Proliferation Challenges in Central Asia and the Need for International Cooperation

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Abstract

International cooperation on WMD nonproliferation in Central Asia must continue. In addition to unsolved problems related from the Soviet era, the region faces new challenges and threats, such as illicit trafficking in WMD materials, technologies, equipment, and delivery systems, as well as the threat of WMD terrorism. In addition, some Central Asian countries plan to develop their national nuclear industries. Future cooperation on WMD nonproliferation in Central Asia should focus on improving nuclear security and safety systems at nuclear facilities, continued engagement on the Semipalatinsk test site, countering radiological security and safety threats, enhancing export controls and border security, encouraging regional cooperation, strengthening cybersecurity, and promoting nuclear science cooperation and WMD nonproliferation education.

Keywords

Central Asia – weapons of mass destruction – nonproliferation – security – international cooperation

International cooperation is needed to assure the nonproliferation of weapons of mass destruction (WMD) in Central Asia. The region still faces many unresolved problems from Soviet-era WMD development programs.[1] The Central

1 K. Butler, "Weapons of Mass Destruction in Central Asia," Nuclear Threat Initiative,October 1, 2002, http://www.nti.org/analysis/articles/weapons-mass-destruction-central -asia/ (accessed May 12, 2014).

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Asian states played an important role in the Soviet military-industrial com- plex. When the Soviet Union collapsed, the successor states inherited uranium mining and milling facilities, nuclear research reactors fuelled with highly enriched uranium, WMD development and production facilities, and test sites for nuclear, biological, and chemical weapons and their means of delivery. Independent Kazakhstan became home to the fourth-largest nuclear arsenal in the world, with 1,410 nuclear warheads deployed on missiles and heavy bombers.2

With significant disarmament and nonproliferation assistance from the United States and other donor states, the Central Asian countries transferred, dismantled, and eliminated much of the WMD-related weapons systems, facilities, and infrastructure left on their territory; signed and ratified major international nonproliferation treaties; and became active proponents of the international nonproliferation regime. The recent decision to expand the geographic scope of the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction program by accepting Kazakhstan as the 24th member and a recipient country is a good sign that the international community recognizes the continuous need for nonproliferation cooperation.3

However, the WMD materials remaining in the region still need to be properly safeguarded from theft or diversion. The regional states also confront com- mon problems related to the health and environmental damage caused by the Soviet WMD programs. Furthermore, the region faces new challenges and threats, such as illicit trafficking in nuclear and other WMD materials, technologies, equipment, and delivery systems, as well as the threat of WMD terror- ism. These threats are exacerbated by the region's porous borders, lack of interstate cooperation, transnational organized crime, weak law-enforcement capabilities, endemic corruption, and other internal security challenges.4

Given the above considerations, the main areas of future cooperation on WMD nonproliferation in Central Asia should include: improving nuclear security and safety systems at nuclear infrastructure facilities, continued engagement on the former Semipalatinsk nuclear test site, countering radiological security and safety threats, enhancing export controls and border security,

2 Nuclear Threat Initiative, *Country Profiles: Kazakhstan*, http://www.nti.org/country-profiles/kazakhstan/ (accessed May 12, 2014).

3 T. Nurmagambetov, "Kazakhstan joins G8 Global Partnership against WMD," *Trend*, February 23, 2012, http://en.trend.az/regions/casia/kazakhstan/1995697.html (accessed May 12, 2014).

4 D. Aben, "Tsentral'naya Aziya i ugrozy rasprostraneniya oruzhiya massovogo unichtozheniya," in *Bezopasnost' i sotrudnichestvo v Tsentral'noi Azii v XXI veke: tseli, prioritety i vyzovy* (Astana: Institute for Modern Research at the L.N. Gumilev Eurasian National University, 2010), 81–88.

encouraging more active regional interaction in the framework of the Central Asian Nuclear-Weapon-Free Zone (CANWFZ), strengthening cybersecurity measures in the nuclear sector, facilitating joint nuclear research projects, and promoting education programs in the area of WMD nonproliferation.

Improving Security and Safety at Nuclear Facilities

The partly natural, partly man-made disaster at the Fukushima nuclear power plant in Japan in March 2011 renewed international debate about new approaches to various aspects of nuclear safety and security.5 The debate concerns not only the outlook for the development of the global nuclear energy industry and the use of safer and more secure technologies, but also ways to improve nuclear safety and security standards, increase nuclear materials security, upgrade rapid response systems, and strengthen the role of the International Atomic Energy Agency (IAEA) and national regulatory authorities.

As part of the Nunn-Lugar Cooperative Threat Reduction Program, multiple projects have been implemented in the Central Asian states in such areas as technological upgrades and improving nuclear and radioactive materials protection, control, and accounting systems, as well as strengthening security measures at nuclear industry facilities and nuclear installations.6 It would seem that all these improvements, along with increased protection of nuclear facilities by law-enforcement agencies, have minimized external threats, including the threat of a direct attack by terrorists. However, technical weaknesses in the safety and security systems of nuclear facilities, as well as shortcomings in personnel training and emergency response procedures, make these facilities vulnerable not only to natural disasters and emergencies, but also to break ins, theft, and sabotage.7 Even if a facility is reliably guarded and equipped with advanced physical protection systems, human error or greed can lead to security breaches.

Experts are now starting to realize the many links connecting nuclear security and safety and the need to improve the security culture. There is also an

5 See, for example, D. Kim and J. Kang, "Where Nuclear Safety and Security Meet," *Bulletin of the Atomic Scientists*, 68, no. 1 (January/February 2012): 86–93.

6 Embassy of the Republic of Kazakhstan and the Nuclear Threat Initiative, *Kazakhstan: Reducing Nuclear Dangers, Increasing Global Security* (Washington, dc, 2004).

7 M. Bunn, "The Threat of Nuclear Terrorism: What's New? What's True?" presentation at us-Korea Institute conference, Seoul, November 3, 2011, http://uskoreainstitute.org/wp-content/uploads/2012/02/Nuclear-Terrorism-Threat-Briefing-2011-Eng.pdf (accessed May 12, 2014).

obvious need to further modernize security and physical protection systems at nuclear installations, as well as nuclear-related research centers and industrial facilities in the Central Asian states. Such modernization must include not only the introduction of more advanced equipment, but also increasing the resilience of nuclear facilities to emergencies and attacks by terrorists, as well as augmenting the capability of security forces with training and equipment.

With the relevant governments' consent, representatives of international partners, in cooperation with the national nuclear security and safety agencies, could conduct security audits at existing nuclear facilities in order to estimate the scale and the cost of the required modernization projects. Such inspections must include a comprehensive analysis of the applied procedures, technology, structures, and equipment in order to identify potential loopholes and vulnerabilities, and the development of preventive measures to increase the level of nuclear security and safety. As part of these activities, an independent international certification of Kazakhstan's nuclear power plant (NPP) construction project could be organized to make sure that it meets all nuclear safety and security standards. International partners could also provide assistance to the Central Asian states by conducting regular training exercises to improve coordination among personnel in case of an incident at a nuclear facility.

To facilitate improvements in the level of security culture in the nuclear industry and to promote interstate sharing of best practices, international partners could help the Central Asian states establish relevant multilateral education programs covering all aspects of nuclear security. It would be helpful, for instance, to set up regional centers of nuclear security excellence that would offer introductory and advanced professional development courses for nuclear security personnel working at nuclear industry facilities and officials from the national regulatory agencies. As a first step, foreign partners could assist in establishing an international nuclear security training center in Kazakhstan. The proposal was put forward by Kazakh President Nursultan Nazarbaev in April 2010 during the first Nuclear Security Summit in Washington, DC.8 In the longer term, the regional states should work together to adopt more comprehensive, robust, and sustainable approaches to fostering a security culture that will encompass not just the nuclear domain, but also chemical, biological, and radiological threats and responses.

8 "Highlights of National Commitments, Nuclear Security Summit, April 12–13, 2010," https://www.nss2014.com/sites/default/files/documents/13.highlights_of_national_commitments_nss.pdf (accessed May 13, 2014).

Continued International Engagement at Semipalatinsk

At the Nuclear Security Summit in Seoul in April 2012 the presidents of Kazakhstan, Russia, and the United States made a joint statement to the effect that efforts to eliminate the consequences of Soviet-era nuclear tests at the Semipalatinsk test site were almost complete.9 It is certainly true that multilateral cooperation programs have carried out an unprecedented amount of work in the Semipalatinsk area to dismantle nuclear weapons testing infrastructure and to increase the level of safety and security of the facilities under the National Nuclear Center of the Republic of Kazakhstan.

At the same time, there is a clear and pressing need for continued international cooperation at the former test site. First and foremost, a number of sensitive facilities still remain there; strengthening their safety and security is in the interests of not just Kazakhstan, but its international partners as well. One of these facilities is the Baikal-1 site, which is currently used as a long-term storage for a significant quantity of nuclear materials and waste generated by the now decommissioned BN-350 fast breeder reactor in Aktau.10 Furthermore, Kazakhstan plans to use the facility as the core of the proposed new national center for radioactive waste processing and storage.11 It is also important to maintain a proper level of security at the sealed tunnels and shafts previously used for nuclear weapons testing.

The Kazakh National Nuclear Center is also currently working on a land rehabilitation initiative at the former Semipalatinsk test site. Based on the findings of a comprehensive radiological study, the Center believes that up to 95% of the land occupied by the former test site can be returned to economic use in several phases by 2020, with the exception of severely polluted areas and the territories occupied by nuclear facilities still in use.12 Taking into account

9 "Joint Statement of the Presidents of the Republic of Kazakhstan, the Russian Federation, and the United States of America Regarding the Trilateral Cooperation at the Former Semipalatinsk Test Site," https://www.nss2014.com/sites/default/files/documents/trilateral_cooperation_at_the_former_semipalatinsk_test_site.pdf (accessed May 13, 2014).

10 "nnsa Secures 775 Nuclear Weapons Worth of Weapons-Grade Nuclear Material from bn-350 Fast Reactor in Kazakhstan," National Nuclear Security Administration Press Release, November 18, 2010, http://nnsa.energy.gov/mediaroom/pressreleases/bn35011.18.10 (accessed May 13, 2014).

11 "Ob utverzhdenii Programmy razvitiya atomnoi otrasli v Respublike Kazakhstan na 2011– 2014 gg. s perspektivoi razvitiya do 2020 g.," Republic of Kazakhstan Government Decree No. 728, June 29, 2011, available via http://adilet.zan.kz/rus/docs/P1100000728, (accessed May 13, 2014).

12 O. Dairova, "Semipalatinsk reabilitiruyut," *Kursiv* August 5, 2010.

the planned scope of work, it would probably be expedient to consider the participation of international experts in implementing this initiative. In particular, they could provide their assistance in assessing long-term public health and environmental consequences of brown-field site reclamation.

Soviet nuclear weapons tests at Semipalatinsk inflicted serious damage on the health of the local population residing around the test site and left significant areas of agricultural lands in Kazakhstan radioactively contaminated. Recognizing the grave consequences of nuclear testing, between 1997 and 2009 the UN General Assembly passed six separate resolutions concerning the provision of international assistance to Kazakhstan for Semipalatinsk.13

Kazakhstan's international partners could play a role in implementing rehabilitation programs to help ameliorate the region's serious social, economic, and environmental challenges. They could provide financial and technical assistance and expertise in conducting systematic, comprehensive studies of public health and the environmental situation, analyze soil and water samples taken throughout the Semipalatinsk area, and implement a system of regular monitoring of radiation levels at the former nuclear weapons test site.

Countering Radiological Security and Safety Threats

In recent years radiological security and safety issues have come to be regarded as part of the general nuclear security agenda. Given the growing risks and threats associated with possible radiation accidents, lax security at radiation sources, and the danger of their use by terrorists, radiological security is becoming a subject of growing international concern.

After the breakup of the Soviet Union, the Central Asian governments lost control of some of the radiation sources used for military, industrial, medical, and research purposes. These sources contain highly radioactive materials, including cesium-137, strontium-90, cobalt-60, and iridium-192. According to some reports, a certain amount of radioactive sources and materials was buried in Central Asia's numerous uranium tailings and other radioactive waste storage sites. Unlike the nuclear facilities, these tailings and waste storage sites

13 The proposals are known as "International Cooperation and Coordination of Efforts to Rehabilitate the Population, Environment, and Economic Development of the Semipalatinsk Region of Kazakhstan." M. Sharipov, "Kazakhstan v oon: aktivnyi i otvetstvennyi uchastnik," *Kazakhstanskaya pravda*, March 3, 2012.

are not properly guarded and protected.14 If highly radioactive materials from these sites fall into the wrong hands, they could be used to build a radiological dispersal device or a so-called dirty bomb. That is one of the region's most serious security risks related to WMD terrorism.15 Dirty bombs do not have the capability to inflict mass casualties or serious destruction. But they can cause radioactive contamination of large territories, leading to public health risks and lost economic opportunities. An attack using a radiological dispersal device would also have a tremendous psychological impact on the population in and around the affected areas. In addition, radical opponents of nuclear energy development could cite the risk of a terrorist attack using radioactive materials to mobilize public opinion against future nuclear projects.

The risk of a dirty bomb attack is fairly high, due to the relatively easy availability of radioactive materials and the simplicity of the dirty bomb design. Furthermore, sources of radiation can be very small and compact, making them easy to transport and smuggle across the borders. That necessitates close cooperation among the Central Asian states and international partners in ensuring the timely detection and interdiction of radioactive contraband in the region. On the national level, the relevant government agencies must take steps toward further improvement of the existing protection, control, and accounting measures for the radiation sources that are widely used in many legitimate areas, including healthcare, research, industry, and agriculture. The governments in Central Asia must also introduce harsher penalties for theft or improper use of radiation sources and incorporate measures outlined in the International Convention for the Suppression of Acts of Nuclear Terrorism into their national legislation.

Interested foreign states could assist the Central Asian governments in strengthening the legislative and regulatory framework for the registration and use of radioactive materials, including the introduction of modern registration and accounting systems that would track all radiation sources throughout their operational lifetime. International assistance would also be useful in tak- ing inventory and issuing registration certificates to radioactive sources and materials; organizing regular operations to locate, secure, and dispose of

14 "Kazakhstan Hosts Seminar on Search for and Security of Radioactive Sources; Inventory of Radiation Sources to Be Held in Kazakhstan," *nis Export Control Observer*, no. 28 (June 2005): 3; "Kazakhstan and Kyrgyzstan Conduct Inventory of Radioactive Sources and Reinforce Controls on Such Material," *International nis Export Control Observer*, no. 3 (December 2005/January 2006): 9–10.

15 I. Plugatarev, "Gryaznaya bomba iz tsentral'noaziatskogo urana," *Nezavisimoye voennoye obozreniye*, September 21, 2007.

orphan or decommissioned sources; building special storage facilities; and upgrading physical protection systems at the existing sites. Assistance from international partners would be hugely important in equipping border crossings and other strategic locations with radiation detectors in order to prevent the smuggling of highly radioactive sources and materials.

There is also another dimension of radiological threats and risks in the region. The Central Asian countries face serious health and environmental dangers from abandoned and unprotected uranium mines, uranium tailings, and radioactive waste storage facilities. Due to the proximity of these sites to densely populated areas, the primary concern is that potential natural or intentional disasters or other emergencies involving them could critically affect the environment, economy, and public health of the entire region. Efforts of the international community to prevent health and environmental hazards have so far been undermined by the inadequacy of allocated technical and financial resources. Therefore, promoting cooperation among the regional states and international stakeholders in addressing this particular problem resulting from the Soviet nuclear weapon program is of utmost importance.16 The December 2013 approval by the un General Assembly of Resolution 68/218, "The Role of the International Community in Averting the Radiation Threat in Central Asia," submitted by Kyrgyzstan and supported by a number of other countries, including Kazakhstan, Tajikistan, and Turkmenistan, can be regarded as the first significant step in this direction.17

Enhancing Export Controls and Border Security

Another potential proliferation threat is the possibility of Central Asian countries being used as transit routes for nuclear and other WMD-related materials, technologies, and equipment. The trafficking routes can be largely the same as the ones used to smuggle drugs out of Afghanistan through Eurasia to Europe. But illicit activities can also be disguised as legal commercial operations, with sensitive equipment and technologies, dual-use products, and fissile materials being purchased by front companies or brokerages. To date, there have been no

16 P. Humphrey and M. Sevcik, "Uranium Tailings in Central Asia: The Case of the Kyrgyz Republic," October 16, 2009, http://www.nti.org/analysis/articles/uranium-tailings-kyrgyz-republic/ (accessed May 15, 2014).

17 un General Assembly Resolution 68/218, "The Role of the International Community in Averting the Radiation Threat in Central Asia," December 20, 2013, http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/68/218 (accessed May 15, 2014).

confirmed cases of highly enriched uranium or weapons-grade plutonium being smuggled via Central Asia. However, the regional authorities have registered numerous cases where cargos containing radiation sources or radioactive scrap metal were interdicted.18 Paradoxically, the Eurasian Economic Union comprised of Belarus, Kazakhstan, and Russia, while facilitating free trade of goods across borders, could also create opportunities for increased transnational crime, including trafficking activities, by removing customs controls on the Union's internal borders.

Although much progress has been achieved in securing and guarding the national borders in the region, the Central Asian states must actively cooper- ate with each other and with international partners if they are to be able to respond effectively to all these threats. It would be appropriate and practical for international partners to build on the existing cooperation experience accumulated during the implementation of US- and EU-initiated assistance programs, such as Export Control and Border Security, Second Line of Defense, and Border Management in Central Asia.

The region's law enforcement, intelligence, and security services should pursue more active cooperation and information exchange with their foreign counterparts. The Central Asian countries should also continue the practice of joint anti-terrorism exercises not only in the frameworks of the Collective Security Treaty Organization (CSTO) and Shanghai Cooperation Organization (SCO), but also on bilateral and regional bases. The Central Asian states would benefit from greater assistance in implementing UN Security Council Resolution 1540, which aims to prevent WMDs from falling into the hands of nonstate actors.19 Closer cooperation is also required under the Global Initiative to Combat Nuclear Terrorism, which is spearheaded by Russia and the United States.

Encouraging More Active Regional Interaction in the CANWFZ Framework

Nuclear-weapon-free zones are an important element of the international nuclear nonproliferation regime. They help to achieve the long-term goal of a

18 C. J. Hanley, "Central Asia is a Hotbed for Radioactive Smuggling," *Deseret News*, June 15, 2002.

19 Nuclear Threat Initiative, *Central Asia and the Caucasus 1540 Reporting*, August 21, 2012, http://www.nti.org/analysis/reports/central-asia-and-caucasus-1540-reporting/ (accessed May 15, 2014).

world free of nuclear weapons. On September 6, 2006, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, and Turkmenistan established the Central Asian Nuclear Weapons Free Zone (CANWFZ) by signing a treaty in Semipalatinsk. They seek to promote global nuclear disarmament, strengthen regional and international security, and step up cooperation in resolving the region's environmental issues.20 Nevertheless, the potential of the CANWFZ has yet to be fully utilized due to the lack of practical implementation mechanisms and insufficient cooperation among the Central Asian states within the CANWFZ framework.

Of the five nuclear-weapon states, only Russia and China expressed their support for the treaty when it was signed. The other three (the United States, Britain, and France) voiced concerns over a number of the treaty provisions and refused to sign the protocol to the treaty.21 The Central Asian states repeatedly expressed their readiness to pursue constructive dialogue with the nuclear-weapon states and discuss all contentious issues. As a result, a series of consultations was held between the regional countries and the five nuclear- weapon states. The experience of other NFWZs demonstrates that the signing and ratification of the protocols can sometimes take decades. Years of multilateral negotiations were finalized on May 6, 2014, when the five nuclear-weapon states signed the protocol to the CANWFZ treaty in New York, on the margins of the meeting of the Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons.22

The CANWFZ, which is the only regional security initiative that includes every single country in the Central Asian region, is tasked with consolidating and strengthening regional cooperation on nuclear nonproliferation and disarmament. In and of itself, the establishment of the CANWFZ or its recognition by the international community cannot achieve this objective. What is required is a regional mechanism that would make full use of the CANWFZ's potential to counter proliferation challenges and threats. Under the terms of the Treaty of Semipalatinsk, the member states have agreed to hold meetings and consultations to discuss various issues related to the implementation of the treaty. So far, however, these meetings have been few and far between.

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20 "Treaty on a Nuclear-Weapon-Free Zone in Central Asia (CANWFZ)," http://disarmament.un.org/treaties/t/CANWFZ/text (accessed May 15, 2014).

21 N. Kutnayeva and I. Akhtamzyan, "O podpisanii Dogovora o zone, svobodnoi ot yader- nogo oruzhiya, v Tsentral'noi Azii," *Indeks bezopasnosti*, 13, no. 1 (2007): 131–136.

22 us Department of State, "United States Signs Protocol to Central Asian Nuclear-Weapon-Free Zone Treaty," May 6, 2014, http://www.state.gov/r/pa/prs/ps/2014/05/225681.htm (accessed May 15, 2014).

This is why all interested parties—especially Russia and the United States—should consider the possibility of providing assistance to the CANWFZ member states in establishing a standing institutional body that would coordinate regional cooperation on pressing issues of nuclear nonproliferation and disarmament. Such a body could also be tasked with monitoring the states' compliance with the provisions of the treaty, and its organizational and technical verification and monitoring measures would augment the IAEA safeguards system and help establish a climate of mutual trust among the CANWFZ members. Since the Treaty of Semipalatinsk does not contain any information- exchange provisions, such exchanges could be conducted in the framework of this new institutional mechanism. A new regional structure would also facilitate closer cooperation among the Central Asian states on peaceful uses of nuclear energy.

Strengthening Cybersecurity in the Nuclear Sector

Cybersecurity issues are now coming to the fore in the context of international and national security. The growing number of cyberattacks against government agencies, diplomatic missions, companies, and research institutions all over the world emphasizes the urgent need for improved protection of information infrastructure and resources from criminals, hackers, and other attackers trying to gain unauthorized access. All of this fully applies to Central Asia as well.

Cybersecurity in the nuclear sector is especially important due to this field's obvious sensitivity and the potential dangers of the loss of integrity of IT systems at nuclear facilities. Targeted cyberattacks by foreign governments or nonstate actors can also lead to the leakage of sensitive information, technologies, and expertise required for the manufacture or use of nuclear materials for malicious purposes. Due to the rapid pace of it, existing national security standards and practices often lag behind the constantly evolving cyberthreats.

This is why there should be a greater focus on cybersecurity in Kazakhstan, which is pursuing ambitious nuclear industry development plans, including the NPP construction. Kazakhstan's vulnerabilities are well known; the country had one of the highest numbers of computers infected by the Red October cyberespionage malware, which was discovered by the Kaspersky Lab, a cybersecurity firm, in January 2013.23 International assistance to Kazakhstan in the

23 Kaspersky Lab Expert, "The "Red October" Campaign—An Advanced Cyber Espionage Network Targeting Diplomatic and Government Agencies," January 14, 2013, http://www.securelist.com/en/blog/785/The_Red_October_Campaign_An_Advanced_Cyber

search for solutions to cybersecurity risks and challenges could help the country to create an effective system of protecting sensitive information and technologies and to ensure the reliability and resilience of its nuclear industry's IT systems in the face of various cyberthreats.

Reducing the vulnerability of nuclear industry facilities requires, first and foremost, an in-depth analysis of Kazakhstan's existing body of laws and regulations related to cybersecurity and of the relevant procedures pertaining to the protection of nuclear facilities. Involving reputable international specialists and scientists in this process would help develop proposals on improving the country's legislation and procedures, identify existing and potential cyber- security threats, and develop effective countermeasures, with an emphasis on proper information protection. The next step would be to hold comprehensive inspections at nuclear infrastructure facilities to identify vulnerabilities to attempted unauthorized access or acts of it sabotage. One of the critically important issues that requires close attention is the choice of IT equipment and software for nuclear infrastructure facilities. Cooperation with international partners would help Kazakhstan to introduce required certification and testing procedures for IT equipment and software, and to introduce a set of organizational, legal, technical, and technological measures to make sure that computer networks are properly protected.

The international community could also help Kazakhstan and other Central Asian states in setting up special cyberunits within the national security agencies, tasked with countering attacks in cyberspace. In addition, individual donor countries could look into the possibility of offering training courses at their universities and colleges to address the shortage of cybersecurity specialists the Central Asian states are currently facing in various industries, including the nuclear sector.

Facilitating Joint Nuclear Research Projects

As part of the Nunn-Lugar Program, hundreds of Central Asian scientists formerly involved in Soviet WMD programs have been able to apply their skills and expertise in civilian areas with the help of the International Science and Technology Center (ISTC).24 Former weapons scientists have been given

_Espionage_Network_Targeting_Diplomatic_and_Government_Agencies (accessed May15, 2014).

24 "ISTC Fact Sheet," http://www.ISTC.ru/ISTC/ISTC.nsf/va_WebPages/ISTCFactSheetEng (accessed May 17, 2014).

support to conduct fundamental and applied R&D and provided with opportunities for integration into the global research community by participating in international research projects.

The transfer of the ISTC headquarters to Kazakhstan after the Russian decision to quit the organization has posed certain organizational and financial difficulties. It has also raised doubts about the completion of the ongoing R&D programs and projects and about the launch of new ones.25 Nevertheless, the research communities of the Central Asian states want to continue their long- standing and productive cooperation with their Russian colleagues. They hope that a new mechanism will be established to enable renewed cooperation between Russia and the other participating countries in the ISTC framework.

Kazakhstan makes a particular emphasis on fundamental and applied research into peaceful uses of nuclear energy, including for the purpose of progressive development of a civilian nuclear industry. Ongoing projects focus on creating new types of nuclear reactors, developing high-precision and high- tech equipment for nuclear facilities, increasing the security and safety of nuclear power installations, designing auxiliary buildings and facilities for the nuclear sector, testing new types of nuclear fuel, and addressing the issue of radioactive waste disposal. Accordingly, continued and increasingly close science and technology cooperation with international partners would enable the Central Asian research organizations to significantly expand the area and scale of their theoretical and applied research into peaceful uses of nuclear energy.

Interested parties could draw up a list of priority R&D projects to be jointly financed and involving research centers in Central Asia and the partner countries, focusing on such areas as nuclear physics, radiation material studies, seismology, nuclear energy safety, and radiological environmental studies and monitoring. It is worth emphasizing that partnership with Russia is particularly important for the success of the program to modernize Kazakhstan's research reactors. The program includes the replacement of devices, instruments, and reactor components that have reached the end of their service life. Since Kazakhstan is interested in setting up new high-tech industrial facilities, it would make sense to consider the possibility of involving companies from Russia, the United States, and other countries in the work of the Nuclear Technology Park in the town of Kurchatov. This is why the transfer of the ISTC headquarters to Kazakhstan can be viewed as an important step in promoting

25 A. Cheban, "Mezhdunarodnye mekhanizmy protivodeistviya yadernomu raspros- traneniyu i interesy Rossii: primery Global'nogo partnerstva i mntts," *Indeks bezopas- nosti*, 18, no. 3–4 (2012): 141–168.

cooperation between the international community and Central Asia, a step that will help to strengthen the science and technological capability of the region's countries.

Another potential area of nuclear cooperation is nuclear medicine. International partners should consider the possibility of providing assistance in the completion of an innovative project to set up the Nuclear Medicine and Biophysics Center in Kazakhstan, to be followed by similar centers in other Central Asian countries. Such centers are required because countries in the region are lagging far behind in the application of nuclear medicine for the diagnostics and treatment of socially significant diseases. Nuclear medicine centers could cooperate with relevant research and pro- duction organizations in Russia and the United States in the development, manufacture, and distribution of radiopharmaceuticals for diagnostics and specialized treatment of cancer; in the introduction of innovative diagnostic and treatment methods; and in the training of medical and technicalspecialists.

One of the priority and long-term areas of cooperation for international partners would be to assist in the training of specialists for those Central Asian states that plan to develop their own uranium and nuclear energy industries. The region's countries still have a pool of qualified specialists who were trained in Soviet times. But these specialists are now approaching retirement age. With few young professionals available to replace them, it will be difficult to implement the existing nuclear industry development plans. That is why it is very important to improve the system of personnel training and retraining in the relevant areas and to offer additional training abroad.

Promoting WMD Nonproliferation Education

Amid the growing risks of proliferation of WMDs, their delivery systems, related materials, technologies and equipment, the international community is facing an urgent need to step up education programs focusing on disarmament, non-proliferation, export controls, and nuclear security. Despite the heritage of the Soviet weapons programs and emerging WMD proliferation threats, the Central Asian states do not treat education in this area as an important priority. Their secondary and higher education institutions do not offer any relevant courses. The importance of education in the area of disarmament and nonproliferation has been recognized at the highest international level. UN General Assembly Resolution 57/60, which was passed by acclamation on November 22, 2002,

emphasizes the need for concrete steps by the un member states to promote this area of education.26

International partners should thus consider the possibility of cooperating with the Central Asian governments to introduce education programs and projects focused on disarmament, nonproliferation, export controls, and nuclear security. Such cooperation could include efforts to organize specialized training courses and programs for officials and specialists working for the relevant government agencies, nuclear industry facilities, and research centers, as well as for journalists who cover these issues. It is also necessary to provide assistance in developing and gradually incorporating in the curricula of Central Asian universities relevant disciplines focusing on the nuclear non- proliferation regime, nuclear weapons reduction, export controls, and nuclear security.

One more important aspect of education activities is working with public opinion; this is currently very low on the list of the Central Asian governments' priorities. Evidence suggests that it is very easy to form negative perceptions of any nuclear-related initiative among the general public in the region, primarily due to a high level of radiophobia. In the late 1990s, activists of nongovernmental organizations and environmental movements succeeded in mobilizing the public against the proposed imports of nuclear and radioactive waste to Kazakhstan for reprocessing and burial. Similarly, Kazakhstan's initiatives to return lands of the former Semipalatinsk nuclear test site to economic use, to host an international nuclear fuel bank, and to build a NPP received very negative coverage.27 German and Japanese experience shows that such anti- nuclear campaigns can play an important role in the social and political life of the country and even affect election outcomes. There is a potential danger of opposition figures in Kazakhstan and elsewhere using anti-nuclear rhetoric for their own political ends. Under possible difficult socioeconomic conditions, such tactics could create fertile ground for further increases in anti- government sentiment among the general public.

Therefore, education programs focusing on WMD nonproliferation are becoming an important element in ensuring information security in the Central Asian states. Taking into account existing experience in this area, international partners could provide countries in the region with necessary assistance in overcoming negative public perceptions of the civilian nuclear

26 un General Assembly Resolution 57/60, "United Nations Study on Disarmament and Nonproliferation Education," November 22, 2002, http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/57/60&Lang=E (accessed May 17, 2014).

27 S. Vasilyev, "Yadernyi va-bank," *Ekspress-K*, no. 58 (April 4, 2013).

industry. They could also help to formulate a clear strategy of countering subversive activities and information attacks, including those relying on social networks as a medium. Other important elements in the provision of information security in the nuclear sphere should include regular and timely circulation of accurate and accessible information; the training of qualified public relations specialists; interaction with media outlets and public opinion leaders; as well as regular public education, awareness and outreach efforts. This could minimize the potential of any destructive information attack, information manipulation, or spread of inaccurate or deliberately falsified information.

Conclusion

The Central Asian states, in cooperation with the United States, Russia, and other interested parties, have made significant progress in reducing WMD proliferation threats, but more work remains to be done. Ongoing political, technical, expert and financial support is necessary if nonproliferation measures in the region are to be effective and sustainable. The end of the Russian-us cooperation in the framework of the Nunn-Lugar Program and Russia's pullout from the ISTC must not put an end to international cooperation in the area of WMD nonproliferation, including in Central Asia. That would not be in the best interests of Russia, the United States, Central Asia, or other countries, because it would have negative consequences for peace and stability all over the world.

The Central Asian states have a clear interest in continued cooperation with international partners on the entire range of WMD nonproliferation issues. Such cooperation would help them resolve the problems they inherited from the Soviet Union and develop adequate responses to the present-day challenges and threats related to WMD proliferation. Such cooperation also benefits outside powers, including Russia and the United States, as it contributes to the reduction of risks related to WMD terrorism and illicit trafficking in sensitive materials, technologies, and equipment. It is clear that a reformed mechanism of multilateral cooperation on WMD nonproliferation must be based on new guiding principles, the major one being equality of all the parties. The new format of cooperation should also reflect the situation on the ground and take into account the national interests of every participating state. To increase the effectiveness of such cooperation, it would be useful to engage, as equal partners, interested international and regional organizations.