16. International non-proliferation and disarmament assistance

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I. Introduction

As part of the international anti-proliferation effort, a growing number of countries offer practical help to other countries in order to secure or eliminate nuclear, biological and chemical (NBC) weapons, the missile delivery systems for such weapons and capacities that might contribute to NBC weapon programmes. The provision of international non-proliferation and disarmament assistance (INDA) is steadily evolving from an emergency programme intended to manage the extraordinary circumstances surrounding the break-up of the Soviet Union to a broader international programme involving new donor states, new recipient states and new types of activity.

This chapter surveys the recent activities of key donors and of Russia, the country in which most INDA activities have been carried out—reflecting the scale of the arsenals, infrastructure and knowledge base that was developed during the cold war. It also examines some of the mechanisms used to manage and organize assistance efforts. Section II examines recent decisions and programmes in the United States. Since their summit meeting in Kananaskis, Canada, in 2002 the Group of Eight (G8) industrialized nations has been engaged in a sustained manner in organizing non-proliferation and disarmament assistance. Section III describes the re-design of these efforts that was undertaken in 2004. Section IV examines the efforts by the European Union (EU), including its member states at the national level, to become a more coherent and effective INDA provider as part of the wider effort to further develop and implement the EU Strategy Against the Proliferation of Weapons of Mass Destruction (WMD).[1] External contributions play an important role in helping Russia to manage the consequences of the massive militarization of its economy and society during the cold war. However, the most critical factor in defining and carrying out related projects is actions taken by the Russian Government and entities under its control. Section V examines the impact on INDA projects of the reorganization of the Russian Government undertaken

[1] Council of the European Union, 'Basic Principles for an EU Strategy Against the Proliferation of Weapons of Mass Destruction', document 10352/03, Brussels, 10 June 2003, URL <http://register.consilium.eu.int/pdf/en/03/st10/st10352en03.pdf>; and Council of the European Union, 'Action Plan for the Implementation of the Basic Principles for an EU Strategy Against the Proliferation of Weapons of Mass Destruction', document 10354/03, Brussels, 10 June 2003, URL <http://register.consilium.eu.int/pdf/en/ 03/st10/st10354en03.pdf>. The background to the adoption of this strategy is discussed in Anthony, I., 'Major trends in arms control and non-proliferation', *SIPRI Yearbook 2004: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2004), pp. 575–601. Implementation of the strategy in 2004 is described in chapter 17 in this volume.

by President of the Russian Federation Vladimir Putin in 2004. Section VI gives conclusions.

II. Developments in the United States

As part of what US officials have labelled a 'layered nonproliferation defence' the USA has sponsored and supported different types of measures to reduce the risk that state or non-state actors might acquire nuclear weapons, nuclear explosive devices, biological weapons (BW), chemical weapons (CW), radiological dispersal devices (RDDs, or 'dirty bombs'), or delivery systems for any of the above weapons. The measures include: (*a*) multilateral treaties and agreements; (*b*) cooperation in ad hoc groupings to develop shared rules and understandings regarding export controls; (*c*) action taken through the United Nations (UN) to reduce the threat to the USA from state or non-state actors that might acquire nuclear weapons, nuclear explosive devices, BW, CW or RDDs; and (*d*) efforts to intercept and seize weapons or materials during transport to countries of concern and non-state actors.

In addition to these measures the USA has, since the enactment of the 1991 Soviet Nuclear Threat Reduction Act, provided practical technical and financial assistance of different kinds as part of its overall arms control and nonproliferation programme.[2] In the past, most US assistance was provided to Russia and the states that emerged on the territory of the former Soviet Union in order to assist with the implementation of arms control and disarmament treaties. US assistance has been particularly important for implementation of the 1991 Strategic Arms Reduction Treaty (START I) by Russia and the other former-Soviet republics with strategic nuclear forces based on their territories—Belarus, Kazakhstan and Ukraine.[3] Under START I, more than 6500 nuclear warheads were deactivated, over 1700 missile delivery systems were destroyed, and the platforms and silos from which these delivery systems would have been launched were dismantled.[4]

After the enactment of the 1996 Defense Against Weapons of Mass Destruction Act,[5] the functional scope of US non-proliferation and disarmament assistance expanded, facilitating further US financial support for nuclear security projects in the former Soviet Union. This expanded remit also opened the way for assistance targeted at projects to assist with the implementation of CW stockpile destruction commitments under the 1993 Convention on the

[2] Under the framework of the 1991 Soviet Nuclear Threat Reduction Act (also known as the Nunn–Lugar Act after the senators who co-sponsored the original authorizing legislation), the US Department of Defense (DOD) manages the Cooperative Threat Reduction (CTR) programme. The programme has subsequently evolved to encompass a wide range of non-proliferation and demilitarization activities under the auspices of the Department of Commerce, the Department of Energy, the Department of State and the DOD.

[3] For a summary of the main provisions of the START I Treaty see annex A in this volume.

[4] Defense Threat Reduction Agency, Reduction scorecard, URL <http://www.dtra.mil/toolbox/directorates/ctr/scorecard.cfm>.

[5] US Defense Against Weapons of Mass Destruction Act 1996, Public Law 104-201, 23 Sep. 1996, incorporated into the 1997 National Defense Authorization Act, available at URL <http://www.gpoaccess.gov/plaws/search.html>.

Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (Chemical Weapons Convention, CWC) and to address BW-related concerns.

The terrorist attacks on the USA in September 2001 provided further impetus for US programmes to deliver non-proliferation and disarmament assistance. In particular, the USA began to examine how the techniques developed for application in the former Soviet Union might be applied in other countries and regions. The USA has made the largest financial commitment of any nation to international non-proliferation and disarmament assistance. The pledge made by the USA, covering the period 2002–12, in the framework of the G8 Global Partnership Against Weapons and Materials of Mass Destruction (Global Partnership) indicates that the US contribution will be roughly equivalent to those of all other donor states combined. In total, the USA is likely to spend around $2 billion (€1.53 billion) each year on threat reduction projects, of which around half will be spent on international projects.[6]

Delivering this assistance is a task that has engaged a number of different parts of the US Government. The Department of Defense (DOD) and its Defense Threat Reduction Agency (DTRA), the Department of Energy (DOE), the Department of State and the Department of Commerce are all responsible for implementing non-proliferation and disarmament assistance programmes. The relative roles of the different US agencies are changing in line with the different programme priorities. The capacity of the DOE is being strengthened to reflect the strong priority currently given to nuclear security projects, which are likely to be costly and of long duration.[7]

As a result of decisions taken in 2004, the range of non-proliferation and disarmament assistance programmes carried out by the USA will also be expanded to include additional projects to 'improve and expedite efforts to secure and recover at-risk nuclear materials and related equipment from vulnerable facilities around the world, which could be used to make radiological or nuclear bombs'.[8]

Repatriation and down-blending of highly enriched uranium

The September 2001 terrorist attacks in the USA, as well as information gained in subsequent anti-terrorist operations in Afghanistan and elsewhere,

[6] Russian–American Nuclear Security Advisory Council (RANSAC), 'Congress passes far-reaching nuclear security measure', RANSAC press release, 12 Oct. 2004. The remaining money will be used to pay for the destruction of US chemical weapons and the disposal of plutonium and highly enriched uranium released by the decommissioning of US nuclear weapons.

[7] US Department of Energy, National Nuclear Security Administration (NNSA), 'Nonproliferation spending and activities up dramatically in this administration', Fact Sheet, June 2004, URL <http://www.nnsa.doe.gov/page_new.htm>. While spending by the NNSA on non-proliferation will increase, spending by the DOD, which has implemented a number of expensive START I-related projects through its Defense Threat Reduction Agency, is likely to fall. Aggregate annual US financing for INDA is likely to remain stable at roughly $1 billion during the G8 Global Partnership

[8] Russian–American Nuclear Security Advisory Council (note 6). The measures, to be implemented by the DOE, were included in the 2005 National Defense Authorization Act, Section 3132, 'Acceleration of removal or security of fissile materials, radiological materials and related equipment at vulnerable sites worldwide'.

have heightened US concern that a nuclear explosive device might be used in a terrorist attack. A number of technical evaluations have concluded that over a period of time a sophisticated terrorist group would be able to accumulate nuclear fissile material and develop the design and engineering skills required to build such a device.[9] In 2004 the USA increased the tempo of and its financial support for programmes intended to reduce the risk of unauthorized access to weapon-usable fissile materials—plutonium and highly enriched uranium (HEU). Particular attention has been paid to securing stocks of HEU, the material considered most vulnerable to misuse.

To this end, the USA has helped to initiate the Global Threat Reduction Initiative as well as processes being undertaken by the International Atomic Energy Agency (IAEA) and the G8, which are discussed below. In addition to these international activities, the USA has conducted or facilitated specific actions to move identified vulnerable HEU stocks to more secure locations.

In 1999 Russia, the USA and the IAEA launched what is now known as the Tripartite Initiative to focus on the possible management and disposition of fuel of Russian-origin located at research reactors on the territory of the former Soviet Union and around the world, and essentially on its return to Russia. A large part of this fuel contains the HEU. The first shipment under the framework of the Tripartite Initiative took place in September 2003.[10]

Three such activities were carried out under the framework of the Tripartite Initiative in 2004. In early March, a shipment took place from the Tajoura Nuclear Research Centre near Tripoli, Libya. The shipment, consisting of 16 kg of 80 per cent HEU in the form of fresh fuel, was airlifted to a secure facility in Dimitrovgrad, Russia. The $700 000 fuel removal project was funded by the USA.[11] In September, a mission to recover 11 kg of enriched uranium fuel, including HEU, from Uzbekistan was completed.[12] The HEU was airlifted under guard from an airport near Tashkent, Uzbekistan, to the same facility at Dimitrovgrad, where it will be down-blended into low-enriched uranium (LEU). Russia provided special transportation canisters for the material and the action was carried out by technical experts from Russia, the USA and the IAEA. In December, 6 kg of HEU was removed from the

[9] See, e.g., Bremer Maerli, M., Norwegian Atlantic Committee, *Nuclear Terrorism: Threats, Challenges and Response* (Security Policy Library: Oslo, Aug. 2002), URL <http://www.nupi.no/IPS/?module=Articles;action=Article.publicShow;ID=966;nocache=true>.

[10] Goldman, I. N., Adelfang, P. and Ritchie, I. G., International Atomic Energy Agency (IAEA), 'IAEA activities related to research reactor fuel conversion and spent fuel return programs', Nuclear Fuel Cycle and Materials Section, Nuclear Fuel Cycle and Waste Technology Division, URL <www.iaea.org/NewsCenter/News/PDF/sfr_programs.pdf>. In addition, similar activities have been carried out in Bulgaria, Georgia, Kazakhstan, Romania and Serbia and Montenegro.

[11] International Atomic Energy Agency (IAEA), 'Removal of high-enriched Uranium in Libyan Arab Jamahiriya: IAEA, United States, Russia assist Libyan Arab Jamahiriya in removing fissile material', IAEA News Centre, 8 Mar. 2004, URL <http://www.iaea.org/NewsCenter/News/2004/libya_uranium0803.html>.

[12] US Department of Energy, 'Secret mission to recover highly enriched uranium in Uzbekistan successful', Press Release, Washington, DC, 13 Sep. 2004, URL <http://www.energy.gov/engine/content.do?PUBLIC_ID=16642&BT_CODE=PR_PRESSRELEASESTT_CODE=PRESSRELEASE>.

Czech Republic and taken to Dimitrovgrad to be down-blended.[13] In all cases, the HEU was contained in nuclear fuel assemblies originally supplied for use in a Russian-designed research reactor. In the past both Russia and the USA have supplied research reactors to countries around the world. In addition to its cooperation with Russia, the USA intends to repatriate approximately 20 tonnes of spent HEU fuel from research reactors of US origin in more than 40 locations. The USA also plans to convert 105 civilian research reactors of Russian and US origin, which currently use HEU fuel, to use LEU fuel.

Russia and the USA continue to implement the 1993 intergovernmental agreement, also known as the 'Megatons to Megawatts Program', which calls on Russia to convert 500 tonnes of HEU from dismantled nuclear warheads to LEU to be used as fuel to generate electricity. The down-blending of HEU takes place in Russia. The resulting LEU fuel is then purchased by the USA for use in power generation. As of 31 December 2004, 231.5 tonnes of weapon-grade HEU—reportedly equivalent to more than 9000 warheads—had been downblended into 6824 tonnes of LEU.[14]

Down-blending HEU into LEU to eliminate a source of fissile material has been validated from a technical perspective and has been shown to have other advantages as a non-proliferation instrument. For this reason a number of proposals have been put forward in Europe and the USA to accelerate the down-blending process.[15] However, this acceleration has not yet taken place.

Ending the production of plutonium for nuclear weapon production

In June 1994, as part of their commitment to make irreversible and transparent reductions in nuclear arms, Russia and the USA agreed steps to end the production of plutonium for use in nuclear weapons and to progressively reduce their respective plutonium stockpiles.[16] In this context, in 1994 Russia agreed to close three reactors that had been used to produce plutonium for nuclear weapons on the condition that an alternative source of energy could be provided for the cities that depended on them for power. The USA agreed to provide financial support for this project, to be carried out in the closed nuclear cities of Seversk and Zheleznogorsk (formerly known as Tomsk-7 and Krasnoyarsk-26). According to an amended timetable agreed in 2001, two reactors in Seversk will close by the end of 2005 and the reactor in Zheleznogorsk

[13] US International Information Programs, 'Highly enriched uranium repatriated from the Czech Republic to Russia', Press Release, Washington, DC, 23 Dec. 2004, available at URL <http://www.globalsecurity.org/wmd/library/news/russia/2004/russia-041223-usia01.htm>.

[14] US Enrichment Corporation, 'US–Russian Megatons to Megawatts Program: recycling nuclear warheads into electricity', Fact Sheet, 31 Dec. 2004, URL <http://www.usec.com/v2001_02/HTML/megatons_fact.asp>.

[15] Arbman, G. *et al*., Statens Kärnkraftinspektion (SKI) [Swedish Nuclear Power Inspectorate], *Eliminating Stockpiles of Highly Enriched Uranium: Options for an Action Agenda in Cooperation with the Russian Federation*, Report submitted to the Swedish Ministry for Foreign Affairs, SKI Report 2004:15 (SKI: Stockholm, Apr. 2004), URL <http://www.ski.se/dynamaster/file_archive/040511/4e8cb165a0a960aba648aaf3479fe05e/2004%5f15.pdf>.

[16] US Department of State, Bureau of Public Affairs, 'Gore–Chernomyrdin Commission', Fact Sheet, 21 Sep. 1994.

should close by the end of 2006. In December 2004 US company Washington Group International (WGI) was contracted to carry out the conversion of electricity generating facilities in Seversk.[17] Under the contract, the city of Seversk will be supplied by an existing coal-fired plant, which is to be refurbished as part of the WGI project.

Enhancing the protection, control and accounting of nuclear materials

The US Department of Energy's Nuclear Materials Protection, Control, and Accounting (MPC&A) Program is the largest and most successful international cooperative effort to secure and account for nuclear weapons and materials.[18] The programme ensures that nuclear materials are securely stored in designated facilities and properly accounted for, thereby minimizing the threat of their diversion. The USA has been providing assistance to Russia for more than a decade, focusing primarily on security upgrades for vulnerable sites.

In 2004 the security at three sites was upgraded under the MPC&A Program: the Novosibirsk Chemical Concentrates Plant, the Urals Integrated Electrochemical Plant and the Electrochemical Plant at Zelenogorsk. The DOE estimates that security improvements have now been completed at 12 sites and expects this figure to rise to 14 by the end of 2005. The programme goal—to provide all 18 designated Russian civilian sites with security upgrades—is expected to be achieved in 2008, after which the DOE will provide low levels of support to ensure the long-term maintenance and operability of upgraded systems.[19] The DOE programme to provide physical protection at military sites, specifically those of the Russian Navy and the Strategic Rocket Forces, is also nearing completion.

The emphasis is now likely to shift from physical protection measures to improving the quality of site personnel, which will also help to ensure the sustainability of the security upgrades.[20] In addition, the DOE has been focusing more attention on export control and border security assistance programmes as part of the Second Line of Defense Program.[21]

[17] US Department of Energy, National Nuclear Security Administration, 'US signs contract as part of effort to permanently shut down plutonium production reactors in Russia', Press Release, 20 Dec. 2004, URL <http://www.nnsa.doe.gov/docs/PR_NA-04-34.htm>.

[18] Nuclear Threat Initiative (NTI), 'Securing nuclear warheads and materials: materials protection control and accounting', NTI Research library, URL <http://www.nti.org/e_research/cnwm/securing/mpca.asp>.

[19] National Nuclear Security Administration (NNSA), 'Security upgrades completed at three Russian nuclear facilities: NNSA continues work to keep nuclear material out of the hands of terrorists', Press Release, 10 Dec. 2004, URL <http://www.nnsa.doe.gov/docs/PR-NA-04-33%20%20Security%20upgrades%20completed(12-04).htm>; and NNSA, Office of Material Consolidation and Civilian Sites, URL <http://www.nnsa.doe.gov/na-20/mccs.shtml>.

[20] Khripunov, I. and Holmes, J. (eds), *Nuclear Security Culture: the Case of Russia*, (Center for International Trade and Security: University of Georgia, Dec. 2004), URL <http://www.uga.edu/cits/documents/pdf/Security%20Culture%20Report%2020041118.pdf>.

[21] For more information on the Second Line of Defense Program see the National Nuclear Security Administration Internet site, URL <http://www.nnsa.doe.gov/na-20/sld.shtml>.

Destruction of chemical weapons in Russia

The USA is also a major contributor to the international effort to dispose of 40 000 agent tonnes of CW in Russia. The US DOD is using funds allocated by Congress to (*a*) build the CW destruction facility at Shchuch'ye; (*b*) improve security systems at the Shchuch'ye and the Kizner CW storage sites; and (*c*) demilitarize former Soviet nerve agent production facilities.[22]

The level of US assistance in this area in 2004 ($200 million) was slightly higher than Russia's contribution ($189 million) and equal to those of the other 14 donors combined.[23] The USA has tried to make funding conditional on Russia meeting a variety of unrelated conditions. For example, the USA wants to obtain a sample of a genetically modified strain of *B. anthracis* that is resistant to antibiotic treatment. The USA is also inflexible about how money allocated to CW destruction can be spent—partly because the US Congress has attached the general condition that there should be no funding for infrastructure. The US Congress has never fully appreciated the fact that CW destruction facilities cannot be operated in areas with no proper roads, sewage systems, reliable power supply, and so on. At the operational level, the dividing line between infrastructure support and supporting the construction of a pilot CW destruction facility becomes blurred.

III. Developments in the Group of Eight

The Global Partnership was created at the 2002 G8 Summit in Kananaskis, Canada. It was established to support specific cooperation projects, initially in Russia, that address non-proliferation, disarmament, counter-terrorism and nuclear safety issues. The G8 identified the destruction of CW, the dismantlement of decommissioned nuclear submarines, the permanent disposition of fissile materials and the employment of former weapon scientists as the main immediate project priorities. President Putin subsequently stated that, from a Russian perspective, the destruction of CW and the dismantling of nuclear submarines were particularly important.

The G8 leaders revised the Global Partnership at the 2004 G8 Summit at Sea Island, Georgia. They highlighted the need for a 'long-term strategy' and for 'multi-faceted approaches' in order 'to prevent, contain and roll back proliferation' to supplement the fairly confined 2002 objectives of the programme. In addition to setting more ambitious objectives, the G8 leaders discussed projects with a wider functional scope and a new geographic orientation and announced an Action Plan to reinforce the global non-proliferation regime.[24] The Action Plan contained: (*a*) an endorsement of a US initiative

[22] CSIS, Strengthening the Global Partnership Project, the United States, URL <http://www.sgpproject.org/Donor%20Factsheets/US.html>.

[23] For the list of those donors and further discussion see chapter 13 in this volume; and G8 Sea Island Summit 2004, 'Consolidated Report of Global Partnership Projects', Summit documents. 9 June 2004, URL <http://www.g8usa.gov/pdfs/GPConsolidatedReportofGPProjectsJune2004.pdf>.

[24] G8 Sea Island Summit 2004, 'G8 Action Plan on Nonproliferation', Summit documents, 8 June 2004, URL <http://www.g8usa.gov/d_060904d.htm>.

calling for a one-year ban on the sale of enrichment and reprocessing technologies to any state that does not already possess full-scale, functioning enrichment and reprocessing plants; (*b*) an exhortation to introduce integrated safeguards—or comprehensive safeguards—in cooperation with the IAEA; (*c*) a proposal for a special committee to be created at the IAEA to focus on safeguards and verification; (*d*) a commitment to support the Proliferation Security Initiative (PSI)[25] and a commitment by the G8 to provide resources to help states combat illicit trafficking in WMD-related items; (*e*) measures specific to Iran and North Korea, two countries of proliferation concern, and Libya, a country where proliferation concerns have been addressed;[26] (*f*) support for the implementation of the CWC; (*g*) support for efforts to defend against bio-terrorism, including strengthening security measures for dangerous pathogen collections; (*h*) support for the implementation of a 2003 G8 initiative related to the security of radioactive materials and sources; and (*i*) support for the completion of nuclear safety measures at the Chernobyl nuclear power plant—a programme unconnected with non-proliferation.

The Action Plan also refers back to the original Global Partnership activities and stresses the need to implement past decisions and programmes. The G8 had previously committed itself to raising up to $20 billion (€15.3 billion) to support specific projects over the 10-financial year period 2002–12 in order to finance these activities. This level of funding will be required to cover the programmes launched in 2002. The financial implications of the new commitments made at the Sea Island Summit were not spelled out. Additional funding will be needed and the sums pledged in 2002 should be regarded as a floor for spending on non-proliferation rather than a ceiling.

The reorganization of the Global Partnership

The G8 has become an important forum in which to conduct regular high-level discussions on any aspect of non-proliferation. The way in which G8 INDA activities are now organized reflects this change.

A Senior Officials Group was established in 2002 to coordinate Global Partnership activities. This group was made up of officials from G8 member states. However, in January 2004 the group was replaced with a new Senior Nonproliferation Officials Group made up of officials at the level of deputy minister and open to both G8 and non-G8 members. The new group has three sub-committees—the Nonproliferation Expert Group, the Nuclear Safety and Security Group and the Global Partnership Working Group. The first two are pre-existing groups that have now been brought under the ‘umbrella’ of the Senior Nonproliferation Officials Group. The Global Partnership Working Group addresses issues related to the implementation of non-proliferation and disarmament projects that fall within the Global Partnership framework.

[25] For a detailed discussion of the PSI see chapter 17 in this volume.
[26] Developments in Libya are discussed in chapter 14 in this volume.

The Global Partnership Working Group meets regularly and is attended by officials from all partnership countries. Since 2002 the Global Partnership has expanded from its original eight partners plus the EU to include an additional 13 states. Eight of these additional states are EU members.[27] At the meetings, officials—who are nearly always diplomats—can address themselves to specific implementation problems and bring these to the attention of the Russian participants, in particular, who come from the Foreign Ministry. The working group does not coordinate project implementation, and neither project managers nor the companies and entities involved in project implementation on the ground usually attend. Reportedly, the working group does not have detailed information on the financial or technical issues involved in particular projects. Given these facts, its main value lies in bringing high-level attention to difficulties encountered when carrying out projects that are designed and implemented in other forums.

At present, projects related to CW destruction and nuclear submarines—the programmes identified by President Putin as his top priority—are making the most rapid progress. These programmes are discussed in section V below. Programmes related to fissile material disposition and the retraining of scientists who participated in Soviet and Russian NBC weapon programmes are also agreed Global Partnership priorities.

In September 2000 Russia and the USA agreed to irreversibly eliminate 34 metric tonnes each of weapon-grade plutonium. The plutonium cores, or 'pits', recovered from deactivated nuclear warheads were the main target of this initiative. At their Summit in 2002, the G8 members agreed to fund a mixed oxide (MOX) fuel programme in Russia to help with the implementation of plutonium disposal by blending it with uranium for use as fuel in nuclear power reactors. However, implementation of this programme is progressing only very slowly. In the 2003 annual report on the Global Partnership, reference is made to the 'initial steps' supporting the design, costing and licensing of the facilities needed for plutonium disposition.[28] With regard to US activities, the report focuses on the replacement of reactors used in the past for plutonium production rather than on the MOX fuel programme.

The main obstacle to the implementation of plans for the disposal of plutonium has been the failure to conclude an agreement specifying liability to make reparations in cases of accidents or acts of sabotage leading to damage or injury in the course of the project. After more than five years of discussion, it is likely that political support for this project will decline unless an agreement can be reached in 2005.

The fourth priority that the G8 leaders identified in 2002 was preventing the spread of the knowledge and expertise necessary to manufacture WMD. To support its massive NBC weapon capabilities the Soviet Union trained a large

[27] These states are Belgium, the Czech Republic, Denmark, Ireland, Finland, the Netherlands, Poland and Sweden.

[28] G8 Senior Officials Group Annual Report, presented at the Annual Summit of the G8 Heads of State and Government, Evian, June 2003, available on the Internet site of the US State Department, URL <http://www.state.gov/t/np/rls/other/34773.html>.

cadre of scientists. With the dissolution of the Soviet Union the future of these scientists became unclear. Immediately after the end of the cold war a number of emergency programmes were put in place to try to ensure that the location and activities of these scientists was known and that they were engaged in peaceful activities. The International Science and Technology Centre (ISTC) in Moscow and the Science and Technology Centre in Ukraine (STCU) in Kyiv were created to help manage and deliver financing to projects involving former weapon scientists.[29]

The projects implemented through the ISTC and the STCU were designed to ensure that former weapon scientists had opportunities to redeploy their skills. Financing for identified projects has been provided by Canada, Japan, South Korea and the USA as well as EU member states—both individually and through the EU budget using Joint Actions and the Technical Assistance for the Commonwealth of Independent States (TACIS) programme. Important initiatives to organize and coordinate projects include the US-sponsored Initiative for Proliferation Prevention (IPP) and the Nuclear Cities Initiative (NCI).

Fifteen years after the break up of the Soviet Union, the body of 'surplus' scientific knowledge that could contribute to proliferation has been reduced in Russia and the other successor states. Russia has identified and consolidated the scientific knowledge necessary to maintain a nuclear deterrent within its nuclear weapon establishment and other scientists have found alternative employment. In these circumstances, a growing share of the projects sponsored by the ISTC and the STCU are non-nuclear in nature. Future projects are expected to emphasize facilitating commercial research in international project teams as a contribution to economic development through the modernization of science. However, verifying the non-proliferation impact of non-nuclear projects is complicated given the 'dual-use' nature of many projects in the fields of chemistry and biology and the lack of information about former Soviet biological weapon programmes in particular. At the same time, the ISTC and the STCU are international organizations with a membership that includes most countries of the former Soviet Union. They have a legal status that permits them to operate in regions and with facilities where access is otherwise restricted—such as the nuclear 'closed cities' in Russia. There is often no obvious alternative to working through the science centres. However, the effectiveness of the ISTC and STCU is currently being evaluated.[30]

[29] The International Science and Technology Center (ISTC) was established in Nov. 1992. See the ISTC Internet site at URL <http://www.istc.ru/>. The Science and Technology Centre in Ukraine (STCU) was established in 1993, more or less in parallel with ISTC. See the STCU Internet site at URL <http://www.stcu.int>.

[30] E.g., 'Redirection of the Russian weapons of mass destruction workforce: new concepts and initiatives', Paper presented by the Landau Network Centro Volta (LNCV), Como, Italy, and the Russian-American Nuclear Security Advisory Council (RANSAC), Washington, DC, at the Non-proliferation and Disarmament Cooperation Initiative (NDCI) meeting, London, 4–5 Mar. 2004; and Ball, D. Y. and Gerber, T. P., 'Will Russian scientists go rogue? A survey on the threat and the impact of Western assistance', PONARS Policy Memo no. 357 (Nov. 2004), URL <http://www.csis.org/ruseura/ponars/policymemos/pm_0357.pdf>

Expanding the geographic coverage of the Global Partnership

The initial focus of the Global Partnership has been Russia. However, at its 2004 Summit the G8 expressed its intention to apply some of the measures in new countries and regions. The G8 has often expressed an interest in carrying out activities in other countries in the former Soviet Union. In 2004 discussions were held between G8 officials and their counterparts from Georgia, Kazakhstan, Ukraine and Uzbekistan. Ukraine joined the Global Partnership in 2004 and by the end of the year detailed discussions were taking place to elaborate specific projects. The retraining of Iraqi and Libyan scientists involved in past WMD programmes was also highlighted as an objective in the Action Plan on non-proliferation.

The G8 has made clear its intention to use the Global Partnership to coordinate efforts made in a number of functional areas that were not given priority in its original decisions taken in 2002. The projects that have been mentioned specifically in this regard are: (*a*) projects to eliminate over time the use of HEU fuel in research reactors worldwide; (*b*) projects to secure and remove fresh and spent HEU fuel; (*c*) projects to control and secure radiation sources; and (*d*) projects to strengthen export controls and border security.

In 2004 the USA also decided to expand its international non-proliferation and disarmament assistance efforts. Albania had notified the Organization for the Prohibition of Chemical Weapons in November 2002 that it had discovered a small stockpile of CW on its territory containing 'very old' mustard agent. In 2003 the US Congress approved the Nunn–Lugar Expansion Act, which allowed the US President to use up to $50 million of funds, initially targeted for non-proliferation and disarmament assistance to the states of the former Soviet Union, in other countries.[31] For the first time, funds provided through the CTR programme are being used outside the former Soviet Union. In April 2004 Switzerland announced that it also plans to assist Albania to destroy its CW.[32] On 22 October 2004 the USA announced that it had secured the stockpile site and that destruction, involving '16 tons (*c*. 14.5 tonnes) of bulk chemical agent', would begin in 2005 and take around two years.

The security of radiological materials

At the 2003 G8 Summit in Evian, France, the G8 leaders announced an initiative to make powerful radioactive sources secure. Through this initiative the G8 pledged to support the completion and subsequent implementation of an IAEA Code of Conduct on the Safety and Security of Radioactive Sources, which was under development at that time and was published in January

[31] US Senate, Richard G. Lugar, US Senator for Indiana, 'Nunn–Lugar to destroy Albania chemical weapons stash: first time Nunn–Lugar used outside former Soviet Union', 21 Oct. 2004, URL <http://lugar.senate.gov/pressapp/record.cfm?id=227616>.

[32] Nartker, M., 'Switzerland to aid Albanian chemical weapon disposal', Nuclear Threat Initiative Global Security Newswire, 26 Apr. 2004, URL <http://www.nti.org/d_newswire/issues/2004_4_26.html#1171ADE3>.

2004.[33] The G8 agreed to finance and participate in measures to secure high-risk stray or inadequately protected radiological sources, so-called 'orphaned' sources of ionizing radiation, including through greater support of IAEA action in this area.[34] France agreed to convene a conference in 2005 to follow-up a 2003 conference on the security of radioactive sources.[35]

While the legal responsibility for ensuring radiological security rests with the states owning the relevant facilities, international cooperation has helped these states to advance their self-interest by securing such sources and to live up to their commitments in this respect. The IAEA Code of Conduct—which was discussed at the IAEA General Conference in September 2003, when its objectives and principles were endorsed—contains enhanced references to the security of radioactive sources.

International efforts to secure radioactive sources were already under way before the terrorist attacks of 11 September 2001. However, since 2001 these efforts have attracted greater attention from political decision makers and the public because of heightened concern about the possible use of an RDD in a terrorist attack. An RDD is a combination of radioactive material and conventional explosives, or some other dispersal agent such as an aerosol, that is used to scatter radioactive debris. Such a device would be unlikely to produce large numbers of fatalities or, if it did, these would occur over a number of years—or even generations.[36]

Although Iraq developed and experimented with an RDD in the 1980s, such devices have generally been considered to have little use on the battlefield. Iraq ended its own RDD programme unilaterally in 1987, presumably for this reason.[37] However, the use of such devices could exert a psychological effect and inflict economic damage by making land or water unusable. In November 1995, a Chechen group led by Shamil Basayev buried a container containing caesium-137 in a Moscow park and then alerted a Russian television network. This incident was one of a number where Chechen groups have threatened

[33] International Atomic Energy Agency (IAEA), Code of Conduct on the Safety and Security of Radioactive Sources, document Codeoc/2004, Jan. 2004, URL <http://www-ns.iaea.org/tech-areas/radiation-safety/default.htm>.

[34] The IAEA defines orphaned sources as radioactive sources that are outside regulatory control. Some sources may not be formally orphaned but control over them may be weak and they therefore might be vulnerable to being mishandled or lost.

[35] G8 Evian Summit 2003, 'Non-proliferation of weapons of mass destruction: securing radioactive sources, a G8 Action Plan', Summit documents, 1–3 June 2003, URL <http://www.g8.fr/evian/english/navigation/2003_g8_summit/summit_documents.html>.

[36] Radioactive substances might be dispersed through the air or used to contaminate water or food. If radioactive material emits penetrating radiation it poses a risk through external exposure. The material also poses a risk if inhaled, eaten or absorbed through the skin. The dispersion of radioactive material could be used to complicate the response to and recovery from a terrorist incident. It could also impose significant economic costs by requiring the decontamination of buildings, land or water or result in the abandonment of land if decontamination was not feasible. United Nations, Office on Drugs and Crime, 'Nuclear and radiological weapons: what's what?', URL <http://www.unodc.org/unodc/terrorism_weapons_mass_destruction_page006.html>.

[37] Nuclear Threat Initiative (NTI), Radiological terrorism tutorial, 'Terrorists and radiological terrorism', NTI research library, URL <http://www.nti.org/h_learnmore/radtutorial/chapter04_01.html>.

either to use an RDD or to attack a Russian nuclear facility, each with an attendant risk of releasing radioactive materials.[38]

The IAEA has maintained a database on incidents of illicit trafficking in nuclear or other radioactive material since the early 1990s.[39] As of November 2004 the IAEA database included around 650 confirmed cases of illicit trafficking, 57 of which were reported in the first six months of 2004. Nearly 80 states have agreed to collect information systematically on trafficking incidents as well as other unauthorized movements of radioactive sources and other radioactive materials, and to share this data with the IAEA for inclusion in the database. Information is submitted to the IAEA using a standardized incident notification form to ensure detailed and uniform entries in the database that allow trend and pattern analyses. The data stored only include confirmed incidents in which information has been verified to the IAEA through official points of contact from the reporting country.[40] The database has become an important resource for law enforcement agencies worldwide.

As part of a nuclear security Action Plan first adopted in 1999 but subsequently revised on several occasions, the IAEA has proposed, as an ultimate objective, the creation of a system to ensure the secure custody and safe use of powerful radioactive sources from 'cradle to grave'.[41] Under the definition applied by the IAEA, nuclear security covers nuclear and radioactive materials and nuclear installations. The focus is on helping states to prevent, detect and respond to terrorist or other malicious acts—such as illegal possession, use, transfer, and trafficking—and to protect nuclear installations and transport against sabotage.

The IAEA Code of Conduct also contributes to achieving the objectives of the Action Plan. In the Code, states are encouraged to establish an adequate system of regulatory control of radioactive sources, applicable from the stage of initial production to their final disposal, and a system to restore control if it has been lost. The Code includes guidelines and elements that should be included in the system of regulatory control as well as recommendations about establishing a national implementing authority, and its responsibilities.

To achieve the objectives of the Action Plan the IAEA has highlighted the need to secure powerful radioactive materials by ensuring that the sites and facilities where they are located have adequate provisions against sabotage,

[38] Bale, J. M., 'Issue brief: Chechen resistance and radiological terrorism', NTI Research Library, Apr. 2004, URL <http://www.nti.org/e_research/e3_47b.html>. Moreover, al-Qaeda is said to be examining the use of radiological devices. Karon, T., 'The "dirty bomb" suspect: lots of questions, few answers', *Time* (online edn), 11 June 2002, URL <http://www.time.com/time/nation/article/0,8599,261119,00.html>.

[39] For an analysis of the longer-term trends see Zarimpas, N., 'The illicit trade in nuclear and radioactive materials', *SIPRI Yearbook 2001: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2001), pp 503–11.

[40] Confirmed incidents are incidents where investigations have taken place. They do not necessarily imply a transfer of material.

[41] The background to the Action Plan is explained in International Atomic Energy Agency (IAEA), 'Measures to strengthen international cooperation in nuclear, radiation and transport safety and waste management', Report to the Board of Governors, IAEA General Conference document, GOV/2003/47-GC47/7, 4 Aug. 2003, URL <http://www.iaea.org/About/Policy/GC/GC47/Documents/gc47-7.pdf>.

attack or unauthorized access. In addition, the IAEA has stressed the need to find and recover orphaned radiological sources.

The IAEA has carried out this kind of activity in several countries on request and has also worked with the US DOE and the Russian Ministry for Atomic Energy (Minatom) in a Tripartite Working Group on Securing and Managing Radioactive Sources. In this group, officials have agreed to develop a coordinated and proactive strategy to locate, recover, secure and recycle orphaned sources throughout the former Soviet Union. Fact-finding missions have been carried out to identify and characterize radioactive sources in Armenia, Azerbaijan, Belarus, Kazakhstan and Moldova, and to propose security measures for them. At the end of 2004 additional were also nearing completion in Kyrgyzstan and Tajikistan.

The IAEA provides advisory services to its members that are relevant to nuclear and radiological security. The International Physical Protection Advisory Service (IPPAS) has revised and updated its guidelines on physical protection to introduce modules related to securing radioactive sources.[42] In particular, the issue of how to protect against 'insider threats' at nuclear facilities has been examined. The IAEA has also created a new advisory service, called the International Nuclear Security Advisory Service (INSServ) to help states assess their protection of radioactive materials. INSServ expert recommendations can then form the basis for follow-on assistance, either through the IAEA or bilaterally between states. Azerbaijan, the Democratic Republic of the Congo, the Philippines, Tanzania, Uganda, Uzbekistan and Yemen had each hosted an INSServ mission by the end of 2004.[43]

The IAEA has developed a number of technical resources to help states strengthen security in the light of the heightened consciousness surrounding the possible use of radiological materials in terrorist acts. Radioactive materials and sources take many different physical forms and vary in size. Radioactive sources are used in industry, medicine, agriculture, research and education as well as in military applications such as sonar devices and other sensors. The IAEA has developed a system for classifying radioactive sources and ranking them according to their potential to cause harm to human health.[44] The IAEA has also produced guidelines for the physical storage of radiological sources of different types and recommendations to ensure that radioactive sources are subject to export controls.[45]

[42] IAEA, International Physical Protection Advisory Service (IPPAS), 'Nuclear security: measures to protect against nuclear terrorism', Supplementary Information to GOV/2004/50-GC(48)/6 Part A, Progress in implementing activity areas 1 to 8 as defined in GOV/2002/10, paragraph 3, URL <http://www.iaea.org/About/Policy/GC/GC48/Documents/gc48-6suppl.pdf>.

[43] Sanders, J. W., 'Safe and secure peaceful nuclear programs', Presentation of the Special Representative of the President of the USA for the Non-Proliferation of Nuclear Weapons, at the 3rd Session of the Preparatory Committee for the 2005 Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons, New York, 4 May 2004.

[44] IAEA, 'Categorization of radioactive sources', IAEA technical document-1344, July 2003.

[45] IAEA, 'Security of radioactive sources: interim guidance for comment', IAEA technical document-1355, June 2003.

IV. Developments in the European Union

Most of the international non-proliferation and disarmament assistance provided by the EU is in the form of bilateral programmes and actions undertaken by member states. These are loosely coordinated and information about them is exchanged in the working group on non-proliferation (CONOP) that meets under the auspices of the Council of the European Union.

Activities of EU member states

Four EU member states—France, Germany, Italy and the United Kingdom—made significant national financial commitments under the Global Partnership.

Germany

In the framework of the Global Partnership, Germany pledged to provide up to $1.5 billion (€1.15 billion) to support projects to be carried out mainly in Russia. Among EU countries, Germany has had the most sustained and significant engagement in Russia. Since 1993 Germany has been continuously engaged in the construction of a CW destruction facility at Gorny in the Saratov region of Russia. Since 1995 Germany has also carried out projects to enhance nuclear security at several Russian facilities.[46] Russia has expressed appreciation of the German approach to assistance and likes to contrast it to the US approach. Germany has been more flexible on how its money can be spent. In future, German efforts under the Global Partnership are likely to be concentrated in three areas. First, in order to help Russia meet its obligations under the CWC, Germany has agreed to support the development of a CW destruction facility in Kambarka as well as continuing to provide further financing for the facility in Gorny. Second, to support the dismantlement of nuclear-powered submarines, Germany will finance the construction of a facility for the long-term secure storage of radioactive reactors and their surrounding compartments that have been removed from vessels decommissioned by the Russian Navy.[47] Finally, Germany will continue to assist with modernizing the measures for the physical protection of nuclear material at Russian nuclear facilities. In total, Germany has already agreed to support projects in the period to 2009 at a cost of about €800 million.

Germany is expected to play a leading role among EU countries in implementing disarmament assistance projects in Russia. This is partly because of the insights gained through long experience of project management, and partly because Germany has developed a legal and administrative framework for

[46] For a breakdown of the nature and type of CW destruction assistance provided by various countries and the EU see Zanders, J. P., Hart, J. and Kuhlau, F., 'Chemical and biological weapon developments and arms control', *SIPRI Yearbook 2002: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2002), pp. 692–93.

[47] German Federal Ministry of Economics and Labour, 'The G8 Global Partnership: German–Russian cooperation', Sherpa-Group, Preparation for the World Economic Summit, 15 May 2004, p. 5, URL <http://www.sgpproject.org/Donor%20Factsheets/German-Russia%20Report%2015%20May%202004.pdf>.

cooperation with Russia in this field that other countries lack. The EU has also used Germany to implement collective projects. In the framework of a 1999 Joint Action on non-proliferation in Russia,[48] the EU contributed roughly €6 million to the construction of the CW destruction facility at Gorny. The money, which was used to pay for part of the air filtration system, was transferred by the European Commission from the EU Common Foreign and Security Policy budget to the German Foreign Ministry, which implemented the project alongside its own much larger project. This model is to be repeated in the context of the project to support the enhancement of physical protection at the Bochvar Institute in Moscow. The institute contains fissile materials that need to be secured from any attempt at diversion. To this end, the EU will finance the construction of a new, reinforced and secure storage facility at the institute equipped with modern, specialized protection measures. The project, valued at roughly €8 million, will be managed by the German Foreign Ministry assisted by the Federal Office for Defence Technology and Procurement. The project will be implemented by the German company Gesellschaft für Anlagen-und Reaktor-Sicherheit mbH (GRS).

This arrangement provides a pragmatic solution to the problem of how to deliver practical assistance from the common EU budget in circumstances where the Commission does not have a legal framework for cooperation with Russia on disarmament and non-proliferation matters.[49] This approach is not, however, without difficulties because it requires the EU member state concerned, which is likely to create a relatively small project management team, to apply EU standards for cash management and financial reporting alongside its national system. For sums of EU aid that are relatively small in the context of the overall costs of a project, this might lead member states to resist using this model too often.

The United Kingdom

In 2002 the UK pledged to spend up to £740 million (€1070 million) on international non-proliferation and disarmament assistance over the period 2003–12. The current spending level for this type of assistance from British sources is approximately £37 million (€54 million) per financial year. The UK has focused its efforts on four areas that closely match the 2002 priorities of the Global Partnership. Enhancing nuclear security and providing secure storage for spent nuclear fuel assemblies taken from decommissioned submarines in north-west Russia are high priorities in the British programme. Assisting Russia to destroy CW and the question of how to retrain and redeploy scien-

[48] Council of the European Union, 'Joint Action 2004/796/CFSP for the support of the physical protection of a nuclear site in the Russian Federation', 22 Nov. 2004, *Official Journal of the European Union*, L349 (25 Nov. 2004), URL <http://europa.eu.int/eur-lex/lex/JOHtml.do?uri=OJ:L:2004:349:SOM:EN:HTML>.

[49] Programmes for technical assistance, where there *is* a legal framework in place for EU–Russian cooperation, may not be used for arms control and disarmament projects because these are still considered to be outside the realm of Community competence by EU member states.

tists and technicians formerly employed in nuclear, BW and CW programmes have also been given high priority.

The UK has developed partnerships with other countries that share an interest in a particular problem area to be addressed. The UK has close relations with Canada, Norway and the USA when implementing nuclear programmes in Russia. To strengthen nuclear security the UK and its partners have emphasized the need to improve physical protection of nuclear and radioactive materials. The UK-led programme helped to complete two submarine dismantlement projects in 2004 and is helping to transfer spent nuclear fuel assemblies currently stored in ships to a dedicated onshore storage facility near Murmansk.

British CW destruction activities are carried out in partnership with Canada, the Czech Republic, Norway and the USA as well as the European Commission. The activities are focused on the destruction facility at Shchuch'ye, where by November 2004 all of the equipment promised under the programme had been delivered to Russian authorities for installation at the facility. Additional projects are being developed to expand the Shchuch'ye facility and its infrastructure. New Zealand is expected to join the group of states implementing infrastructure projects under the British–Russian bilateral agreement.

British projects to redirect the skills of scientists have been concentrated in the Russian closed nuclear cities. Recent emphasis has been placed on how to commercialize projects initiated with foreign assistance in order to make them self-sustaining. Expanding the scope of projects to include not only designers but also engineers and production workers is also being considered.

To meet its pledge under the Global Partnership it is likely that the UK's spending on international non-proliferation and disarmament assistance will increase significantly and that its functional and geographic scope will expand. In its first biological non-proliferation project the UK is supporting the development of civilian projects at a research institute in Georgia where plant health scientists worked as part of the Soviet BW programme. In widening the geographic scope of activities, the UK is examining how to develop and deliver projects in Iraq and Libya.

Italy

Italy has pledged €1 billion to the Global Partnership—the fourth highest pledge and an amount equivanent to the EU pledge. Three priorities have been identified: (*a*) €360 million for submarine dismantlement and the safe management of radioactive waste and spent nuclear fuel in 2004–2013; (*b*) €365 million for CW destruction in 2004–2008; and (*c*) €80 million to be spent on plutonium disposition projects.[50]

Italy and Russia signed two bilateral agreements on 5 November 2003, which were not ratified by the Russian State Duma until the end of 2004. The first agreement is on the dismantlement of nuclear submarines and the storage

[50] CSIS, Strengthening the Global Partnership Project, Italy, URL <http://www.sgpproject.org/Donor%20Factsheets/Italy.html>.

of nuclear fuel. Russia has proposed the following projects to Italy in the naval sphere: (*a*) the dismantlement of three submarines at a cost of €70 million; (*b*) the construction of two radioactive waste processing plants at a cost of €133 million; (*c*) the improvement of physical security measures at seven naval bases in north-west Russia at a cost of €45 million; (*d*) the construction of spent nuclear fuel transport and storage casks at a cost of €30 million; and (*e*) the construction of a ship to carry dismantled submarine parts at a cost of €60 million.[51] The second agreement is for the construction of the CW destruction facility in Pochep. Also in November 2003, Italy announced that it would provide €5 million over two years for infrastructure and energy projects at Shchuch'ye under a bilateral intergovernmental agreement signed in 2000 and an Additional Protocol signed in April 2003.

France

France has been formally engaging with Russia in nuclear cooperative threat reduction since 1992, when the aide au démantèlement (AIDA) programme was launched.[52] It also participated in later EU programmes, including the Joint Action on non-proliferation in Russia and the ISTC. French assistance is focused mainly on the various aspects of nuclear weapon dismantlement and protection, particularly plutonium disposition.

The French Global Partnership pledge of €750 million in 2003–12 can be roughly divided into €500 million for nuclear projects—including plutonium disposition, submarine dismantlement and nuclear safety programmes—and €250 million for CW destruction, bio-safety and bio-security.[53] In 2003–2004 France spent €13.1 million on nuclear safety, €17 million on nuclear submarine dismantlement, €3 million on nuclear MPC&A, €9 million on CW destruction and €5 million on bio-security and bio-safety.[54]

Activities financed by the common EU budget

In addition to activities carried out by EU member states, at the 2002 G8 Summit the EU committed itself to spend €1 billion over a period of 10 years. In the period up to 2006 a number of programmes that are specifically relevant to non-proliferation objectives are being financed from the EU common budget. These programmes include the EU's contribution to Nordic Dimension Environmental Partnership (NDEP) projects carried out in north-west

[51] Center for Nonproliferation Studies, Global Partnership funding commitments, Global Partnership resource page, 7 May 2004, URL <http://cns.miis.edu/research/globpart/funding.htm>.

[52] Facon, I., Maisonneuve, C. and Tertrais, B., 'France', eds R. J. Einhorn and M. A. Flournoy, Center for Strategic and International Studies (CSIS), *Protecting Against the Spread of Nuclear, Biological and Chemical Weapons: An action agenda for the Global Partnership,* vol. 3, *International Responses* (CSIS Press: Washington, DC, Jan. 2003), available at URL <http://www.csis.org/pubs>.

[53] CSIS, Strengthening the Global Partnership Project, France, URL <http://www.sgpproject.org/Donor%20Factsheets/France.html>.

[54] G8 Sea Island Summit 2004, 'Consolidated Report of Global Partnership Projects', Summit documents. 9 June 2004, URL <http://www.g8usa.gov/pdfs/GPConsolidatedReportofGPProjectsJune2004.pdf>.

Russia,[55] nuclear security projects, export control and border security-related projects, and a financial contribution to the ISTC and the STCU. Taken together, the value of these programmes is roughly €150 million in 2004–2006. If funding continues at this level, the EU will not meet its €1 billion Kananaskis commitment. The EU's current spending priorities—valid until 2007, when the next common budget cycle will begin—reflect decisions taken at a time when non-proliferation was a relatively low political priority for the EU. It is likely that the level of spending on non-proliferation projects will be increased in the EU budget covering the period 2007–13.

V. Developments in Russia

As is clear from the sections above, most of the international non-proliferation and disarmament assistance provided so far has gone to Russia and most of the future projects that are planned are also to be carried out in Russia. The actions taken by the Russian authorities are critical to their success.

The administration of INDA in Russia

In 2004 a major reform of the civil service, a process known as 'administrative reform', was launched in Russia. Government departments and agencies, including those closely associated with defining and implementing INDA projects, were reorganized and the relationships between them were changed. On 9 March President Putin issued Presidential Decree 314, which set out a new system of federal executive bodies—federal ministries, federal services and federal agencies.[56] The decree set out the number of these entities, their functions and the hierarchy or relationship between them. The development and implementation of the reform process continued throughout 2004 and a further presidential decree was published on 20 May.[57]

The INDA functions of the Ministry of Foreign Affairs (MOFA) were preserved almost intact, with only minor changes such as the appointment of a new minister and a reduction in the number of his deputies. INDA issues in the MOFA are dealt with by Deputy Minister Sergei Kislyak.[58]

Prior to the administrative reform, the Ministry of Defence (MOD) was already responsible for international cooperation in the field of military issues including: (*a*) preparing regulations and procedures in areas related to nuclear weapons; (*b*) supervising nuclear and radiological security during the entire

[55] For background material on the Nordic Dimension Environmental Partnership see URL <http://europa.eu.int/comm/external_relations/north_dim/ndep/index.htm>.

[56] 'O sisteme i struktury federal'nikh organov ispol'nitel'noi vlasti' [On the system and structure of federal executive bodies], Russian Presidential Decree no. 314, 9 Mar. 2004, Internet site of the President of the Russian Federation (in Russian), URL <http://document.kremlin.ru/doc.asp?ID=021438>.

[57] 'Voprosy struktury federal'nikh organov ispol'nitel'noi vlasti' [Issues of the structure of federal executive bodies], Russian Presidential Decree no. 649, 20 May 2004, Internet site of the President of Russia (in Russian), URL <http://document.kremlin.ru/doc.asp?ID= 22560>.

[58] Organization Chart of the Russian Ministry of Foreign Affairs (MOFA), Internet site of the Russian MOFA, URL <http://www.ln.mid.ru>.

Table 16.1. The programme for eliminating chemical weapon stockpiles in Russia[a]

Facility	Percentage of original declared stockpile stored	Destruction facility operational since	Destruction facility operational until
Gornyi, Saratov region	*2.9*	2002	2005
Shchuch'ye, Kurgan region	*13.6*	2008	2012
Kambarka, Udmurt Republic	*15.9*	2006	2009
Pochep, Bryansk region	*18.8*	2008	2012
Maradykovskiy, Kirov region	*17.4*	2006	2010
Leonidovka, Penza region	*17.2*	2008	2012
Kizner, Udmurt Republic	*14.2*	2009	2012

[a] The time frames for the construction and operation of destruction facilities are subject to change in accordance with periodic Russian Government statements.

Source: Kholstov, V., 'Urgent problems of chemical disarmament in the Russian Federation', Presentation to the Green Cross National Dialogue, Moscow, 10 Nov. 2004. Viktor Kholstov is Deputy Chief of the Federal Agency for Industry.

lifecycle of nuclear weapons and military nuclear facilities; (*c*) military-to-military cooperation; and (*d*) supporting the government in negotiations.[59] In addition, the MOD was officially allocated two further tasks in 2004. The supervision of export control procedures in Russia was allocated to a new Federal Service for Technical and Export Control, which inherited functions and personnel from a corresponding division in the Ministry of Economic Development and Trade.[60] Under Decree 314, the MOD is responsible for overseeing the work of the Federal Agency for Atomic Energy (Rosatom) on issues related to the nuclear weapon complex.

Minatom was transformed into Rosatom by Decree 314 and initially placed under the control of the Ministry of Industry and Energy (MIE). This demotion meant that Rosatom could not participate directly in negotiations on international agreements, including those related to non-proliferation and INDA. This situation was later modified by Decree 649, which subordinated Rosatom directly to the Russian Federal Government,[61] allowing Rosatom to participate in international negotiations. Three of the four Global Partnership priorities agreed at the 2002 G8 Summit—the dismantling of decommissioned nuclear submarines, the disposition of fissile materials and the employment of former weapon scientists—remain the responsibility of Rosatom, and it is still the major recipient of INDA.

[59] Statute of the Russian Ministry of Defence, Chapter 2, Article 6, paragraph 11; Chapter 3, Article 7, paragraphs 14, 34, 36, 37; and Chapter 4, Article 11, paragraphs 6 and 32 (in Russian), URL <http://www.government.ru/data/static_text.html?st_id=7518&he_id=671>.

[60] 'Putin naznachil Sergeya Yakimova zamdirektora Federal'noi sluzhby po tekhnicheskomu i eksportnomu kontrolyu' [Putin appoints Sergey Yakimov as the Deputy Director of the Federal Service for Technical and Export Control], *RIA Novosti*, 22 Oct. 2004 (in Russian), URL <http://www.rian.ru/rian/intro.cfm?nws_id=713660>.

[61] Russian Presidential Decree no. 649 (note 57), p. 2.

GosAtomNadzor (GAN), which was responsible for the control and inspection of security in the use of atomic energy on Russian territory, was abolished in 2004. A new Federal Service for Atomic Inspection (FSAI) was created to take over its responsibilities.[62] The FSAI survived only a few months, however, before Presidential Decree 649 created the 'Federal Service for Ecological, Technological and Atomic Inspection', which combined the FSAI with entities unrelated to INDA.[63]

The Russian Munitions Agency (Rosboepripasy) had been responsible for the fourth Global Partnership priority—the destruction of the CW stockpiles. This agency was abolished by Decree 314 and its functions were divided between the MIE and its subordinate Federal Agency for Industry (FAI). The MIE is empowered to elaborate state policy and laws, and to participate in international negotiations on CW destruction.[64] Government Decree 190 gives the FAI the task of meeting Russia's obligations under the CWC and the 1972 Biological and Toxin Weapons Convention (BTWC).[65]

Major INDA projects under way in Russia

As noted above, President Putin has identified CW destruction and dismantling nuclear submarines as the two most important priorities for Russia among the range of projects for which international non-proliferation and disarmament assistance could be used.[66] Thus far, the funds that Russia itself has earmarked under the Global Partnership are being spent almost exclusively on these two areas.[67]

In the area of *CW destruction*, Russia has continued to fulfil its obligations under the CWC. The first agreed deadline, eliminating 1 per cent of Russia's CW stockpile of 40 000 agent tonnes by the end of 2003, has been met.[68]

[62] 'Voprosy Federal'noi sluzhby po atomnomu nadzoru' [Issues for the Federal Service for Atomic Inspection], Russian Government Decree no. 192, 7 Apr. 2004, Internet site of the Government of Russia (in Russian), URL <http://npa-gov.garweb.ru:8080/public/default.asp?no=86943>.

[63] 'O Federal'noi sluzhbe po ekologicheskomu, tekhnologicheskomu i atomnomu nadzoru' [On the Federal Service for Environmental, Technological and Atomic Inspection], Russian Government Decree no. 401, 30 July 2004, Internet site of the Government of Russia (In Russian), URL <http://npa-gov.garweb.ru:8080/public/default.asp?no= 12036495>.

[64] 'Ob utverzhdenii Polozheniya o Ministerstve promyshlennosi i energetiki Rossi'iskoi' Federatsii' [On the adoption of the Statute of the Ministry of Industry and Energy of the Russian Federation], Russian Government Decree no. 284, 16 June 2004 (as amended on 10 Sep. 2004), Internet site of the Government of Russia (in Russian), URL <http://npa-gov.garweb.ru:8080/public/default.asp?no=87118>.

[65] 'Voprosy Federal'nogo agentstva po promyshlennosti' [Issues for the Federal Agency for Industry], Russian Government Decree no. 190, Government of the Russian Federation, 8 Apr. 2004, Internet site of the Government of Russia (in Russian), URL <http://npa-gov.garweb.ru:8080/public/default.asp?no=86941>. For a discussion of the CWC and the BTWC in 2004 see chapter 13 in this volume.

[66] 'Zayavleniya dlya pressy po okonchanii sammita 'Bol'shoi vos'merki' [Comments to the press after the G8 summit], Internet site of the President of Russia, 27 June 2002 (in Russian), <http://www.kremlin.ru/appears/2002/06/27/2300_type63380_29029.shtml>.

[67] G8, Sea Island Summit 2004, 'Consolidated report of Global Partnership projects', Summit documents 9 June 2004, URL <http://www.g8usa.gov/pdfs/GPConsolidatedReportofGPProjectsJune2004.pdf>.

[68] 'Na obekte UKhO v p. Gorny Saratovskoi oblasti unichtozhen iprit', [Yperite is destroyed at chemical weapon destruction facility in Gorny settlement, Saratov oblast], *IA Regnum*, 16 Nov. 2003 (in

Russia is working to meet the second deadline—the elimination of 20 per cent of its stockpile by 29 April 2007.[69] Under its CWC obligations, Russia should go on to eliminate 45 per cent of its stockpile by 2009 and its entire stockpile by 2012. By the end of November 2004, over 740 agent tonnes had been eliminated at the facility in Gorny.[70]

The extent to which foreign assistance might support the Russian destruction programme continued to be debated.[71] Russia has reportedly signed 28 intergovernmental and interdepartmental agreements with international donors which could result in just over $1 billion in funding being provided by 2009.[72] In 2004 Victor Kholstov, Deputy Chief of the Federal Agency for Industry, estimated that foreign destruction assistance had accounted for approximately 7 per cent ($217 million) of the total amount of money spent on chemical weapon destruction in Russia.[73] In 2004 further international assistance for destruction of Russia's stockpile was agreed to be provided by Canada, the Czech Republic, the EU, Finland, France, Germany, Italy, Japan, New Zealand, the Netherlands, Norway, Poland, Sweden, Switzerland, the UK and the USA.[74]

Russia has set a goal of dismantling all its *decommissioned submarines* by 2010.[75] Since the Soviet Union commissioned its first nuclear submarine in 1958, around 250 have been built. At the end of 2004, 83 Russian nuclear-powered submarines still await dismantlement—41 in the Northern Fleet and 42 in the Pacific Fleet. Russian facilities have the capacity to dismantle about 20 submarines annually but the funds to dismantle only about 15. To achieve

Russian), URL <http://www.regnum.ru/expnews/180620.html>. The declared Russian stockpile is held in the 7 storage sites identified in table 16.1.

[69] 'V 2005 godu predusmatrivaetsya uvelichenie finansirovaniya programmy po stroitel'stvu obektov dlya unichtozheniya khimoruzhiya' [Increase in funding for the construction of chemical weapon destruction facilities is envisaged for 2005], *RIA Novosti* 10 Nov. 2004 (in Russian), URL <http://www.rian.ru/rian/intro.cfm?nws_id=729450>; and Organisation for the Prohibition of Chemical Weapons (OPCW), 'Decision: extension of the intermediate and final deadlines for the destruction by the Russian Federation of its Category 1 chemical weapons', OPCW document C-8/DEC.13, 24 Oct. 2003.

[70] 'Unichtozhenie pod kontrolem' [Destruction under control], *Nezavisimoe Voennoe Obozrenie*. 12 Nov. 2004 (in Russian), URL <http://nvo.ng.ru/printed/forces/2004-11-12/1_korotko.html>; and 'Statement by Anatoliy Antonov: Head of the Russian delegation to the 9th Session of the Conference of the States Parties to the Convention on the Prohibition of Chemical Weapons', The Hague, the Netherlands, 29 Nov.–2 Dec. 2004, p. 1.

[71] On problems associated with Russia's implementation of the CWC see Hart, J. and Miller, C. D. (eds), *Chemical Weapon Destruction in Russia: Political, Legal and Technical Aspects*, SIPRI Chemical and Biological Warfare Studies no. 17 (Oxford University Press: Oxford, 1998); and Foreign Intelligence Service of Russia, *Problemy Ratifikatsii Konventsii o Zapreshchenii i Unichtozhenii Khimicheskogo Oruzhiya (otkrity doklad SVR za 1996 god)* [Problems of ratification of the convention on the prohibition and destruction of chemical weapons (open report of the SVR for 1996)] (SVR: Moscow, 1996), URL <http://svr.gov.ru/material/1-0.html>.

[72] 'Some $217 million . . .', Agentstvo Voyennykh Novostey [Military News Agency] (Moscow), 10 Nov. 2004, in 'Russia: $217 million in foreign aid spent for destruction of chemical weapons', Foreign Broadcast Information Service, *Daily Report–Central Eurasia (FBIS-SOV)*, FBIS-SOV-2004-1110, 10 Nov. 2004.

[73] 'Some $217 million . . .' (note 72).

[74] 'Statement by Anatoliy Antonov' (note 70).

[75] 'Rossiya zavershit k 2010 g utilizatsiyu spisannikh atomnikh podlodok' [Russia will complete the dismantlement of decommissioned nuclear submarines by 2010], *Regions Ru*, 27 Apr. 2004 (in Russian), URL <http://www.regions.ru/article/any/id/1493029.html>.

its own deadline, Russia should dismantle 15–18 vessels each year. In 2004 Russia dismantled 17 nuclear submarines, 5 using funds provided by foreign donors in the framework of Global Partnership.[76]

Nuclear-powered submarines must be dismantled in a manner that is safe and secure from an environmental perspective. Three main challenges have been identified in this respect: (*a*) the safe transportation of a retired submarine to the dismantling shipyard; (*b*) insufficient funding in the Russian budget; and (*c*) the 'clean-up' of nuclear sites (ex-naval bases) to prepare them for alternative use.[77] The submarines do not present a proliferation risk and the process of dismantling them must not create new proliferation risks or vulnerabilities that could be exploited by terrorist groups. In order to address these problems systematically, the Russian Government published a 'strategic master-plan on submarine dismantlement' in 2004.[78] In a number of cases donor countries have identified obstacles to safe, secure and proliferation resistant dismantlement. The masterplan was designed to integrate and coordinate the efforts of all donors and the Russian authorities, and to systematically assess all programmes and projects that still need to be implemented in order to complete the process of dismantlement. Rosatom has estimated that the total cost of the submarine dismantlement programme will be $4 billion (€3 billion).[79] Another 17 submarines are scheduled to be dismantled in 2005.[80]

VI. Conclusions

International non-proliferation and disarmament assistance continues to be a critical element in helping states to implement their disarmament obligations. In addition, INDA is increasingly establishing itself as a significant element of the wider anti-proliferation effort. The geographic and functional scope of assistance is expanding and this expansion is likely to continue for the foreseeable future. At present, the most important initiatives continue to be bilateral. However, some of the programmes currently being evaluated—such as

[76] Rybachenkov, V., 'Prospects for Russian Nuclear-powered submarine dismantlement', Presentation to the conference 'Prospects for Russian nuclear-powered submarine dismantlement: a discussion of current programs, progress and challenges', Washington, DC, 27 Jan. 2005.

[77] IAEA, Minutes of the 18th CEG [IAEA Contact Expert Group for International Radioactive Waste Projects in the Russian Federation] Meeting, Moscow, 13–15 Oct. 2004, URL <http://www.iaea.org/OurWork/ST/NE/NEFW/CEG/documents/Minutes18fin.pdf>.

[78] Northern Dimension Environmental Partnership (NDEP), 'Nuclear Operating Committee discusses Strategic Master Plan', NDEP News, no. 6 (Dec. 2004), p. 2, URL <http://www.ndep.org/files/uploaded/NDEP%20News%20issue%206.pdf>. For background on nuclear submarine dismantlement see Chuen, C., 'Russian submarine dismantlement issues', Monterey Institute of International Studies, Center for Nonproliferation Studies, 3 Dec. 2003, URL <http://cns.miis.edu/pubs/week/031203.htm>.

[79] Obshchestvennosti garantiriyut otkrytost vsekh meropriyatii Strategicheskogo master-plana po kompleksnoi utilizatsii APL [The openness of the Strategic master-plan on submarine dismantlement is guaranteed to the public], Official Rosatom nuclear submarine Internet site, 1 Dec. 2004 (in Russian), URL <http://www.a-submarine.ru/News/Main/view?id=9599&idChannel=105>.

[80] 'Podderzhka ot bol'shoi vos'merki' [Assistance from the G8], *Zvezdochka* [local newspaper of Severodvinsk, Arkhangelsk region], 26 Oct. 2004 (in Russian), available at URL <http://www.shipbuilding.ru/rus/news/russian/2004/10/26/magate/print.phtml>.

the development of a comprehensive approach to securing powerful radiological sources—are too costly and complicated to be undertaken on a bilateral basis. As new countries become engaged in the overall effort, questions continue to arise about how the delivery of assistance can be organized, financed and coordinated in the most effective manner. The relationship between bilateral efforts, informal coordination mechanisms and the activities of international organizations, in particular the IAEA, is continuing to develop in this field.

The anticipated expansion in the geographic and functional scope of INDA may bring forward the 'moment of truth' for a number of long-standing projects, such as plutonium disposition and scientist redirection projects, which have so far proved impossible to implement in spite of the fact that their clear non-proliferation significance is clear.