier, comprising the delivery of methodology, hardware and training to enable semi-automatic thickness scanning of pipes and components at the Leningrad NPP’s feedwater system. The demand for complete scanning is based on stricter requirements from the operator and Russian regulator, which in turn was due to an incident at a similar plant where degradation of a pipe had gone undetected.
methodology and equipment were approved for delivery in September 2013, with the final test and training performed in January 2014. The project is co-financed by Norway and LNPP.

5010014–05 – Gamma tracer for leakages to groundwater at the Kola NPP, SSM2012–3429; payments in 2014: 5 kSEK

A gamma tracer instrument was ordered in 2012 in order to detect and trace groundwater contamination at the Kola nuclear power plant. The instrument will primarily be used for direct measurements in existing boreholes drilled for the purpose of keeping track of radioactivity levels. The instrument will also be used for the general environmental monitoring system at KNPP. Due to unforeseen work with the instrument’s documentation and registration, delivery was delayed until spring 2014. The instrument has been tested and approved at KNPP.

5010014–06 – Batteries for emergency power supply at the Kola NPP, SSM2012–450; payments in 2014: 13 kSEK

The project started in 2012 and a contract for delivery of one set of batteries was established in November 2012 between KNPP and a Swedish supplier. In parallel with the supply financed by SSM, KNPP decided to buy and install four battery sets. The batteries will replace the old pre-existing batteries for emergency power supply, which are approaching their expected lifetime. Their manufacturing took place in 2013 but delivery to KNPP was delayed because of a protracted procedure for obtaining the necessary shipping documents from Russian authorities. Delivery was made in the beginning of 2014, but some documentation and minor assembling equipment remained to be delivered in 2015. The battery set will be installed, tested and taken into operation in 2016 according to schedule.

5010014–08 – Upgrading of the Eddy Current inspection system at the Kola NPP, SSM2012–447; payments in 2014: 92 kSEK

The project started in late 2012. The outcome of the project was delivery of hardware, software and training for upgrading the inspection system for steam generator tubes. Conditions in the steam generator tubes are crucial for prevention of radioactive contamination outside the primary system of the reactors since the tubes form a barrier between the radioactive and the “clean” spheres. The equipment was approved at the factory in May 2013, but shipment and delivery to KNPP were delayed because of the Russian procedure for issuance of shipping release documents. The hardware was delivered in December 2013. The final testing, training and commissioning at KNPP were performed in July 2014. The project was co-financed by Finland, Norway, Sweden and KNPP.

5010014–32 – Swedish cooperation with the Institute for Radiation Hygiene (IRH), St. Petersburg, SSM2011–2047; payments in 2014: 256 kSEK

The project supports research activities between IRH and Malmö University. This is in order to prepare IRH for serving as part of the Russian emergency preparedness system by providing scientific information and measurement data to other authorities. The main activities planned for 2014 were measurement campaigns, one in the Bryansk area in Russia and one in Gävle, Sweden. The campaigns focused on continuous measurement of the effects of the Chernobyl accident. This led to better understanding of the long-term consequences of radiation exposure for the environment. There were also plans to carry out measurements at a former site used for testing of “civilian” nuclear explosives. A system for dose monitoring in medical applications, as well as a system for environmental measurements, have been purchased.

5010014–34 – Waste extractor installation at the Kola NPP, SSM2010–3123; payments in 2014: 1,165 kSEK

The project comprises the design, procurement and commissioning of a remote operated device for extraction and disintegration of solid low and intermediate level radioactive waste. The equipment will enable safe processing of the waste for further volume reduction, characterization and disposal. The technical requirements were elaborated at the end of 2013, followed by a tender invitation for the supply of equipment and training that was announced in the first half of 2014. A contract was signed in December 2014 between KNPP and a Swedish supplier. The project is planned to be completed by the first half of 2015. The project is co-financed by Finland, Sweden and KNPP.
The project comprises the development, procurement and commissioning of a new and more accurate flow rate measurement system for gases from the reactor filtering system. This system makes it possible to obtain better calculations of radioactive releases through the main stack. The availability of accurate measurements and calculations of radioactive releases are of vital importance during normal operation as well as in emergency situations.

A tender process was announced by SSM in August 2014 and contract discussions were held with the winning bidder, a Russian company. However, the company withdrew its offer and SSM and LNPP agreed to cancel the project. The project was intended to be co-financed by Finland, Sweden and LNPP.

This project concerns the improvement of the control and national accountancy of nuclear materials appearing by accumulation in different technological processes, both in the nuclear cycle industry as well as in non-nuclear industries such as the oil industry.

In the framework of the project, spectrometer-based measurement equipment will be delivered to IPPE (Rosatom’s Institute for Physics and Power Engineering in Obninsk), the national institution responsible for occupational training and technical support in the nuclear field. Another outcome of the project will be improved radiation protection of personnel as well as the environment. In 2014, the contract was signed; delivery of the measurement equipment to IPPE is expected in 2015.

Cooperation with universities in the Tomsk region was initiated in 2004. SSM’s main partners, Tomsk State University (TSU) and Tomsk Polytechnic University (TPU), have established a profound teaching and research base in the nuclear non-proliferation field. Other regional universities are engaged in the joint student activities, where non-proliferation summer schools have also had a valuable role in spreading awareness of non-proliferation issues among teachers, institutes and Siberian university students. The teachers and students have created sustainable contacts and networks.

SSM support to the TSU postgraduate programme on non-proliferation studies has been provided since 2007. In 2014 SSM evaluated the progress achieved by seven postgraduates at the TSU, funded by SSM. The outcome: one dissertation is defended, three are in a final stage. Despite delays for a couple of students, SSM and TSU consider that most of the PhDs have developed their academic research skills in a satisfactory manner.

The TSU PhDs took part in SSM’s academic writing skills seminar conducted in Stockholm in November 2014 for scholars and professors from Russian and Ukrainian universities.

SSM’s efforts to improve nuclear non-proliferation education in the St. Petersburg region started in 2011. The objective is to enhance knowledge and research interest in the nuclear non-proliferation field. The target group is students and faculty members from nuclear universities and technological institutes of the National Research Nuclear University MEPhI.

In 2014, the main activity was a student conference on nuclear safety and security held in St. Petersburg, which was organized as a side-event of the annual Nuclear Forum. This was arranged by the Rosatom Central Institute for Continuing Education and Training. Twenty selected students and PhD students from seven MEPhI universities presented their research papers on export control, accounting of nuclear and radioactive materials, nuclear security, the international non-proliferation regime as well as nuclear safety and waste management. The research papers submitted were a testimony to progressing research skills since a similar conference conducted with SSM support in 2013. The best students were awarded...
by participation at the Moscow International Non-proliferation Conference held in November 2014.

5010007–161 – Education at Russian universities in the field of nuclear non-proliferation: The Urals region, SSM2014–283, SSM2014–284; payments in 2014: 448 kSEK

Cooperation with universities in the Urals was initiated in 2006. SSM activities in the Urals are managed by the two main partners, the Ural Federal University (URFU) and the Novouralsk Technological Institute of the National Research Nuclear University MEPhI (NTI MEPhI).

Within the SSM/URFU cooperation framework, a workshop entitled “Practical Aspects of Nuclear Non-proliferation Policy” was held for twenty-five graduate and undergraduate students from the departments of international relations and physics. The workshop was tailored as a combination of lectures and case studies presented by international experts. The results demonstrated a strong need to continue the work with Russian students on promoting knowledge and an analytical discussion culture.

In 2014, SSM cooperated with NTI on a bilateral basis to improve the knowledge of nuclear non-proliferation with a special focus on nuclear security culture issues. The target group has been complemented by participants from the local nuclear industry. A regional seminar on nuclear security, radiation safety and non-proliferation was held in Novouralsk in October 2014.

5010007–15 – Support for establishment of the Nuclear Non-proliferation Knowledge Centre at the Sarov Physics and Technology Institute, SSM2014–293 [SSM2013–627]; payments in 2014: 47 kSEK

The project was initiated in 2013 based on a request by the management of the Sarov Physics and Technology Institute (SPTA) of the National Research Nuclear University MEPhI. The aim is to improve the level of nuclear non-proliferation knowledge among students and faculty members. A specialized non-proliferation study room at the SPTA has been established. The project was completed in 2014.

5010007–18 – Education at Russian universities in the field of nuclear non-proliferation: Overall and joint activities, SSM2014–2851; payments in 2014: 483 kSEK

The project’s aim is to promote non-proliferation education in academia in the form of joint capacity-building events, exchange among universities and participation in national and international networks. SSM targets all main partners from Russian and Ukrainian universities.

In 2013 SSM initiated a series of training events to improve academic writing skills of faculty members and postgraduates. The main goal is to promote non-proliferation research publications in internationally recognized journals. The second phase of the academic writing seminar was held in Stockholm in November 2014 with the participation of eleven professors and PhDs from the Ural, Novouralsk, Tomsk, Kiev and Odessa universities. International experts evaluated submitted research papers, commented and gave advice on further work with the manuscripts. A continuation is planned in 2015.

In 2014, SSM continued its fruitful cooperation with the Comprehensive Test Ban Treaty Organization by supporting participation at the CTBTO Academic Forum and Public Policy Course in Vienna. Eleven university professors and government professionals from Russia, Ukraine and Georgia attended. Russian and Ukrainian universities were also supported to take part at International Nuclear Security Education Network (INSEN) meetings in Vienna.

5010003–18 – Power supply infrastructure at Andreeva Bay (diesel generators), Murmansk, SSM2012–4525; payments in 2014: 1,951 kSEK

The international efforts to remediate the Andreeva Bay site of its enormous quantities of nuclear and radioactive materials continue. In order to ensure adequate power supply for the spent nuclear fuel handling operations at the site, a joint project was initiated with the participation of Rosatom, SevRAO, Italy, EBRD and SSM. The Swedish contribution deals with the design and infrastructure for the diesel generators needed for the emergency power supply required by national and international legislation. The work and documentation on the detailed design were completed in 2014. The project is expected to be completed by April 2015.
5010003-07 – Participation in and contribution to Contact Expert Group meetings regarding radioactive and nuclear waste issues in Russia, SSM2008–2026; payments in 2014: 93 kSEK

The Contact Expert Group (CEG) under the auspices of the IAEA was established at the initiative of Sweden in 1990 and was intended to promote international cooperation to assist Russia in addressing nuclear legacy issues such as the management of spent nuclear fuel and radioactive waste. In 2014 there was one workshop and one plenary meeting. At the workshop in Bergen in May, Rosatom announced that it would suggest an abolishment of the CEG for decision at the plenary in October. At the plenary in October, it was agreed that the CEG could not meaningfully continue without Russia as a partner. The Norwegian chair of the CEG has agreed with the members and the IAEA to abolish the CEG as of 31 December 2014.

5010003-03 – Establishment of a control dosimetry station at Andreeva Bay, Murmansk, SSM2012–1265; payments in 2014: 125 kSEK

This project deals with the establishment of a dosimetry control station for vehicles, equipment and personnel at the access point to the controlled zone of the Andreeva Bay site. The project was completed in December 2014 after a successful site acceptance test of the installation and equipment. A direct outcome of the project is full control of radiation levels for movement and transportation into and out of the controlled zone as well as improved radiation protection for the personnel.

5010003-15 – Installation of physical protection system on the m/v Serebryanka for transportation of spent nuclear fuel and radioactive waste, SSM2012–4693; payments in 2014: 217 kSEK

The purpose of this project, co-financed with Norway, is to equip the transport vessel Serebryanka with a physical protection system that is consistent with the contemporary international standard. The Serebryanka is one of the two vessels intended for transports of spent nuclear fuel and radioactive waste from the former military nuclear submarine bases at the Kola Peninsula to centralized storage sites. The project was completed in 2014 after a successful site acceptance test of the installed system and all of its components.

5010003-19 – Establishment of mobile automated systems for detection of radioactive material at FSUE Mayak PA, Russia, SSM2013–6026; payments in 2014: 908 SEK

The site of FSUE Mayak has large quantities of Soviet nuclear legacy waste that cause serious problems not only for the environment but also public health. To ensure the security of radioactive materials and their transportation, mobile and portable automated systems for detection of radioactive materials were established and installed for monitoring the site of FSUE Mayak.

The main purpose of this project is to provide monitoring of the onsite radiation situation and adjoining areas to decrease the risks posed to the population and the environment by illicit transportation of radioactive materials. The automated system provides background radiation monitoring of vehicles and the surrounding area in real time. In 2014, the site acceptance test of the system was performed in the vicinity of FSUE Mayak.

5010003-24 – Reconstruction of Security Checkpoint 11 at the Nerpa Shipyard, SSM2014–2901; payments in 2014: 70 kSEK

For several years now, Sweden has assisted the Nerpa Shipyard in implementing a general plan for reconstruction of the physical protection system (2008-2015). In 2013, SSM finalized work on replacement of most of the perimeter fence. In 2014, SSM and the Nerpa Shipyard had several meetings on reconstruction of Security Checkpoint 11, an integral part of the security infrastructure of the site.

The ensuing security upgrades at Checkpoint 11 will improve monitoring and control of vehicles, people and materials transported to and from the decommissioning site of the nuclear service ship, the Lepse (financed by the EBRD). Moreover, the new infrastructure will prevent intruders from accessing the territory of the shipyard, where highly radioactive spent nuclear fuel and other radioactive materials are stored as a result of decommissioning of nuclear submarines and other nuclear powered vessels. However, due to several administrative obstacles, implementation of the project has been postponed until 2015.
In 1981, in the Kara Sea northwest of Russia, the Soviet nuclear submarine K27 was sunk after a reactor accident. The submarine remains on the seafloor at 30 meters' depth. Today, the submarine causes concern regarding the risk of leakages from the reactor. In cooperation between SSM and Norwegian Strålevernet, a risk assessment of the consequences to the environment has been made. The report was written by Strålevernet and reviewed by SSM. Based on the results of the report, a follow-up project may be initiated in 2015.

Moldova

SSM supported the establishment of the Nuclear Security Support Centre at the Technical University of Chisinau, Moldova, which formally opened in October 2014. The main purpose of the Centre is to train the national human resource base in order to strengthen nuclear security in Moldova. The Centre will provide for long-term capacity building in activities involving nuclear and other radioactive materials that are specific to Moldova. A new cooperation programme between SSM and the Technical University of Chisinau focusing on educational issues will be elaborated during 2015.

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Georgia

SSM has continued its cooperation with the Civil Council on Defense and Security of Georgia (CCDS) on development of Georgia’s non-proliferation policy priorities. SSM has also continued to provide support to the Council in the development of Georgia’s Nuclear Security Forum. The main task of this project is to support debates in Georgian society on issues regarding nuclear and radiation safety and nuclear non-proliferation issues in order to enhance civil society awareness in Georgia.

In May 2014, a three-day workshop was held for Georgian journalists to increase their knowledge of global security and international nuclear non-proliferation regime issues as well as to strengthen networking between journalists, governmental organizations and experts on nuclear non-proliferation issues. Continued support was also provided for preparation of the February 2015 Regional Conference, to be held in the framework of the Tbilisi International Forum for Regional Stability; “Challenges and Responses to Nuclear Security and Non-Proliferation”.

In order to broaden the cooperation on CBRN security issues within the Black Sea region and to assist states in their efforts to secure CBRN materials, SSM supported organization of the Workshop on CBRN Security Culture, held in Yerevan, Armenia in June 2014. The workshop was held by the Center for International Trade and Security of the University of Georgia (CITS/UGA) for more than 30 participants from countries including Moldova, Ukraine and Georgia.
SSM sponsored the participation of several experts from Georgia in particular. During the workshop, various aspects for developing and practicing a shared architecture for CBRN security culture were discussed.

5010006-11 – System for physical protection at the storage site of the Institute of Physics at Mtskheta, SSM2013-6036; payments in 2014: 371 kSEK

In Georgia, SSM undertook the first steps in modernizing the physical protection system at the Mtskheta radioactive waste repository. SSM was responsible for upgrading the guard house. The guard house was in poor shape and lacked running water, heating and other basic requirements for the guards and staff of the waste repository. The guard house has been renovated in order to ensure that qualified surveillance and repository security can be achieved.

Ukraine

5010015-221 – Systems and procedures for the management of ageing reactors, SSM2012-619; payments in 2014: 984 kSEK

Ageing of reactors is a major challenge in Ukraine as well as in other countries. SSM and the Ukrainian regulator, SNRIU, have agreed to cooperate on SNRIU’s requirements and instructions in the area of ageing management and long-term operation of NPPs. Four working meetings were held in 2014. The outcome of work during the year was that SNRIU completed draft guidance documents and requirements for the nuclear industry. One concluding element of the project is a pilot study at the Rivne NPP during the first half of 2015.

5010015-151 – Development of systems for safety qualification of staff and equipment of SNRIU, SSM2009-4200; payments in 2014: 1,236 kSEK

At the request of SNRIU, the Ukrainian regulator, SSM and SNRIU now cooperate on transferring the model for non-destructive testing procedures used in Sweden. The aim of this project is to assist SNRIU and its Ukrainian accreditation body in developing a new system for qualification of staff and equipment regarding in-service inspection at nuclear facilities. Four working meetings were held in 2014. The work focused on the production of documents which SSM assisted in reviewing. These documents will be used during the next phase, when a pilot study at the Rivne NPP will be carried out. The project has suffered from delays in implementation due to late signings of the contracts.

5010015-161 – Implementation of risk monitoring at the South Ukraine NPP, SSM2013-1351; payments in 2014: 661 kSEK

Riskspectrum is a tool used for Probabilistic Safety Analysis (PSA), and thus the calculation and estimation of various risk factors at nuclear power plants. At an early stage, SSM and its Ukrainian counterparts concluded that Riskspectrum’s implementation in Ukraine would contribute significantly to the continuous safety analysis of Ukrainian NPPs.

In the framework of this project, Riskspectrum has been introduced at the South Ukraine NPP. Riskspectrum is essential for using an additional program for risk monitoring, called Riskwatcher. The South Ukraine NPP and eventually the remaining Ukrainian NPPs will have more continuous surveillance of the state of safety. The project will be completed in 2016.

5010015-171 – Swedish cooperation with Zhytomyr State Technical University (ZSTU) on development of analytical and preventive capabilities, SSM2012-3428; payments in 2014: 397 kSEK

The objective is to strengthen the role of the ZSTU in its function as a specialized organization for emergency preparedness in Ukraine. This implies exchanging scientists, carrying out joint measurement campaigns and purchasing new equipment. The work was carried out under the supervision of, and in collaboration with, experienced scientists from the Swedish University of Agricultural Sciences in Uppsala, Sweden.

The focus is on the way in which the intake of caesium in vegetation is affected by adding ash or potassium chloride to the soil. The main activity in 2014 was to continue low resolution gamma spectroscopic measurements of the study samples. Several measurement campaigns were carried out in the highly contaminated forests near the Chernobyl area.
5010015–20 – Strategies and meetings with Ukrainian authorities and organizations, SSM2013–1350; payments in 2014: 245 kSEK

The purpose is to have meetings with Energoatom and SRNIU in order to discuss completed and ongoing projects and plan future activities. During the year, two project meetings were held. The meetings resulted in a list of prospective projects and approaches for dealing with delays in some projects.

Moreover, SSM participated in one Steering Committee Meeting in Kiev related to the Swedish-Norwegian-Ukrainian cooperation that was initiated at the Nuclear Security Summit. Later on, SSM organized a second similar meeting in Stockholm.

5010015–26 – Licences for software programs to SNRIU, SSM2014–3725; payments in 2014: 450 kSEK

The objective of this project is to provide the regulator, SNRIU, with the programs Riskspectrum and Riskwatcher in order to be able to review safety analyses from Ukrainian NPPs. One of the software programs was delivered in December 2014 and the second one will be delivered in 2015. Training courses will be held in 2015. The project is co-financed by the NRPA.

5010015–25 – Requirements for qualification and licensing of reactor fuel, SSM2014–3726; payments in 2014: 264 kSEK

The project was suggested by the SNRIU immediately after the Nuclear Security Summit in March 2014 for the cooperation between Sweden, Norway and Ukraine in assisting Ukraine with issues related to the new challenges posed by the conflict between Russia and Ukraine. Previously, Ukraine mainly imported fuel from Russia, but Ukraine, with a view to its relations with Russia, decided that it needs to diversify its nuclear trade.

The project brings together experts from the Swedish, Norwegian and Ukrainian regulatory authorities as well as experts from the Czech Republic to review Ukrainian drafts of new regulatory guides that will make it possible for Ukrainian nuclear power plants to import nuclear fuel from any international company. Three meetings were held in 2014 and the project will be concluded in 2015.

5010006–14 – Support to the Training Course in Nuclear Security Culture Self-Assessment Methodology in Ukraine, SSM2014–1524; payments in 2014: 100 kSEK

On a request by the Ministry of Energy and Coal Industry of Ukraine, and in collaboration with the Research Foundation of the University of Georgia (USA), SSM supported a training course on Nuclear Security Culture Self-Assessment Methodology held in Sofia, Bulgaria in November 2014. More than 20 experts representing the nuclear facilities and government authorities of Ukraine took part in the training.

The main goal of this training course was to increase awareness of security culture issues among nuclear engineers, scientists, officials and security personnel in Ukraine, as well as to increase their understanding of important dimensions of nuclear security, the role of human factors and the impact on the overall security regime. This project has been co-financed by the UK Department of Energy and Climate Change (DECC).

5010015–23 – Medical equipment for Kiev’s National University, SSM2014–925; payments in 2014: 278 kSEK

During the period 2009–2013, Kiev’s National University was one of the recipients of funding from Sida, the Swedish International Development Cooperation Agency. This funding was directed at medical quality assurance and quality control, with SSM as technical supervisor. The project was registered under the Ministry of Health. However, the university is subject to the Ministry of Education.

Therefore, the university could not receive new equipment in the framework of the Sida project. The problem could only be circumvented by initiating a new project. This new project was not financed by Sida, but from the budget of the Swedish Ministry for Foreign Affairs, earmarked for Ukraine. In the framework of the new project, the equipment was delivered to the university in 2014. It will be used for education of medical staff.

5010020–071 – Export control system in Ukraine, SSM2014–492; payments in 2014: 360 kSEK

SSM and Ukraine have cooperated on export control matters since 2005. The aim is to strengthen the Ukrainian state export control system. SSM’s activities mainly focus on facilitating Ukraine’s adjustment process.
to the EU’s export control principles and procedures. The 2014 activities were based on the cooperation agreement between the Ministry of Economic Development and Trade of Ukraine and SSM. The main support was directed at the national implementation process of the Ukrainian single control list of dual-use goods and technologies (SCL).

SSM supported a one-day seminar in Kiev, held in June 2014. The seminar provided the opportunity for forty Ukrainian government officers from ministries and state authorities to deepen their knowledge of the SCL specifics and implementation consequences. In addition, SSM supported the update of a manual on recent changes regarding the export control law of Ukraine, as well as the development of a specialized export control handbook for the industry.

SSM’s export control activities in Ukraine are closely coordinated with the US Export Control and Border Security programme partners.

5010020-081 – Non-proliferation education in Ukraine, SSM2014–1109; payments in 2014: 924 kSEK

Since 2009, SSM has cooperated with the Odessa National University (OUN) on enhancement of non-proliferation knowledge and on strengthening the young generation’s community devoted to nuclear non-proliferation issues. The main target group is university students, scholars and young professionals from the nuclear policy or industry sectors, as well as other related areas. In 2014, SSM supported the organization of the fifth regional summer school in Odessa, “Nuclear Non-proliferation and Nuclear Security: Regional Challenges”, for students and young specialists from Ukraine, Moldova, Georgia and Poland.

Another cooperative action in 2014 shared by the ONU and SSM was to promote the creation of a centre for non-proliferation research at ONU. The main aim of the centre is to attain an independent academic research capacity on non-proliferation issues in Ukraine, and to promote research skills based on European and “Western” values and methods. In 2014, two brainstorming meetings were arranged with international experts in order to exchange experiences and to advise ONU on how to establish and administer independent NGO research and deal with challenges in the area.

5010020-101 – SNRIU database for IAEA safeguards(93,85),(950,968)

inspections, and technical support for a database for the Ukrainian state system on nuclear material accountancy and control, SSM2014–2853; payments in 2014: 38 kSEK

Sweden assists SNRIU in providing technical support for a special database in order to keep track of IAEA safeguards inspections in Ukraine. The objective is to ensure that the Safeguards Agreement between Ukraine and the IAEA is properly applied, and that SNRIU nuclear material accountancy reporting to the IAEA functions well. In 2014 the database received annual service as agreed between SSM and SNRIU.

5010020-14 – Support for a nuclear security training laboratory at the Sevastopol National University of Nuclear Energy and Industry, SSM2014–779; payments in 2014: 5 kSEK

In 2013 the Sevastopol National University of Nuclear Energy and Industry requested SSM to support the establishment of a specialized nuclear security laboratory for student training in physical protection. Though visible progress on implementation was achieved at the beginning of 2014, the project was cancelled due to political implications caused by Russia’s annexation of Crimea in March 2014.

5010020-091 – SNRIU information and communication technologies project, SSM2012–3037; payments in 2014: 482 kSEK

SSM and SNRIU have cooperated for a couple of years for the purpose of creating an open Ukrainian website as a forum for non-proliferation to be used by all interested parties, such as the general public, experts on nuclear issues, Ukrainian authorities, non-governmental organizations and the media. Over the years, the object of the website has been broadened to also include “amnesty of orphan sources”. The results achieved in 2014 were further technical improvements to the website, as well as continuous updates of the site with new information of current interest and topical articles by experts in the field. The first flyer about the amnesty project was produced in 2014. In addition, a feasibility study on improving the SNRIU intranet was carried out, resulting in a package of recommended measures to increase the efficiency of the authority in exercising its supervisory tasks.
5010020-13 – Feasibility study for the management of well-type storage facilities in Ukraine – Participation in Global Partnership Programme in Ukraine, SSM2014-1654; payments in 2014: 144 kSEK

There are approximately half a million disused radioactive sources throughout Ukraine that are improperly stored at the facilities of Radon, the state-owned radioactive waste management company. Under the long-term programme of the Global Partnership, all these sources are to be moved to the newly built central repository in the Chernobyl exclusion zone in the framework of the Disused Sealed Radioactive Sources (DSRS) Management Programme in Ukraine.

In 2014, SSM negotiated a contract with Radon on a feasibility study for solving the well-type storage problems at Radon's facilities with the support of Swedish expertise. The expected outcome is to remove the waste to the central repository in Chernobyl. The feasibility study, which will result in recommendations for an optimal solution for the well-type storage facilities, should be finalized in 2015.

5010020-15 – 12th Ukrainian conference on Material Protection, Control and Accounting (MPC&A) at the Rivne NPP, SSM2014–931; payments in 2014: 551 kSEK

The objective of this project was to facilitate organization of the 12th Ukrainian conference on Material Protection, Control and Accounting (MPC&A) at the Rivne NPP in September 2014. The purpose of the conference was to review nuclear materials issues among Ukrainian professionals and between Ukrainian regulatory bodies. Nuclear security challenges caused by the complex political situation in Ukraine in 2014 were also discussed. For the first time, security of radioactive sources was included in the programme of the conference and the organizations concerned were presented. Before the conference, a one-week course was carried out on nuclear materials accountancy and control for the employees of all nuclear power plants in Ukraine.

5010020-16 – Training courses on physical protection of radioactive waste and sources of ionizing radiation, SSM2014-1332; payments in 2013: 421 kSEK

In 2014 two training courses, "Physical Protection of Radioactive Waste" and "Physical Protection of Sources of Ionizing Radiation", for inspectors from all regional offices of SNRIU were carried out at the George Kuzmycz Training Center for Physical Protection, Control and Accounting of Nuclear Material of the Nuclear Institute in Kiev. These training courses have contributed to increased national competence and knowledge as part of supervisory work relating to the security of radioactive sources and radioactive waste.

5010020-17 – SNRIU state registry of ionizing radiation sources and computerized work stations for the personnel of SNRIU, SSM2013–4711; payments in 2014: 614 kSEK

The aim of this project is to update and further develop the Ukrainian state registry of ionizing radiation sources at the SNRIU. Furthermore, the aim is to improve the technical infrastructure for SNRIU personnel in order to improve the efficiency of supervisory work. Ukraine currently has approximately 30,000 radioactive sources in operation. The registry, as well as the work stations of SNRIU personnel, have been updated with new up-to-date hardware and operation systems. Further development and modernization of the registry will include developing the database software.

5010020-20 – Twenty years of Ukrainian adherence to the Non-Proliferation Treaty, SSM2014–3546; payments in 2014: 6 kSEK

In 1991, when the Soviet Union was dissolved, one-third of its nuclear weapons arsenal was located in Ukraine. In 1994, Ukraine joined the NPT, the Non-Proliferation Treaty, and signed the Budapest Memorandum. Over twenty years have passed and many things have changed. For this reason, SSM has commenced arrangement of a conference at the Diplomatic Academy in Kiev for the purpose of reflecting and debating on Ukrainian experiences regarding the NPT. The partners for the project and conference are Sweden, Norway, Ukraine and Poland.
During the period 2010–14, SSM received project funding from Sida, the Swedish International Development Cooperation Agency, in order to supervise projects on radiation protection in Ukraine. In total, SSM received 28,646 kSEK for the project period. Three areas were covered by the funding, as described below. Two of these areas were completed in 2013 and the third was completed in 2014. The project basket, or programme, was concluded in 2014.

5010018-01 – Quality assurance and quality control in medical radiology, SSM2009–863

In order to increase the competence of medical physicists as well as in radiation safety at Ukrainian hospitals, this project was initiated through funding from Sida. This was a four-year project with a great deal of focus on training of medical staff. The stakeholders were mainly Kiev’s National University, SNRIU and HIMR.

Their tasks included developing a new university curriculum, arranging international medical workshops, purchasing new equipment and developing regulatory documents for use of linear accelerators and PET (Positron Emission Tomography). Many of these tasks were performed, but due to a slow registration process at the Ministry of Health, the project was to a certain extent already crippled from the start. Equipment could not be procured until the registration was complete. Registration of the project was completed in June 2013, six months before termination of the project.

5010018-02 – Reduction of risks posed by exposure to radon gas and natural radiation, SSM2009–609

Due to the risks linked with exposure to radon gas in homes, schools and kindergartens in Ukraine, a four-year radon project was initiated with funding from Sida. The project’s objective was to develop and implement a national strategy for protection of the population exposed to radon gas and natural radiation. The main stakeholder was the Marzeev Institute of Hygiene and Medical Ecology.

The project outcomes focused on activities such as radon mapping in different oblasts in order to make radon maps, training courses based on Swedish methods for remediation and mapping, as well as training excursions in Sweden and Ukraine. The project suffered from a lack of both equipment and expertise from the Ukrainian side. The project also experienced difficulties in registration at the Ministry of Health, which was not completed until June 2013. Due to this, the purchase of equipment was delayed and was not delivered until after project closure in December 2013.

5010018-03 – Remediation of uranium tailings, SSM2010–569

There are several former uranium mines and sites in Ukraine where uranium ore was extracted by means of chemicals during the Soviet era. The residues from the mining and milling processes have not been adequately taken care of and consequently a radiation legacy remains. During a four-year project financed by Sida, the objective was to establish the foundations for a larger remediation programme at the former uranium mine located in Dniprozerzhinsk.

This project included elaboration of national legislation and guidance documents for the issue, establishment of safety analyses for the contaminated areas as well as plans for managing the environmental risks posed by the uranium residues and chemicals. A final element was to ensure that the population in the local communities is kept informed of the risks and ongoing remediation work.

The future

The Global Partnership and UNSCR 1540 as referred to above have set a framework and agenda for not only national efforts regarding nuclear non-proliferation and security, but also for urging states to reach out and cooperate on these issues.

In this respect, the Global Partnership and UNSCR 1540 may serve as meaningful vehicles or instruments for implementing the collective international objectives as stated in the Communiqués of the Nuclear Security Summits.

SSM has thus far been active in the states in Eastern Europe and Central Asia. The agenda for security and safety issues is entering other regions as well. Upon request and government instruction, SSM is ready to contribute in old and new contexts.
List of abbreviations

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<th>Abbreviation</th>
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<tr>
<td>CBRN</td>
<td>Chemical Biological Radioactive Nuclear material</td>
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<td>CCDS</td>
<td>Civil Council on Defense and Security of Georgia</td>
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<td>CEG</td>
<td>Contact Expert Group (IAEA)</td>
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<td>CITS</td>
<td>Center for International Trade and Security of the University of Georgia (USA)</td>
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<td>CTBTO</td>
<td>Comprehensive Test Ban Treaty Organization</td>
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<td>DECC</td>
<td>Department of Energy and Climate Change (UK)</td>
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<td>EBRD</td>
<td>European Bank for Reconstruction and Development</td>
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<td>FSUE Mayak</td>
<td>Federal State Unitary Enterprise Mayak</td>
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<td>HIMR</td>
<td>Kharkov Institute of Medical Radiology (Ukraine)</td>
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<td>IAEA</td>
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<td>INSEN</td>
<td>International Nuclear Security Education Network</td>
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<td>IPPE</td>
<td>Rosatom's Institute for Physics and Power Engineering (Russia)</td>
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<td>IRH</td>
<td>Institute for Radiation Hygiene (Russia)</td>
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<td>KNPP</td>
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<td>KNU</td>
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<td>LNPP</td>
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<td>MEPhi</td>
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<td>MPCA</td>
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<td>NARNRA</td>
<td>National Agency for Regulation of Nuclear and Radiological Activity (Moldova)</td>
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<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>Nuclear Power Plant</td>
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<td>NPT</td>
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<td>NRPA</td>
<td>Norwegian Radiation Protection Authority (Norway)</td>
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<td>NTI</td>
<td>Novouralsk Technological Institute (Russia)</td>
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<td>OMU</td>
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<td>PET</td>
<td>Positron Emission Tomography</td>
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<td>SIPRI</td>
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<td>SNRIU</td>
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<td>SPTA</td>
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<td>SSM</td>
<td>Swedish Radiation Safety Authority</td>
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<td>URFU</td>
<td>Ural Federal University (Russia)</td>
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<tr>
<td>ZSTU</td>
<td>Zhytomyr State Technical University (Ukraine)</td>
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Staff from SSM’s Office for International Relations involved in international project implementation.

Back row, left to right: Zlatan Delalic, Leif Pettil, Cecilia Somell, Tage Eriksson, Tor Stenberg, Olof Karlberg, Håkan Klasén.

Front row, left to right: Kjell Olsson, Viviana Sandberg, Lars van Dassen, Sarmite Andersson.

For further information on the projects described in this report, please contact Lars van Dassen, lars.van.dassen@ssm.se, or on +46 8 799 40 00.