

CREATING A COMMON EU POLICY ON NUCLEAR NON-PROLIFERATION EDUCATION: A CASE STUDY OF SWEDEN

THOMAS JONTER

I. INTRODUCTION

Ten years after the European Council adopted the European Union Strategy against Proliferation of Weapons of Mass Destruction (EU WMD Strategy), the time is ripe to review the programmes that have come out of the joint strategy.¹ Have the goals formulated in the WMD Strategy been fulfilled? And is the strategy supported and followed by the member states in their non-proliferation cooperation with states outside the EU, or do they tend to pursue policies based on their individual agendas, interests and traditional approaches?

This paper uses Sweden as a case study of how and how far individual EU member states have aligned their actions to the goals formulated in the EU WMD Strategy. The central question it seeks to answer is to what extent Sweden has attempted to coordinate its non-proliferation activities outside the EU with the strategy.

Sweden is an interesting case in this respect since the Swedish Government had already been providing non-proliferation assistance to other countries for several years by the time the EU strategy was adopted in 2003. This assistance had started under a strategy called *Östsamarbetet* (East cooperation) for Central Europe and Eastern Europe as early as the end of the 1980s. The *Östsamarbetet* strategy had four objectives: promoting common security, deepening the culture of democracy, supporting socially sustainable development and supporting environmentally sustainable development.² In 1991, immediately after

¹ Council of the European Union, 'Fight against the proliferation of weapons of mass destruction: EU Strategy against Proliferation of Weapons of Mass Destruction', 15708/03, 10 Dec. 2003.

² Swedish Ministry of Education, *Utredning rörande organisation av ett Östersjöcentrum* [Inquiry regarding organization of a Baltic centre], Inquiry UD 2004:03, Statens offentliga utredningar [Official Reports]

SUMMARY

The European Union Strategy against Proliferation of Weapons of Mass Destruction (EU WMD Strategy), adopted in 2003, was among other things supposed to lead to a unified and coherent approach to member states' cooperation on non-proliferation with third countries.

Sweden's non-proliferation cooperation with several former Soviet states was already well developed when Sweden joined the EU in 1995. However, a new set of cooperative activities—nuclear non-proliferation education cooperation programmes in Russia and later Ukraine—started in 2004. These programmes have been successful in numerous ways. Many universities in these countries can now offer courses in nuclear non-proliferation, and networks of cooperation have been created.

To further build the professional skills in non-proliferation of Russian and Ukrainian scholars and scientists, they need to be able to participate in and contribute to international forums. To facilitate this, the EU should resume its non-proliferation support to Russia.

Sweden has performed well in terms of the goals of the EU WMD Strategy and the associated 2008 New Lines for Action, including through the non-proliferation education programmes. However, this has much to do with the great overlap between the long-standing Swedish national policy, which has largely been pursued independently of the obligations of EU membership. Implementation of the EU WMD Strategy has nevertheless had positive impacts on the Swedish support activities.

ABOUT THE AUTHOR

Thomas Jonter (Sweden) is Professor of International Relations with the Department of Economic History at Stockholm University. His research focuses on nuclear non-proliferation and energy security. He has been visiting researcher at SIPRI and Stanford University and been project leader of several nuclear non-proliferation education and research projects in Russia.

the collapse of Soviet Union, the Swedish Government decided to support nuclear non-proliferation capacity building in the former Soviet Union. The overall aim was to enhance nuclear security in the Baltic region—with a focus on Belarus, Estonia, Latvia, Poland, Russia (particularly the adjacent area of north-western Russia) and Ukraine—to impede the spread of nuclear weapons, materials and technologies.³

In this context, it is important to note that Sweden only became an EU member in 1995. The initial overarching strategy—for the Baltic region and in the non-proliferation area—was formulated when non-alignment was the key guiding principle of Sweden's foreign policy. An important aspect of this foreign policy was nuclear non-proliferation and disarmament. With committed politicians, skilled diplomats, technical competence and high ambitions, Sweden was recognized as an important contributor to international disarmament and arms control efforts, especially during the cold war.⁴

With its long non-aligned tradition, its successful non-proliferation and disarmament engagement, and its geographical position on the Baltic, Sweden might be expected to be less inclined to adjust to a centralized EU policy that limited its independence.

Nuclear non-proliferation education in Russia and Ukraine

Sweden has engaged in many WMD non-proliferation-related activities in many states during the past 20 years. Studying them all would require a much

longer paper. This paper therefore focuses on nuclear non-proliferation, and particularly on a new area in the Swedish-funded programmes: nuclear non-proliferation education in Russia and Ukraine.

The Swedish nuclear non-proliferation education programmes in these two countries started in 2004. Their purpose is to help Russian and Ukrainian universities strengthen their academic training and education capacity. Since these programmes started a year after the adoption of the EU WMD Strategy, they are a good reference point for investigating how successful the EU has been in creating a common nuclear non-proliferation policy.

Studying how individual EU member states are acting in relation to WMD non-proliferation in Russia is particularly important because the EU had recently stopped funding nuclear non-proliferation projects in Russia through various organizations and channels. For example, Russia used to be the main beneficiary of EU support through the International Science and Technology Centre (ISTC) in Moscow, which has financed a wide range of international cooperative projects in the field of WMD non-proliferation, but this support ceased in 2011.⁵ Similarly, the EU provides no funding to Russia under either the Instrument for Stability or the Instrument for Nuclear Safety Cooperation, which used to promote WMD non-proliferation cooperative projects with Russia.⁶ Given the objectives of the EU WMD Strategy and the 2008 'New Lines for Action by the European Union in combating the proliferation of weapons of mass destruction and their delivery systems', it is remarkable that Russia is not a key beneficiary of EU support.⁷ However, Russia's scepticism about the cooperation

no. 2004:124, 16 Dec. 2004, p. 21. See also Swedish International Development Cooperation Agency (SIDA), *Det Svenska Stödet till Reformprocessen i Ryssland* [Swedish support to the reform process in Russia] (SIDA: Stockholm, Feb. 2009), <http://www.sida.se/Global/Countries%20and%20regions/Europe%20incl.%20Central%20Asia/Russia/SIDA48576sv_Ryssland_91-08.pdf>.

³ Jonter, T., 'Swedish nuclear non-proliferation assistance programme in Russia and Latvia', Swedish International Development Cooperation Agency (SIDA) Evaluation no. 04/15 (SIDA, Department for Europe: Stockholm, June 2004).

⁴ Andersson, S., *Den första grunden: svensk nedrustningspolitik 1961–1963* [The first gate: Swedish disarmament policy 1961–1963] (Santérus: Stockholm, 2004); Jonter, T., 'The Swedish plans to acquire nuclear weapons, 1945–1968: an analysis of the technical preparations', *Science and Global Security*, vol. 18, no. 2 (2010); Jonter, T., *Sverige, USA och Kärnenergin: Framväxten av en Svensk Kärnämneskontroll 1945–1995* [Sweden, the USA and the emergence of Swedish nuclear materials control], Statens kärnkraftinspektion (SKI) report no. 99:21 (SKI: Stockholm, May 1999); and Prawitz, J., *From Nuclear Option to Non-Nuclear Promotion: The Swedish Case*, Research Report (Swedish Institute of International Affairs: Stockholm, 1995).

⁵ Schweitzer, G., 'The life and legacy of Moscow's science center', *Bulletin of the Atomic Scientists*, 13 Nov. 2012, <<http://www.thebulletin.org/web-edition/op-eds/the-life-and-legacy-of-moscow's-science-center>>.

⁶ European External Action Service, 'Instrument for Nuclear Safety Cooperation' (n.d.), <http://eeas.europa.eu/nuclear_safety/>.

⁷ Council of the European Union, Council conclusions and new lines for action by the European Union in combating the proliferation of weapons of mass destruction and their delivery systems, 1712/08, Brussels, 17 Dec. 2008. See European External Action Service, 'The fight against proliferation of WMD', <http://eeas.europa.eu/non-proliferation-and-disarmament/wmd/index_en.htm>. The New Lines for Action are 'designed to increase the effectiveness and impact of the EU's approach to non-proliferation, and make it even more operational'. On the Instrument for Stability see <http://ec.europa.eu/europeaid/how/finance/ifs_en.htm>.

played a large part in this, and it is unclear whether EU funding to Russia will be resumed in the future.⁸

In relation to the education programmes, this paper asks what has been accomplished and what lessons have been learned in terms of the aims of establishing academic courses and strengthening sustainable nuclear education structures in Russia and Ukraine. At the end of the paper, the lessons learned are discussed and recommendations made for how Sweden and the EU could best act and allocate resources to promote further successful cooperation with higher academic institutions in Russia and other former Soviet states, in line with the EU WMD Strategy and the more specific common objectives outlined in the New Lines for Action.

II. SWEDISH NON-PROLIFERATION ASSISTANCE PROGRAMMES, 1991–2003

As noted above, Sweden's support to cooperative programmes in the area of nuclear non-proliferation started shortly after the disintegration of the Soviet Union. The main goals of the programmes were to establish national means and measures for the control and protection of nuclear materials and facilities in the Newly Independent States (NIS) of the former Soviet Union that, in order to minimize the risk of proliferation of nuclear weapons and trafficking of nuclear-related substances and equipment. The immediate objective was to assist these states in becoming signatories to the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT) as well as to support their membership of the International Atomic Energy Agency (IAEA).

Today, non-proliferation in the NIS forms part of the so-called Swedish security enhancement support, covering both civil and military areas. Other parts of this security promotion support are security policy issues, democratic and civil control of defence structures, border management, emergency preparedness, migration and asylum issues.⁹

In the field of non-proliferation, cooperative activities are carried out in five main areas: (a) nuclear legislation and the establishment of nuclear regulatory

agencies; (b) physical protection of nuclear-related buildings and materials; (c) systems for registration and control of the location and movement of nuclear materials; (d) prevention of trafficking of nuclear and other radioactive substances; (e) strengthening the participation of recipient states in international non-proliferation forums and agreements.

The cooperation has covered 15 states in Central and Eastern Europe and Central Asia, with the main targets being the Baltic states, Russia and Ukraine. Several projects have been financed and implemented jointly with other donors such as Finland, Germany, Norway, the United Kingdom and the United States, as well as multilateral organizations such as the EU and the IAEA.¹⁰

The start of Swedish cooperation in Russia

In the Baltic states, Belarus, Kazakhstan and Ukraine, the cooperative programmes became very successful and the objectives largely fulfilled.¹¹ In Russia, however, the situation was more complicated. The Soviet Union was not only a superpower with a big arsenal of nuclear weapons, but also had a significant amount of nuclear energy generation. Russia's nuclear-related problems were thus gigantic when the Soviet Union disintegrated. All over Russia there were nuclear facilities that stored nuclear substances and facilities that could be used in the manufacture of nuclear weapons. At that time, Russia lacked any effective means to control or protect the nuclear infrastructure: legislation, nuclear material control and accountancy systems, of efficient physical protection of sensitive technology and nuclear materials.¹²

From the earliest stages, the Swedish nuclear regulatory body has been responsible for directing and implementing the Swedish support and cooperation programmes in Russia and the NIS. These responsibilities originally fell to Statens kärnkraftinspektion (SKI, Swedish Nuclear Power Inspectorate), but in 2008 passed to

⁸ Interview with Lars van Dassen, Head of International Cooperation at the Swedish Radiation Safety Authority, 10 Apr. 2013. On Russian scepticism about continuing cooperation see Schweitzer (note 5).

⁹ Swedish International Development Cooperation Agency (note 2). See also Jonter (note 3).

¹⁰ Jonter (note 3).

¹¹ Jonter (note 3).

¹² Khlopov, A. and Sokova, E. (eds), *U.S.–Russian Partnership for Advancing a Nuclear Security Agenda: Recommendation for U.S.–Russian Cooperation in Strengthening Nuclear Security in the Former Soviet states and Southeast Asia* (James Martin Center for Non-proliferation Studies: Monterey, CA: June 2012).

Strålsäkerhetsmyndigheten (SSM, Swedish Radiation Safety Authority).¹³

The first SKI contacts aimed at establishing cooperation in the non-proliferation field in Russia were made in 1992, at Russian initiative. In this early phase some feasibility studies were carried out and certain projects discussed. However, the only concrete project realized at this time was concerned mainly with nuclear material accountancy and control at a fuel fabrication plant. The SKI cancelled this cooperation in 1993 because the responsibilities of various Russian authorities had not been clearly defined.

The SKI and its Russian counterpart, the Russian Federal Inspectorate for Nuclear and Radiation Safety (Gosatomnadzor, GAN; which became the Federal Service for Environmental, Technological, and Nuclear Oversight, Rostekhnadzor, in 2004), resumed cooperation in 1995, after the division of responsibilities in Russia had been clarified. By this time GAN was considered to have undergone an important stabilization process; the organization now had more clearly defined goals and had identified steps that needed to be taken in order to develop into a well-functioning agency. As a consequence, Russia and Sweden signed a bilateral state-level agreement on nuclear matters in 1997.¹⁴

In the initial phase of bilateral cooperation the partners focused on two priorities: strengthening GAN's regulatory and supervisory role, and improving physical protection measures for nuclear material at facilities in the Arkhangelsk and Murmansk regions of Russia.¹⁵ Over time, the cooperation expanded to other areas, such as nuclear material accountancy, combatting trafficking of nuclear materials and building the capacity of human resources through nuclear non-proliferation education.

Sweden's EU membership: new influences, new obligations

Sweden's nuclear non-proliferation programmes in the NIS were from the outset motivated by Sweden's political, economic and security interests, which were

defined in several government documents. Before Sweden joined the EU in 1995, Swedish activities and goals in the NIS were formulated based on Sweden's non-aligned position and its traditionally strong engagement in international efforts to prevent the spread of nuclear weapons.¹⁶ The contacts that were made and the agreements signed with entities in the NIS were all motivated by Sweden's independent foreign and security policy.

The non-aligned policy based on Sweden's defined interests in the Baltic region did not, however, exclude coordination and cooperation with other states and organizations. In fact, Swedish policy in this field was based on a division of labour with other states with similar interests in supporting the creation of effective nuclear non-proliferation infrastructure and regulatory authorities in the NIS. The cornerstone of the Swedish non-proliferation policy was strong support of international cooperation channeled through the UN, the IAEA and the NPT and its stipulations. Moreover, it is fair to say that engagement in these organizations and the strong support of the NPT regime were the guiding principles when the goals of the programmes in the NIS were defined and implemented by the Swedish Government.

Sweden's non-aligned tradition, in combination with heavy dependence on nuclear power, were also the probable reasons why Sweden continued a rather independent policy on nuclear non-proliferation after joining the EU on 1 January 1995. Since the 1980s, nuclear has accounted for between 40 and 50 per cent of all electricity production in Sweden. A strong national control and verification system had been in operation for decades.¹⁷

Nevertheless, EU membership somewhat changed the situation for Sweden. There was discussion in the EU about whether member states should abandon their national regulatory agencies and let the European Atomic Energy Community (Euratom) take over the responsibility. However, the SKI had developed advanced competences, including a unit specialized in international cooperation projects with the NIS. Sweden was thus reluctant to hand over the oversight

¹³ The SSM was established in July 2008 with the merger of the SKI with Statens strålskyddsinstitutet (SSI, Swedish Radiation Protection Authority).

¹⁴ Khlopkov and Sokova (note 12).

¹⁵ Van Dassen, L. et al., *Sweden's Cooperation with Eastern Europe in Radiation Safety 2010*, Swedish Radiation Safety Authority (SSM) report no. 2011:23 (SSM: Stockholm, Sep. 2012).

¹⁶ On the Swedish non-proliferation policy see Bergenäs, J., 'The rise of the white knight state: Sweden's non-proliferation and disarmament history', Nuclear Threat Initiative, 10 Feb. 2010, <<http://www.nti.org/analysis/articles/swedens-nonproliferation-history/>>.

¹⁷ World Nuclear Association, 'Nuclear power in Sweden', updated May 2013, <<http://www.world-nuclear.org/info/Country-Profiles/Countries-O-S/Sweden/#.UWuoEbWpXX4>>.

responsibility to Euratom, as other member states such as Germany and Italy had already done—even though, strictly speaking, EU membership obliged Sweden to follow Euratom’s direction on nuclear material control. Euratom was created to serve as an oversight authority for the whole European Economic Community (forerunner of the European Community and, later, the EU).¹⁸

When the signature and ratification processes for the Additional Protocol (AP) to the IAEA Safeguards Agreements started, the European Commission became the contact point for the IAEA regarding the Swedish facilities. Since the AP also covers several matters unrelated to nuclear materials, intense discussions were held within the EU concerning the AP’s implementation. Sweden was determined to keep its national oversight authority. The Swedes maintained that a nationally organized oversight system would provide more effective control and a higher degree of transparency, while also functioning better as a conduit for information to the media and the public.

Euratom was initially sceptical of Sweden’s decision to maintain its oversight system, but the arrangement turned out to be to the benefit of both Euratom and the IAEA. Among other things, it facilitated Sweden’s ratification of the AP. Thanks to the SKI’s work, Sweden was able to quickly meet the AP’s requirements for an account of technical data, ongoing research and plans in the nuclear field.

The AP identifies responsibilities shared between the European Commission and the member states, but it was agreed that individual member states could, by means of a ‘side-letter’, ask the Commission to fulfil all of their state-level obligations. As a result, the EU was divided into ‘side-letter states’ and ‘non-side-letter states’.¹⁹ Being able to keep its national control verification system allowed Sweden to continue its bilateral, independent cooperation on nuclear non-proliferation with the NIS. Some of Sweden’s neighbours—Finland and the Baltic states—also decided (partly on the recommendation of the SKI) to maintain their national authorities on joining the EU.

¹⁸ Håkansson, A. and Jonter, T., *An Introduction to Nuclear Non-proliferation and Safeguards*, Swedish Nuclear Power Inspectorate (SKI) report no. 2007:44 (SKI: Stockholm, June 2007), p. 64.

¹⁹ Dahlin, G., ‘Sweden towards integrated safeguards’, ESARDA Bulletin, no. 43 (Dec. 2009).

III. COOPERATIVE PROGRAMMES ON NON-PROLIFERATION EDUCATION

Initiation of the programmes

The initiators of the nuclear non-proliferation education programmes at the SKI saw this new collaboration field as a natural next step in their activities. After more than 10 years of assistance to the NIS oriented towards short-term goals—strengthening the nuclear materials control systems, the physical protection of storage facilities and capacity building of regulatory bodies—they thought it was time to pay attention to the human factor and longer-term investments.²⁰

When a new strategy was being considered, the SKI struggled with several questions: how to improve human resource-development capacity in nuclear non-proliferation in Russia; how to ensure the training and education of younger generations of students and specialists in nuclear security and non-proliferation, and thereby make improvements sustainable; and how to best deploy Sweden’s rather limited resources.

To seek answers, the SKI gathered donors and experts from Russia, Sweden and the USA to survey existing courses and training activities in non-proliferation in Russia in September 2004.²¹ The main aim was to identify possible areas for cooperation projects and to discuss how to coordinate investments and activities with the international donors involved in non-proliferation education in Russia.

Given the limited budget and the emphasis on knowledge transfer in Swedish support and assistance programmes, the SKI (and later SSM) has always advocated coordination and cooperation between relevant international donors as important ingredients in successful support activities. As a part of this strategy, it has developed close relationships with organizations dealing with assistance programmes in the former Soviet states such as the James Martin Center for Nonproliferation Studies (CNS) at the Monterey Institute for International Studies, and the US Department of Energy (DOE), and with other

²⁰ Interviews with Lars van Dassen, Head of International Cooperation at the SSM, 5 Jan. 2013, and Sarmite Andersson, Project leader of the nuclear education programmes at the SSM, 10 Jan. 2013.

²¹ The participating organizations were the James Martin Center for Nonproliferation Studies at the Monterey Institute of International Studies, the US Department of State, the Russian Center for Policy Studies (PIR Center), Tomsk State University, Tomsk Polytechnic University, Stockholm University and the SKI.

European regulatory authorities, including those of Finland, Norway and the United Kingdom.²²

Based on discussions with other foreign organizations and on internal assessments, the SKI decided early on to cooperate with academic institutions, mainly universities, in Russia. This was considered a better long-term investment than collaboration with private companies or regulatory authorities, because academic institutions—especially those conducting both education and research of high quality—had the central purpose of creating and distributing knowledge, ensuring sustainable outcomes from the cooperation.²³

Another strategic decision taken at this early stage was to give the projects a more European dimension in terms of the external partner organizations, lecturers and experts; the US programmes, which had hitherto dominated the nuclear-related education activities in Russia, had used US research institutes and US experts. As a result, the SKI chose to collaborate more closely with two Swedish organizations: SIPRI and Stockholm University. Researchers and experts from both have acted as project leaders, advisers and lecturers in more or less all education activities since the project started in 2004.²⁴ Experts from other European universities and research institutes have also been involved as lecturers, and a number of US-based researchers have also participated.

In 2005 a framework agreement was signed between the SKI and the Tomsk Polytechnic University (TPU) and Tomsk State University (TSU), in the Tomsk region of Siberia, to promote education in nuclear non-proliferation and nuclear security. The following year, a similar agreement was signed with Urals State Technical University (USTU) and the Urals State University (USU). The reasons for including the two universities in the Urals region, USTU and USU, are twofold. First, USTU is an important supplier of trained personnel for the Russian companies and governmental organizations dealing with nuclear-related activities. Second, the SSM had already established good relations with experts in the region with excellent contacts in the academic world in the Urals region who

were willing to act as regional representatives of the projects.²⁵

In 2008 another agreement was signed with Odessa State University in Ukraine, with a primary focus on students and PhD candidates. Finally, in 2010 another such agreement was negotiated with the Central Institute for Continuing Education and Training of Rosatom in the St Petersburg region of Russia. A number of courses, several conferences and workshops, exchange programmes and other activities within the field of nuclear non-proliferation education have so far been established and conducted.

In parallel with the launch of non-proliferation education projects in Russia, the SKI became engaged in European Commission collaboration to promote training and education in nuclear safeguards and non-proliferation within the EU. In 2004, seeing an education deficit in the area of safeguards, the European Safeguards Research and Development Association (ESARDA) created a working group tasked with setting up an annual course on safeguards and developing course syllabuses. The main purpose of ESARDA's work is to improve education and training in safeguards and non-proliferation for students and professionals in Europe.²⁶ The SKI has been represented in the working group from the outset, and for the past three years the chairman has been a Swede.

Under the ESARDA initiative, an annual course has been conducted since 2005 at the European Commission's Joint Research Centre (JRC) in Ispra, Italy, providing a full five-day programme with lecturers and experts from the IAEA, Euratom, the JRC and European universities.²⁷ Hundreds of newly employed professionals in organizations dealing with nuclear-related activities and students have taken the course. The SKI and SSM have sponsored around 30 participants from the former Soviet Union, mainly Russia and Ukraine. In 2011 the SKI also organized and financed an ESARDA course at Uppsala University in Sweden, including 15 participants from the SSM education projects in Russia and Ukraine.²⁸

²² Interview with Andersson (note 20).

²³ Interview with van Dassen (note 20).

²⁴ Several SIPRI researchers have been involved, especially Vitaly Fedchenko. At Stockholm University, the present author has been involved. He has also written a text book together with the professor of physics at Uppsala University, Ane Håkansson, which has been used in the education programmes in Russia. Jonter and Håkansson (note 18).

²⁵ Interviews with Andersson and van Dassen (note 20).

²⁶ However, even students from non-EU states have participated in the course, including around 10 from Russia.

²⁷ The course is designed to suit both advanced students and professionals, mainly from the EU. For a description of the course and its objectives see <http://esarda2.jrc.it/internal_activities/WC-MC/Web-Courses/index.html>.

²⁸ Interview with Andersson (note 20).

The state of Russian nuclear-related education in 2004

During the cold war, the Soviet Union established a huge nuclear research and development (R&D) infrastructure, including 10 closed nuclear cities where nuclear weapons were designed and manufactured. As its peak, the Soviet nuclear weapons production system included around 120 000 scientists, technicians and specialized labourers covering the entire nuclear fuel cycle from mining through fuel element production and reactor construction, to nuclear weapons design.²⁹ An advanced nuclear education and research system was needed to train personnel to run the production facilities, and to educate scientists and qualified engineers to develop the capacity of the Soviet nuclear infrastructure.³⁰

When the Soviet Union was dissolved in 1991, the nuclear education infrastructure faced severe problems due to lack of funding and the absence of strong governmental structures. In 2006, shortly after the SKI became involved in nuclear non-proliferation education, the majority of personnel for the Russian nuclear sector were trained and educated at only a handful of institutes.³¹

In 2006, only three universities had programmes and taught courses in nuclear non-proliferation, and the National Nuclear Research University (MEPhI) in Moscow was the most advanced in this respect. At MePhI, 170 students graduated from the Material, Protection, Control and Accounting masters programme between 1999 and 2011. In 2006 MEPhI also developed a joint masters programme on nuclear non-proliferation and international security with Texas A&M University.³² By the end of 2011, 50 students had graduated from this programme. In 2003 TPU started a new undergraduate programme on Safety, Security

²⁹ Flores, K. L., *Proliferation Concerns in the Russian Closed Nuclear Weapons Complex Cities: A Study of Regional Migration Behavior*, Sandia Report, SAND2004-3408 (Sandia National Laboratories: Albuquerque, NM, July 2004), p. 11.

³⁰ On the Soviet nuclear weapons infrastructure see Cochran, T., Norris, R. and Bucharin, O., *Making the Russian Bomb from Stalin to Yeltsin* (Westview Press: Boulder, CO, 1995).

³¹ The following universities and institutes trained the majority of the personnel for the Russian nuclear energy sector at this time: Moscow State University, Moscow Power Engineering Institute, National Nuclear Research University (MEPhI), Obninsk State Technical University for Nuclear Power Engineering, St Petersburg State Polytechnic University, Tomsk Polytechnic University and Ural State Technical University.

³² Sister programmes based on the MEPhI education structure were also later established at Tomsk Polytechnic University and Sevastopol National University of Nuclear Energy and Industry.

and Non-proliferation of Nuclear Materials. There are currently two programmes at TPU connected with non-proliferation education: an engineering degree programme in safeguards and security and a masters degree programme in nuclear control and regulation. At the Russian Methodological and Training Center in Obninsk, hundreds of Russian specialists have taken courses in nuclear non-proliferation issues.³³

Since most of the programmes and courses were conducted in the Moscow region, there was also a need to reach out to other regions in Russia where important higher academic institutions trained nuclear engineers and personal for the nuclear sector. The SKI decided to cooperate with universities in the Tomsk region of Siberia. Tomsk was chosen mainly because the DOE and the CNS already had education activities there, but the newly established nuclear non-proliferation activities at the two main universities in the region, TSU and TPU, still needed considerable strengthening. An added advantage in the eyes of the SKI was that a small network for cooperation in the education field had already been established there, which could be of use.

There were other reasons for choosing this region. First was a perceived huge need for knowledge in the non-proliferation field there. Several other universities in the region are involved in nuclear engineering education. Many graduates of these programmes are hired by employers within the Russian nuclear infrastructure. It was therefore deemed important to stimulate the design of courses and develop syllabuses in nuclear non-proliferation and nuclear security-oriented issues that could be incorporated into the ongoing programmes. Second, in the Tomsk region there is one closed city, Seversk, formerly known as Tomsk-7, where the Siberian Chemical Combine (SCC) is located. The SCC is one of the principal uranium-enrichment facilities in Russia that is run by Rosatom.³⁴ It was deemed important to establish contacts with SCC, since this site plays a vital role in the Russian nuclear production chain, especially regarding the production of nuclear materials.

³³ Khlopkov and Sokova (note 12).

³⁴ On the SCC and its importance in the Russian nuclear weapons production cycle see e.g. a presentation by the organization Global Security at <http://www.globalsecurity.org/wmd/world/russia/tomsk-7_nuc.htm>.

Education cooperation in the SSM strategy for 2005–10

In 2005 the SSM developed a strategy for its education cooperation activities in Russia for the period 2005–10. This strategy included the following vision:

In 2010 several universities in the Tomsk and Urals regions run programmes and courses in nuclear non-proliferation on a permanent basis. Some of the universities involved have initiated research programmes on safeguards and non-proliferation. The universities participating in the project cooperate with other Russian universities and have research contacts with foreign universities and research institutes within the field of nuclear non-proliferation.³⁵

Several long-term objectives were formulated in line with this strategy, including

1. In 2010 regular courses in nuclear non-proliferation are conducted at TPU, TSU, USTU, and USU, with a main focus on non-proliferation.
2. Research projects in non-proliferation have been initiated at TSU with the aim of building up research competence in this area. The SSM is sponsoring a number of PhD students at TSU and TPU in the period 2007–2013.
3. A student collaboration organization has been established with the aim of promoting cooperation and research and to stimulate discussions in non-proliferation issues in southwestern Siberia.
4. A network has been established by researchers and professors from universities in both Tomsk and Urals regions. The purpose is to develop a webpage, and initiate collaboration in setting up courses and research projects, exchange lecture materials, and arrange workshops and conferences within the field of non-proliferation.
5. An internship programme has been established at SIPRI to promote research and to provide the opportunity for between two and four teachers and graduate students annually

³⁵ The SSM strategy was adopted in 2005. A new strategy for post-2010 has not yet been formulated due to uncertainty over whether the programmes will be funded in the future. The Ministry for Foreign Affairs is currently only approving funding on a yearly basis. Interview with Andersson (note 20).

to gain work experience in an international thinktank. The most successful students and teachers will receive assistance to participate in the ESARDA non-proliferation course in Ispra and in the visiting fellows programme at the CNS.³⁶

The strategy stated that a local or regional project group of Russian members with operational responsibility should be created. This group should be given freedom to present ideas and involve other research institutes and universities in the region that are potential important cooperating partners in future activities. However, the project group at the SSM has the overall responsibility and decides priorities, hires consultants and engages international organizations. The purpose of establishing a model like this was to create a high degree of flexibility and to make it easier for the Russian group to take over the whole responsibility when the Swedish assistance programmes on nuclear education in Siberia and the Urals are eventually phased out.³⁷

Using the experiences gained in Russia, the SSM launched an educational project in Ukraine in 2008. The first efforts of this project were directed towards improving general awareness about non-proliferation issues, fostering research skills at university level, and providing technical support to train young experts on nuclear materials accountancy. The SSM's main partners in Ukraine are Odessa State University and Sevastopol National University of Nuclear Energy and Industry. In 2009 the first summer school on non-proliferation was held in Odessa for students of the technical and political sciences. Another three summer schools have been held since that time, with participants from Georgia, Moldova, Russia and Ukraine.

In 2011 the programme was expanded to the St Petersburg region of Russia, with an agreement signed between the SSM and the Central Institute for Continuing Education and Training of Rosatom. Three modules have been delivered since the start of the programme and St Petersburg University is involved.

³⁶ Leading experts from the IAEA, Euratom and academia lecture on different nuclear security subjects such as safeguards, export controls, physical protection and trafficking. The course is approved as an academic course by the European Nuclear Engineers Network and every year about 60 participants take the course. On the courses offered at the CNS see <<http://cns.miis.edu/edu/portal.htm>>.

³⁷ Interviews with Andersson and van Dassen (note 20)

Around seven organizations and universities have been engaged as participants.

The pedagogical model for the programme

The pedagogical model includes a combination of lectures, seminars, individual assignments, group discussions, role play and independent research. The original model had four five-day modules, of which students usually took two modules per year. The programme is designed to provide participants with a basic knowledge of nuclear non-proliferation and arms control (see the topics covered in the different modules in box 1).

The SSM has adapted the model in three main ways to better suit the aims of the Swedish strategy. First, a regional theme has been introduced in order to improve participants’ understanding of how local nuclear production is interconnected with global activities. Second, two additional learning modules have been designed on contemporary theory and methods in academic teaching and research, aiming to build participating professors’ capacity as seminar leaders and supervisors. Third, a theme on classroom teaching techniques has been developed, with a programme of pedagogical exercises. The last theme was developed in cooperation with the IAEA Office of Nuclear Security.

The design of the programme is flexible enough to adjust to the needs and special interests of the participating universities and to the individual groups’ demands. In this respect, the regional nuclear dimension is addressed, with its traditions and tasks within the broader Russian nuclear infrastructure. Each module is evaluated and the subsequent module is designed to meet recommendations with regard to topics and issues.

This programme is developed to suit professors and PhD students from both the technical and political science/humanities faculties (departments of physics, nuclear engineering, international relations, history and political science, international law, etc.). The multidisciplinary orientation stimulates broader mutual understanding between technical and political aspects of non-proliferation. The optimal number of participants is 25–30.

The European profile of the SKI/SSM projects, particularly the involvement of European research institutes and universities, was an added attraction for the Russian and Ukrainian universities. They were at the time moving towards entering the Bologna Process,

Box 1. Topics covered in the teach-the-teachers programme

Modules 1–4

- History of proliferation of nuclear weapons
- Technical aspects of nuclear materials and nuclear explosive devices
- History of the international nuclear non-proliferation regime
- International non-proliferation treaties
- Theories of international regimes
- The implementation of nuclear materials control systems
- The IAEA and its function, and the role of Nuclear Security Fund
- Nuclear disarmament
- Nuclear terrorism/trafficking
- Multilateral export-control regimes
- Current challenges to the NPT regime
- International cooperative efforts in the field of nuclear non-proliferation
- Role play

Modules 5–6

- Teaching technologies and pedagogical methods
- Theory and methods in nuclear non-proliferation
- Research design
- Networking
- Role play

which has the goal of creating a common education and research system within Europe, and thus were keen on building relationships—and exchange, education and research programmes—with European universities and institutes.³⁹

As already been mentioned, an important collaborative partner is the IAEA. Its Office of Nuclear Security has participated in several projects, providing lecturers and expert advice on how to build programmes and training activities in the non-proliferation field. Andrea Braunegger-Guelich, who developed the International Nuclear Security Education Network (INSEN) at the IAEA, has been involved in the projects in both Urals and St Petersburg regions and offered advice based on her and INSEN’s

experiences on how to create successful tools for designing programmes and courses.³⁸

Also, leading international experts have from time to time lectured in the SKI/SSM programmes or given advice on how to improve them. These include IAEA Director-General Emeritus Hans Blix and US Assistant Secretary of State Rose Gottemoeller. However, it is important to emphasize that the majority of lecturers and seminar leaders have been Russian experts. SIPRI has hosted a great number of Russian researchers and students as visiting scholars and interns.

IV. THE IMPACT OF THE EU WMD STRATEGY ON SWEDISH COOPERATION

In retrospect, the Swedish activities could be seen as resulting directly from the EU WMD Strategy, and especially the New Lines for Action. Among other things the New Lines for Action call for the support and coordination of training courses for European officials dealing with non-proliferation. They also emphasize that in order to make EU counter-proliferation action more effective, there should be collaboration with ‘foreign policy institutions and research centres specializing in the EU’s strategic areas’; such networking could be ‘extended to institutions in third countries which with EU is conducting specific dialogues in connection with non-proliferation’.³⁹

However, according to the project leader at the SSM, the EU strategy was not central to the discussions and planning of the programmes. SKI staff were of course aware of the EU strategy and its goals, but saw the programmes as the natural next step in the activities in the NIS that had been in operation since the early 1990s.⁴⁰ Nevertheless, the Ministry for Foreign Affairs (MFA) and its officials responsible for allocating the government funding to authorities and other organizations involved in these efforts had formulated a plan to steer the Swedish assistance programmes towards projects in line with the EU strategy.

It should be stressed that the traditional Swedish WMD and nuclear non-proliferation policy is in many respects identical with the EU strategy. The cornerstone of the Swedish policy is implementation of the NPT and strong support of the IAEA. Sweden has signed and ratified all nuclear non-proliferation-

relevant treaties and agreements and participates in their verification organizations, and is well respected for its non-proliferation efforts.⁴¹ In addition, Sweden’s foreign minister at the time, Anna Lindh, was one of the initiators of discussions towards the EU WMD strategy. In fact, the first proposal to design a common EU policy on WMD and nuclear non-proliferation was formulated by Anna Lindh and the Greek foreign minister, Giorgiós Papandréou.⁴² Therefore, it can be argued that Sweden pushed for an EU WMD non-proliferation approach close to Sweden’s existing policy.

Does this mean that the EU WMD Strategy has had no effect on the Swedish policy and its directions? According to officials at the MFA this is not the case. They say that the EU strategy has in fact stimulated clarification of the Swedish policy in certain areas. For example, in the area of export controls, government directives now stipulate more exactly what rules have to be applied when Swedish military and nuclear-related products are exported than they did before the adoption of the EU strategy. Also, the MFA’s Department for Disarmament and Non-proliferation organizes meetings with Swedish universities to encourage education and research in the field of WMD and non-proliferation in line with the New Lines for Action.⁴³

However, it could be argued that the traditional high profile given by Sweden to nuclear non-proliferation and disarmament has been abandoned. Following the death of Anna Lindh in September 2003, Swedish WMD and non-proliferation policy has been watered down, particularly under the centre-right coalition in power since 2006. For example, in 2008 Sweden did not oppose a US proposal to exempt India from the Nuclear Suppliers’ Group (NSG) ban on the export of nuclear material and equipment to states that have not signed a full-scope safeguards agreement with the IAEA. Other states, including Austria, Ireland, the Netherlands, New Zealand, Norway and Switzerland have criticized the proposal, arguing that it goes against the NSG’s purpose.

⁴¹ Bergenäs (note 16).

⁴² Bailes, A. J. K., *The European Security Strategy: An Evolutionary History*, SIPRI Policy Paper No. 10 (SIPRI: Stockholm, 2005), p. 10. See also Grip, L., ‘The EU Non-proliferation Clause: a preliminary assessment’, SIPRI Background Paper, SIPRI, Nov. 2009.

⁴³ Interview with Anna Maj Hultgård and Jonas Norling, Swedish Ministry for Foreign Affairs, Department for Disarmament and Non-proliferation, 27 Feb. 2013.

³⁸ On the INSEN network and its goals see <<http://www-ns.iaea.org/security/workshops/insen-wshop.asp>>.

³⁹ Council of the European Union (note 7).

⁴⁰ Interviews with Andersson and van Dassen (note 20).

Also, Sweden did not make non-proliferation and disarmament priority issues for its EU presidency in July–December 2009. For example, the fact that Sweden did not use the EU presidency to support US President Barack Obama's recent call for a world without nuclear weapons surprised many international observers.⁴⁴ In the same year, the government cut the funding for the Weapons of Mass Destruction Commission, headed by Hans Blix. The WMD Commission, launched by the Swedish Government in 2003, had attracted international attention for its bold recommendations on how to reduce the threats posed by WMD.⁴⁵

Lately, however, there are signs that the government is moving in the direction of a more engaged non-proliferation policy. In a speech at the Global Zero Summit in February 2010, initiated by US President Barack Obama and Russian President Dmitry Medvedev, the Swedish foreign minister, Carl Bildt, voiced strong support for non-proliferation, and especially for the initiative to promote a nuclear-free world.⁴⁶

V. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Sweden has performed well in terms of the goals of the the EU WMD strategy and the New Lines for Action. This is hardly surprising given that the former Swedish minister for foreign affairs was one of the initiators of the EU strategy.

Although the Swedish support programmes were designed before Sweden joined the EU and before the adoption of the EU WMD Strategy, implementation of the strategy has nevertheless had positive impacts on the Swedish support activities. The Department for Disarmament and Non-proliferation in the Swedish MFA has, as a result of this process, articulated in the 'New Lines of Action', formulated clearer and more specific objectives about what should be achieved. These objectives have been written as government directives to be used as clearly defined tasks of the

⁴⁴ White House, 'Remarks by President Barack Obama, Hradcany Square, Prague, Czech Republic', 5 Apr. 2009, <http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/>.

⁴⁵ Bergenäs (note 16).

⁴⁶ Swedish Ministry for Foreign Affairs, Remarks By Carl Bildt at the Global Zero Summit, 2 Feb. 2009, <<http://www.regeringen.se/sb/d/12529/a/138949>>.

authorities involved in export control and other WMD-related activities. Another positive impact of the implementing process is that the Department for Disarmament and Non-proliferation has initiated a dialogue with Swedish universities and research institutes about how the goals of the EU strategy and the 'New Lines of Action' can be achieved.

The nuclear non-proliferation education programmes in Russia and Ukraine have also been successful in numerous ways. Many universities in both the Tomsk region and the Urals region can now offer courses in nuclear non-proliferation, and cooperation networks have been created, with the result that workshops are organized and joint courses are held by Russian universities without any support from the SSM.

No Russian or Ukrainian university has a single one- or two-year programme (equal to a masters degree in Europe or the USA) on safeguards and non-proliferation except TPU, where this topic is mandatory within two programmes: the Engineering degree programme in Security and Non-proliferation of Nuclear Materials and the masters degree programme in Nuclear Control and Regulation.

However, this may not be a problem. Arguably, Russia does not need more than two or three masters programmes in which non-proliferation and nuclear security are essential and major parts. Even though the Russian nuclear sector is huge, a few masters programmes are probably enough to meet the needs. From the SSM's perspective, the most important thing is that there are courses in safeguards and nuclear non-proliferation included in programmes and degrees at several leading Russian universities located in regions where essential nuclear R&D activities are carried out. This strategic goal is well met by the engagement with universities in the region of St Petersburg, since two nuclear power plants are under construction there and will be completed in a couple of years. Also, in the closed city of Seversk in the Tomsk region, this objective will also be relevant since two new nuclear power plants are planned there also.⁴⁷

The SSM's experiences in the education field demonstrate that it is important to integrate research as an essential aspect of the activities. If a university starts research projects or enrolls PhD students in non-proliferation, this indicates a will to deal seriously

⁴⁷ World Nuclear Association, <<http://www.world-nuclear.org/info/inf45.html>>.

with non-proliferation issues, and the likelihood of sustainable results is higher.

Another lesson learned from the education activities is that the most valuable investment that can be made is to build an effective local project group that is well connected in the academic world. If you do not have the right people in the local team with the right contacts, it will be hard to attain good results. Local partners need to be able to set up meetings with university vice-chancellors and deans and, most importantly, to ensure that cooperation framework agreements will be signed. The local project group also needs to be able to identify skilled experts and lecturers who could be engaged in the training activities. The SSM has been very lucky to find competent partners in Russia and Ukraine. The partners at different universities have been very enthusiastic and creative in their efforts to initiate new courses and workshops and establish networks for further activities.

Recommendations

How can the SSM move forward and what can the EU learn from the SSM's experience in Russia and Ukraine? All the investments in nuclear non-proliferation and nuclear security education made by the SSM and by other foreign organizations such as the CNS and the US DOE—and especially by Russian and Ukrainian universities—have created a solid foundation. There are already dozens of Russian universities that have both courses running and cadres of engaged and knowledgeable researchers in the non-proliferation field. The platforms have already been built.

What is so far lacking, however, is any means for further development of the professional skills of Russian and Ukrainian scholars and scientists. This is best done through international cooperation with foreign universities and researchers. Russian academics dealing with non-proliferation need to participate in and present papers at international conferences and workshops, including those with European and US colleagues, so as to develop their research skills. They and their institutions often lack the financial means to enable participation in such events. Moreover, Russian research councils seldom have the financial capacity to fund such projects. The best option would therefore be to resume EU financial support as soon as possible.

In the field of research and education the EU could, for example, earmark funding through its research agencies to enable Russian researchers to participate in conferences and workshops. In addition, the EU research agencies could tailor calls for research projects to encourage collaboration between EU, Russian and Ukrainian universities; that is, to set up joint education and research programmes. Through such an approach, even European researchers and universities would learn a lot from their Russians and Ukrainian peers.

One successful ingredient of the SSM's activities has been the visiting programme in which Russian and Ukrainian researchers are allowed to spend a few months at SIPRI or at the CNS in Monterey. The researchers the SSM has worked with at these institutes have often become very successful in their subsequent careers in the field of nuclear non-proliferation, nationally and also, in some cases, even internationally. The EU should make financial resources available for European research institutes and universities to host experts from the NIS.

Many Russian training centres have advanced equipment. These facilities are already used by IAEA- and DOE-sponsored training programmes for third-country experts.⁴⁸ The EU could, perhaps, fund projects and programmes that train academics and professionals from other countries, mainly, at least in the first phase, from the NIS.

⁴⁸ Khlopkov and Sokova (note 12).

ABBREVIATIONS

AP	Additional Protocol
CNS	James Martin Center for Nonproliferation Studies, Monterey Institute for International Studies
DOE	Department of Energy
EU	European Union
GAN	Gosatomnadzor
IAEA	International Atomic Energy Agency
ISTC	International Science and Technology Centre
JRC	Joint Research Centre
MFA	Ministry for Foreign Affairs
NIS	Newly independent states
NPT	Non-Proliferation Treaty
SCC	Siberian Chemical Combine
SKI	Statens kärnkraftinspektion (Swedish Nuclear Power Inspectorate)
SSM	Strålsäkerhetsmyndigheten (Swedish Radiation Safety Authority)
TPU	Tomsk Polytechnic University
TSU	Tomsk State University
USTU	Urals State Technical University
USU	Urals State University
WMD	Weapon(s) of Mass Destruction

A EUROPEAN NETWORK

In July 2010 the Council of the European Union decided to create a network bringing together foreign policy institutions and research centres from across the EU to encourage political and security-related dialogue and the long-term discussion of measures to combat the proliferation of weapons of mass destruction (WMD) and their delivery systems.

STRUCTURE

The EU Non-Proliferation Consortium is managed jointly by four institutes entrusted with the project, in close cooperation with the representative of the High Representative of the Union for Foreign Affairs and Security Policy. The four institutes are the Fondation pour la recherche stratégique (FRS) in Paris, the Peace Research Institute in Frankfurt (PRIF), the International Institute for Strategic Studies (IISS) in London, and Stockholm International Peace Research Institute (SIPRI). The Consortium began its work in January 2011 and forms the core of a wider network of European non-proliferation think tanks and research centres which will be closely associated with the activities of the Consortium.

MISSION

The main aim of the network of independent non-proliferation think tanks is to encourage discussion of measures to combat the proliferation of weapons of mass destruction and their delivery systems within civil society, particularly among experts, researchers and academics. The scope of activities shall also cover issues related to conventional weapons. The fruits of the network discussions can be submitted in the form of reports and recommendations to the responsible officials within the European Union.

It is expected that this network will support EU action to counter proliferation. To that end, the network can also establish cooperation with specialized institutions and research centres in third countries, in particular in those with which the EU is conducting specific non-proliferation dialogues.

<http://www.nonproliferation.eu>



FOUNDATION FOR STRATEGIC RESEARCH

FRS is an independent research centre and the leading French think tank on defence and security issues. Its team of experts in a variety of fields contributes to the strategic debate in France and abroad, and provides unique expertise across the board of defence and security studies.

<http://www.frstrategie.org>



PEACE RESEARCH INSTITUTE IN FRANKFURT

PRIF is the largest as well as the oldest peace research institute in Germany. PRIF's work is directed towards carrying out research on peace and conflict, with a special emphasis on issues of arms control, non-proliferation and disarmament.

<http://www.hsfk.de>



INTERNATIONAL INSTITUTE FOR STRATEGIC STUDIES

IISS is an independent centre for research, information and debate on the problems of conflict, however caused, that have, or potentially have, an important military content. It aims to provide the best possible analysis on strategic trends and to facilitate contacts.

<http://www.iiss.org/>



STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE

SIPRI is an independent international institute dedicated to research into conflict, armaments, arms control and disarmament. Established in 1966, SIPRI provides data, analysis and recommendations, based on open sources, to policymakers, researchers, media and the interested public.

<http://www.sipri.org/>