

2010 Nuclear Security Summit

National Commitment Implementation:

Steps in the Fight Against Nuclear Terrorism

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2010 Nuclear Security Summit National Commitment

Implementation: Steps in the Fight Against Nuclear Terrorism

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OVERVIEW

At the 2010 Washington Nuclear Security Summit (NSS), 47 nations signed consensus documents outlining how they planned to prevent nuclear terrorism by strengthening global nuclear material security. Reviewing, advancing, and building on the progress that countries have made implementing these commitments are among the main objectives of the second summit to be held in Seoul, Republic of Korea in March 2012. The 2010 summit's communiqué endorsed the ambitious goal of securing all nuclear materials around the world in four years and a number of related pledges supporting compliance with the existing nuclear materials security regime. The communiqué was accompanied by a more detailed work plan that provides guidance on implementing the political commitments made at the summit. At the 2012 summit, a "Seoul Communiqué" that combines the work plan and communiqué into a single document is expected to be endorsed by over 50 world leaders.

As a complement to the objectives detailed in the 2010 communiqué and work plan, a number of countries made national pledges to take specific measures to improve global nuclear security. After the summit, the White House released a document summarizing nearly 60 national commitments made by 29 countries and the International Atomic Energy Agency (IAEA). These national commitments ranged from domestic, unilateral measures to cooperative, multinational contributions that bolster global nuclear security. The United States, which did not include any of its own national commitments in the highlights document, also released its own national statement that discussed the US policy and its 12 specific pledges. While other countries may have also made additional commitments in their national statements, most of these were not made public. At the 2012 summit, countries are expected to again issue additional, voluntary national statements (called "house gifts" by summit planners), and some may join together to offer regional or multilateral commitments ("gift baskets"). In advance of the Seoul Summit, this paper provides an overview of the steps that countries have taken to implement the voluntary, national commitments detailed in the 2010 White House highlights document and the US national statement.

Approximately 80 percent of the Washington Summit's national commitments had been completed by February 2012 and represent some of the most concrete results of the summit. Some commitments were completed ahead of the 2010 summit, such as the United Kingdom's September 2009 ratification of the United Nations (UN) nuclear terrorism convention, but many were facilitated by the momentum created by the NSS process. Important examples of countries fulfilling their commitments include the removal of all highly enriched uranium (HEU) from Chile. New nuclear centers of excellence, conferences,

and training activities were developed by Canada, China, France, India, Italy, Japan, Kazakhstan, Saudi Arabia, and the Republic of Korea. Funding for the IAEA's Nuclear Security Fund (NSF), HEU reactor conversion and material removals, and anti-smuggling initiatives have been contributed by Belgium, Canada, Japan, New Zealand, Norway, Russia, the United Kingdom, and the United States.

Some national commitments involved projects, such as HEU reactor conversions, which are technically complex and require long lead times and careful negotiations to complete. Still, notable progress has been made on these commitments, including Ukraine eliminating more than half of its HEU stocks and signing a memorandum of understanding (MOU) with the United States in September 2011, formalizing its commitment for a full clean out. Kazakhstan has worked with the United States to complete the removal and down-blending of 33 kilograms (kg) of HEU fuel in August 2011 as part of its reactor conversion and HEU elimination commitment. Mexico signed an agreement with the United States and the IAEA in August 2011, defining the terms of removing its HEU and receiving low enriched uranium (LEU) fuel in return as part of its commitment to converting a reactor and eliminating remaining HEU.

The only national commitment where no progress is evident involves Kazakhstan "considering an International Nuclear Security Training Center." The pledge to "consider"—rather than "create"—the center, combined with the development of a number of similarly focused centers around the world, may explain the lack of movement on this commitment. Some of these centers are being created in accordance with the 2010 national commitments, and others have been undertaken independently of them, including in Japan, China, India, and the Republic of Korea.

In short, countries have made commendable progress implementing their national commitments from the 2010 summit and have bolstered global nuclear security in the process. Reviewing the implementation of commitments made in 2010 is among the objectives of the Seoul meeting, and important for understanding how the NSS process is helping to bolster the global nuclear security regime. However, it is also worth noting that summit participants have been unable to agree on a common format for tracking and reporting on their implementation of the 2010 summit consensus document and national commitments.

TRACKING IMPLEMENTATION

The 2010 communiqué and work plan were important for demonstrating broad global support of nuclear terrorism prevention and encouraging countries to prioritize nuclear material security measures. However, tracking the implementation of the commitments described in the work plan is difficult because they are non-binding and often come with caveats such as "as appropriate," when "technically and economically feasible," and "as soon as possible."¹ While the national commitments made at the summit were voluntary, they described concrete actions those nations agreed to take. That makes evaluating their progress more straightforward.

There is no official assessment methodology or presentation format for countries reporting on the status of their commitments at the Seoul Summit. Efforts by high-level government representatives to establish a common format at the November 2010 Sherpa Meeting in Buenos Aires were unsuccessful. The proposed matrix format met stiff resistance from some participants and was ultimately abandoned in favor of a

general agreement to report on implementation without specific parameters attached. While this free-form reporting method offers flexibility, a common tracking and reporting format would provide a more comprehensive and transparent picture of efforts to live up to the commitments made at the 2010 summit and, more broadly, the state of the global nuclear material security regime.

Common reporting requirements would give states the incentive to ensure that their nuclear security systems were developing evenly. The selective reporting favored for the 2012 summit allows countries to highlight the areas where they are strong without drawing attention to others where their efforts may be lagging. The 2010 communiqué and work plan purposely outlined a broad array of tools, capacities, and stakeholder engagements that collectively comprise today's nuclear material security regime. Even though summit commitments are voluntary, leaders' endorsement of these documents are an acknowledgement of the multifaceted approach required to help keep nuclear materials and facilities secure. In short, an accurate assessment of how states have lived up to their summit commitments requires an evaluation of the full scope of principles and objectives discussed at the summit.

While nuclear security may be a national responsibility, deficiencies in one state's system can have international ramifications. Common reporting on the summit's agreed upon priorities has the potential to help build confidence among neighbors and the global community that states are taking their responsibilities seriously. In a regime that is largely nationally-focused and without binding international standards or reporting mechanisms, utilizing a common reporting format on implementation at the summits would encourage countries to demonstrate how they are implementing the IAEA's recommendations and taking other steps to continuously adapt their nuclear material systems to twenty-first century threats. Reporting at the summit could also feed into the work of other international initiatives working to prevent nuclear terrorism through collaboration, such as the Global Initiative to Combat Nuclear Terrorism (GICNT), G-8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction (Global Partnership), and the 1540 Committee.

Moreover, in 2014 the international community will want to know how summit leaders have fared in meeting their 2010 commitment to "secure all vulnerable nuclear materials in four years."² Absent an official tracking and reporting process, it is difficult to see how states will be able to credibly and comprehensively demonstrate their achievements. The Global Partnership's efforts to reconstruct and communicate the scope and significance of its achievements after 10 years are instructive on the difficulty of retroactively assessing progress without establishing a common tracking format. When the Global Partnership was launched in June 2002, G-8 countries committed to spending \$20 billion over 10 years to promote safety and prevent the proliferation of chemical, biological, radiological, and nuclear weapons materials and expertise. With the initiative set to expire in 2012, the G-8 tasked an experts group with assessing the Global Partnership's effectiveness. By then, the original eight countries had been joined by an additional 15 countries and the European Union (EU).

Members of the Global Partnership published few sources on how billions of dollars were spent, and those that were published were not comprehensive or centralized. Annexes to the G-8 Summit documents periodically included tables describing countries' WMD security projects, but it was difficult to decipher the total dollars and specific types of expenditures from them. As a result, the G-8 experts group limited its published assessment to representative cases of the partnership's achievements.³ Despite this lack of detail, the group's mandate was extended in June 2011, although without new funding targets. Separately, an academic evaluation conducted by researchers at Kings College and published in late 2011 had to rely heavily on interviews with government and nongovernment officials involved with the partnership for evidence.⁴

In the absence of a governmental process to assess global nuclear security, the Nuclear Threat Initiative (NTI) recently undertook a study of nuclear material security in 176 countries and published a public index of the results. NTI commissioned the Economist Intelligence Unit to develop a multidimensional analytic framework capable of measuring nuclear security performance over time. For countries with weapons-usable nuclear materials, the index evaluated them based on five indicator categories: 1) Quantities and Sites; 2) Security and Control Measures; 3) Global Norms; 4) Domestic Commitments and Capacity; and 5) Societal Factors. States without weapons-usable materials were assessed using indicators 3, 4, and 5. Overall rankings and scores in each of these indicators provide a snapshot of where a country is excelling in nuclear material security and where improvements are needed. The NTI Index stresses that this data should be used as a tool to begin a dialogue on setting international nuclear material security priorities, benchmarking progress to achieve them, and holding states accountable for the steps they take. The index was launched in January 2012 and will be updated periodically.

This report is another nongovernmental effort to provide transparency in tracking the actions taken by countries to improve their nuclear material security but its scope is limited to 2010 NSS national commitments. It provides concrete examples of steps countries have taken to implement their commitments ahead of the Seoul Summit, and demonstrates where needs and gaps of intention remain. The information in this report was obtained primarily from open source publications and is accurate as of February 2012. Research results have been organized into the following nine categories:

1. International Conventions
2. Removing and Securing HEU and Plutonium
3. Reactor Conversions and Shutdowns
4. New IAEA Cooperation
5. New Centers, Conferences, and Training Support
6. New National Laws
7. Global Initiative to Combat Nuclear Terrorism
8. Preventing Nuclear Smuggling
9. G-8 Global Partnership

INTERNATIONAL CONVENTIONS

The 2010 NSS communiqué and work plan recognize the importance of the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT), Convention on the Physical Protection of Nuclear Material (CPPNM), and the CPPNM's 2005 Amendment as legally binding, multilateral mechanisms for enhancing material security and preventing nuclear terrorism. Summit participants called for their universal adoption.

The CPPNM has been ratified by 41 of the 47 NSS participants.⁵ It is the only legally binding international instrument with physical protection requirements for nuclear materials, but only applies to those undergoing international transport.⁶ The CPPNM's 2005 Amendment extends protection requirements to domestic use, storage, and transport of nuclear materials and establishes new legal penalties for misuse and sabotage. However, the Amendment is not yet in force because too few countries have ratified it. Since the Washington Summit, 18 new countries have ratified the CPPNM's

2005 Amendment. Half were summit participants.⁷ Of these states, Germany, the United Kingdom, and Argentina were acting on their national ratification pledges. The Amendment was ratified by the United Kingdom in April 2010, by Germany in October 2010, and by Argentina in November 2011. France also pledged to ratify the Amendment and was working to complete this process as of January 2012 with the objective of finishing ratification “within the next few months.”⁸

The 2005 United Nations (UN) treaty against nuclear terrorism, ICSANT, provides a definition of nuclear terrorism and details how offenders and illicit materials should be handled by states when seized. Since the 2010 NSS, 12 countries have ratified ICSANT, half of which were summit participants.⁹ Armenia, Georgia, and the United Kingdom acted on their national ratification pledges. Armenia ratified the convention in September 2010 and Georgia in April 2010. The United Kingdom completed ratification ahead of the summit in September 2009. Argentina and Australia also committed to moving toward ratification of ICSANT, but their work remains in progress.¹⁰ In November 2011, Australia announced that “The Nuclear Terrorism Legislation Amendment Bill 2011” had been introduced into Parliament to implement ICSANT.¹¹

The US national statement at the Washington Summit indicated that it was accelerating efforts to ratify both the 2005 Amendment and ICSANT. In April 2011, the White House indicated that the Obama administration was submitting legislation to Congress necessary for ratifying both conventions.¹² Congress has not yet passed this legislation.

CPPNM 2005 Amendment	
<i>Country</i>	<i>Ratified</i>
Argentina	✓
France	In progress
Germany	✓
United Kingdom	✓
United States	In progress

ICSANT	
<i>Country</i>	<i>Ratified/Approved</i>
Argentina	In progress
Armenia	✓
Australia	In progress
Georgia	✓
United Kingdom	✓
United States	In progress

REMOVING AND SECURING HEU AND PLUTONIUM

Summit documents recognize that the use and management of nuclear materials and facilities is under the jurisdiction of individual states, but encourage steps to keep them secure, including consolidation of storage sites and removal and disposition of fissile materials no longer in use. In this vein, a number of summit participants made national commitments to consolidate, secure, or remove nuclear materials in their territories.

Removing and Securing Highly Enriched Uranium (HEU) and Plutonium		
<i>Country</i>	<i>Commitments</i>	<i>Status</i>
Canada	Return spent HEU to United States	In progress
	Fund HEU removals from Mexico and Vietnam	✓
Chile	Removed all HEU in March 2010	✓
Kazakhstan	Cooperative work on BN-350 reactor shutdown and fuel security	✓
Russia	Sign Plutonium Disposition Protocol	✓
Ukraine	Remove all HEU by 2012 summit, including half of stocks by end of 2010	In progress
United States	Obtain approval to bring up to 100 kilograms of plutonium from sites of concern into the United States for disposition	✓

Chile completed its national commitment to eliminate all 18 kg of HEU from the country ahead of the Washington Summit. In early 2010, the National Nuclear Security Administration (NNSA) worked with the Chilean Commission of Nuclear Energy to remove the HEU and more than 400 radiological sources from the La Reina Nuclear Center and the Lo Aguirre Nuclear Center.¹³ The Chilean operation was particularly challenging due to an 8.8 magnitude earthquake off its coast during the shipment preparations on February 27. Only minimal delays occurred despite the national emergency and numerous aftershocks. This was the first HEU shipment to occur since a January 2009 Record of Decision authorized the United States to accept limited amounts of non-US-origin HEU spent fuel.¹⁴

Ukraine is on track to meet its commitment to give up half of its HEU by the end of 2010 and all of it by the Seoul Summit. On September 26, 2011, US Secretary of State Hillary Clinton and Ukrainian Foreign Minister Kostyantyn Gryshchenko signed a Memorandum of Understanding formalizing this commitment.¹⁵ Under the MOU, the United States will provide Ukraine with financial and technical assistance to eliminate the HEU and modernize its peaceful nuclear research activities. This assistance is expected to exceed \$60 million and include LEU reactor conversions as well as a new neutron source facility for medical isotope production that will be operational by 2014. In December 2010, NNSA announced that 50 kg of HEU fresh fuel had been removed from three sites in Ukraine: Kiev Institute for Nuclear Research, Kharkiv Institute for Physics and Technology, and Sevastopol National University of Nuclear Industry and Energy.¹⁶ Officials from the United States, Ukraine, Russia, United Kingdom, and IAEA worked cooperatively on the project which required five flights to move the material. Earlier that year, Ukraine returned 56 kg of spent HEU fuel to Russia by train for disposition.¹⁷

In November 2010, the US-Kazakhstan Energy Partnership announced the completion of cooperative work on the BN-350 plutonium production reactor shutdown and fuel security project.¹⁸ Hundreds

of scientists, engineers, and safety, security, and transportation experts from the United States and Kazakhstan were part of the effort to secure three metric tons (mt) of weapons-grade plutonium and more than 10 mt of HEU.¹⁹ Over the course of a year, 12 shipments of spent fuel were transported more than 3,000 kilometers from Aktau to a new long-term, IAEA-safeguarded storage facility in Eastern Kazakhstan. Additionally, in May 2009, over 70 kg of spent HEU fuel was returned to Russia, and 33 kg of fresh HEU fuel was down-blended into LEU in fall 2011.²⁰

Canada committed to returning large inventories of spent HEU fuel to the United States. This fuel had been used to produce medical isotopes and is currently stored at the Chalk River Laboratories in Ontario. At the Washington Summit, Canadian Prime Minister Stephen Harper announced that the project would take place between 2010 and 2018.²¹ In addition to returning its own HEU, Canada also committed to providing funding for HEU removals in Mexico and Vietnam. A trilateral agreement to work cooperatively to convert the Mexican HEU research reactor and remove its fuel from the country was announced at the summit by Mexico, Canada, and the United States.²² Canada is contributing C\$5 million to help NNSA's Global Threat Reduction Initiative (GTRI) implement the project.²³ The Vietnam conversion effort is also underway.

At the Washington Summit, Secretary Clinton and Russian Foreign Minister Sergey Lavrov fulfilled national commitments to sign the Plutonium Disposition Protocol to the 2000 Plutonium Management and Disposition Agreement. Under this agreement, both countries committed to eliminating at least 34 mt of excess weapons-grade plutonium. In June 2011, a US official indicated that "good progress" was being made on negotiating verification measures and milestones for Russian progress on US-funded work, and a letter to IAEA explained that the governments hoped to complete these talks by 2012.²⁴

The US national statement indicated that it was in the final stages of gaining approval to bring up to 100 kg of plutonium into the United States from sites of concern overseas for disposition. This effort was completed following the approval of required environmental impact appraisals and other assessments.

Additionally, other significant material removals have occurred outside of publicized summit commitments. For instance, Poland, an NSS participant, completed the removal of over 450 kg of Russian-origin HEU spent fuel in October 2010 in collaboration with NNSA.²⁵ Belarus committed to returning all of its HEU to Russia in advance of the 2012 summit, but reneged on the pledge.²⁶ However, in October and November 2010, over 84 kg of HEU was removed from a research facility in Sosny, Belarus.²⁷

Since President Barack Obama announced a four-year, international effort to secure vulnerable nuclear materials in his April 5, 2009 speech in Prague, GTRI has eliminated all of the HEU from six countries: Serbia, Chile, Romania, Libya, Taiwan, and Turkey.²⁸ Since the 2010 NSS, the United States has removed 400 kg of HEU and plutonium and down-blended 700 kg of HEU from civil nuclear programs from 10 countries.²⁹

REACTOR CONVERSIONS AND SHUTDOWNS

Summit participants encouraged the conversion of HEU-fueled reactors to LEU in the communiqué and work plan as part of efforts to minimize the use of HEU. They recognized that HEU and separated plutonium are particularly sensitive materials and agreed take special precautions with them as well as to shutdown any reactors that are no longer required to minimize the use and production of weapons materials.

Reactor Conversions and Shutdowns		
<i>Country</i>	<i>Commitments</i>	<i>Status</i>
Kazakhstan	Convert a HEU research reactor and eliminate remaining HEU	In progress
Mexico	Convert a HEU research reactor and eliminate remaining HEU	In progress
Russia	End plutonium production	✓
Vietnam	Convert a HEU research reactor	In progress
United States	Convert six remaining HEU reactors in the United States once acceptable fuel is developed	In progress

Russia fulfilled its national commitment to end plutonium production by shutting down the ADE-2 reactor in Zheleznogorsk a few days after the 2010 summit.³⁰ During the Soviet era, this reactor was used to produce plutonium for nuclear weapons, but since 1995, its main purpose has been supplying heat for the city. The Zheleznogorsk reactor was the last of three that the United States and Russia worked cooperatively to close. Two plutonium production reactors in Seversk were shut down in 2008.³¹

In December 2010, Vietnam reaffirmed its national commitment to complete the conversion of its Dalat HEU research reactor in an MOU with the United States.³² The Dalat reactor, built with US assistance in the 1960s, produced medical isotopes and was also used to conduct research. NNSA previously worked with Vietnam in 2007 to partially convert the reactor and return 4.3 kg of fresh fuel to Russia. However, the new agreement provides the legal framework for full conversion and return of the remaining fuel to Russia.³³

Kazakhstan committed to converting an HEU research reactor and eliminating the remaining fuel. Cooperative efforts between the United States and Kazakhstan to convert a research reactor at the Institute of Nuclear Physics in Almaty are ongoing, but 33 kg of HEU fuel has already been removed and down-blended.³⁴ The United States, Kazakhstan, and the IAEA worked together to ship the material to the Ulba Metallurgical Plant in Ust-Kamenogorsk in August 2011 where it was down-blended into LEU and returned to the Institute for future nuclear energy research.

Mexico committed to converting its research reactor, and a trilateral agreement with the United States and Canada to implementing this project was announced at the Washington Summit.³⁵ Under the agreement, the three countries will work cooperatively with the IAEA. Negotiations to define and set up the project have begun.³⁶ In August 2011, Mexico, the United States, and the IAEA signed an agreement detailing arrangements for replacing Mexico's HEU fuel for the TRIGA Mark III reactor at the National Institute for Nuclear Research with LEU.³⁷ At the September 2011 IAEA General Conference, Mexico indicated that the fuel transfer could be completed by early 2012.³⁸

In the US national statement, the country committed to converting its six remaining HEU fueled reactors to use LEU as soon as a suitable fuel was developed. The statement noted the completed conversion of all 20 US HEU reactors capable of using current LEU fuels. No new US reactors have been converted since the Washington Summit.

NEW IAEA COOPERATION

The essential role that the IAEA plays in advancing nuclear security was highlighted in the 2010 summit documents. The work plan detailed the valuable services and guidance materials the agency offers. Summit participants were also encouraged to take advantage of IAEA resources and to provide support for its nuclear security work.

New International Atomic Energy Agency (IAEA) Cooperation		
<i>Country</i>	<i>Commitments</i>	<i>Status</i>
Belgium	Contribute \$300,000 to IAEA Nuclear Security Fund (NSF)	✓
Finland	Invited an IAEA International Physical Protection Advisory Service (IPPAS) security review	✓
France	Invite an IAEA IPPAS security review	✓
Japan	Contribute new resources to IAEA NSF	✓
New Zealand	Contribute to IAEA NSF	✓
Norway	Contribute \$3.3 million over next four years to IAEA NSF (flexible funds for use for activities in developing countries)	✓
Russia	Contribute to the IAEA NSF	✓
United Kingdom	Contribute \$6 million to IAEA NSF	✓
	Invite an IAEA IPPAS security review	✓
United States	Invite an IAEA IPPAS security review	✓
	Contribute to the IAEA NSF	✓

The IAEA’s annual nuclear security reports do not list the amounts that countries contribute to the Nuclear Security Fund (NSF), but do provide a yearly accounting of pledges and contributions. According to the 2010 and 2011 reports, all countries that made national commitments to provide NSF funding have fulfilled them: Belgium, Japan, New Zealand, Norway, Russia, the United Kingdom, and the United States.³⁹ Additionally, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, the Netherlands, ROK, Spain, Sweden, and the European Union have provided NSF funding during this period.⁴⁰ At the September 2010 IAEA General Conference, Norway announced that it had signed an agreement with the Agency to provide €2.5 million over four years for nuclear safety and security work in developing countries.⁴¹ In December 2010, Russia announced that it had signed an agreement to contribute \$6.5 million between 2010 and 2015.⁴² The United Kingdom signed a similarly sized funding agreement with the IAEA in March 2011, committing £4 million (approximately \$6.4 million).⁴³ The United States, EU, United Kingdom, and Canada are the NSF’s largest contributors.⁴⁴

Finland's International Physical Protection Advisory Service (IPPAS) mission took place in June 2009 and a follow-up security review is planned for 2012.⁴⁵ The UK's IPPAS mission to the Sellafield Nuclear Reprocessing facility and Barrow port was completed in late October 2011.⁴⁶ The mission to France's EDF power plant at Gravelines was completed in late November 2011.⁴⁷ According to US officials, the United States has requested an IPPAS mission, but the IAEA's "Nuclear Security Report 2011" provides no update on its status.⁴⁸ The US national statement indicated that the review would be of the National Institute of Standards and Technology's Center for Neutron Research facility.

NEW CENTERS, CONFERENCES, AND TRAINING SUPPORT

The 2010 summit documents emphasized the importance of the human dimension of nuclear security. They describe the need for continuing education and for the sharing of best practices among knowledgeable peers. Countries responded with a series of national commitments to enhance nuclear security culture and build human capacity through hosting or establishing new training and educational centers, conferences, and other activities. Funding, cooperation pledges, and new guidance materials were also offered in support of these objectives.

Canada hosted a four-day World Institute for Nuclear Security (WINS) workshop on "Guard Force Recruitment, Training, Deployment, and Exercises" in June 2010.⁴⁹ This workshop helped inform subsequent work by WINS to produce an International Best Practice Guide on Nuclear Guard Force management and operation.⁵⁰ While Canada's new bilateral security cooperation with Russia has reportedly been implemented, the details of this effort have not been publicized.⁵¹

Japan launched its new Integrated Comprehensive Support Center for Non-proliferation and Nuclear Security in December 2010. The Japan Atomic Energy Agency (JAEA), which is operating the center, hosted opening ceremonies in February 2011.⁵² The center aims to help emerging nuclear power countries develop tailored institutional infrastructure, provide human resources and capacity building support, and enhance international cooperation and coordination.⁵³ The IAEA, EURATOM, Australia, Republic of Korea, China, and the United States are among those cooperating with JAEA on the center.⁵⁴ Additionally, in November 2010, the United States and Japan established a bilateral Nuclear Security Working Group to support their collaborative work related to the NSS process, Integrated Support Center, and other activities, such as nuclear forensics.⁵⁵ Japan also hosted an "International Workshop on Nuclear Forensics Following on the Nuclear Security Summit" in October 2010 and a WINS workshop on "Corporate Governance and Security Leadership" in June 2010.⁵⁶

At the Washington Summit, China announced it would establish a nuclear security center of excellence. In January 2011, the United States and China signed an MOU for NNSA to work with China's Atomic Energy Authority on the center, which will promote effective nuclear security safeguards throughout Asia and act as a central site for training site personnel on measurement and accounting, developing protective force personnel, and designing and installing nuclear material security systems.⁵⁷ The center will be located in Beijing and construction is set to begin after a project review is completed.⁵⁸ NNSA has committed to provide some equipment to the center and help develop its training programs and best practice exchanges. However, there has been some opposition in Congress resulting in the enacting of funding limitations.⁵⁹ Despite reservations from Congress, the United States continues to work with China

New Cooperative Centers, Conferences, and Training Support		
<i>Country</i>	<i>Commitments</i>	<i>Status</i>
Canada	Host a World Institute of Nuclear Security (WINS) best practice workshop	✓
	Unveil \$100 million in new bilateral security cooperation with Russia	✓
China	Announce cooperation on center of excellence	✓
France	Incorporate training in nuclear security at the European Nuclear Safety Training and Tutoring Institute (ENSTTI) and the International Nuclear Energy Institute (I2EN)	✓
IAEA	Complete INFCIRC 225 Revision 5	✓
India	Announce creation of a Nuclear Energy Center with a nuclear security component	✓
Italy	Establish a school of nuclear security in Trieste to train nuclear personnel from developing countries	✓
Japan	Launch an integrated regional support center	✓
	Host and fund a WINS best practices conference	✓
	Research and development on nuclear detection and forensics	✓
Kazakhstan	Consider an International Nuclear Security Training Center	No progress
Republic of Korea	Host 2012 Nuclear Security Summit	✓
Saudi Arabia	Host United Nations Security Council Resolution (UNSCR) 1540 conference for Gulf Cooperation Council	✓
United States	Provide financial and expert support to WINS	✓
	Requested largest amount ever for nuclear security cooperation programs in fiscal year 2011	✓
	Contribute to a voluntary UNSCR 1540 implementation fund	✓
	Launch an international effort to develop nuclear forensics library, exercises, common lexicons, etc.	✓

on nuclear security issues, including agreeing to expand the work of the Joint Coordinating Committee of the US-China Peaceful Uses of Nuclear Technology Agreement in March 2011, and the installation of a radiation detection system at China's Port of Yangshan in December 2011 as part of NNSA's Megaports Initiative.⁶⁰

At the Washington Summit, India announced that it would build a nuclear energy center that would include a nuclear security component. India's Global Centre for Nuclear Energy Partnership (GCNEP) is under construction at Kheri Jassaur, near Bahadurgarh, Haryana.⁶¹ In September 2011, India's Atomic Energy Commission (AEC) announced that a regional training course on nuclear security, "Physical Protection of Nuclear Facilities against Sabotage, Assessing Vulnerabilities and Identifying Vital Areas," would take place in New Delhi in November to launch GCNEP, which would be owned and operated by the government but open to international participation.⁶² The center is intended to improve international cooperation on advanced nuclear energy systems, nuclear security, radiological safety, and radiation technology applications to health, food, and industry. An MOU with the United States on cooperating on the GCNEP was signed during President Obama's trip to India in November 2010.⁶³ At the US-India

Strategic Dialogue in July 2011, a joint statement was issued that indicated the first meeting of the US-India Joint Working Group would be held in late 2011 to begin implementing the MOU.⁶⁴ India has also signed an MOU related to the center with Russia and is expected to complete one with the IAEA and possibly France and the United Kingdom.⁶⁵

Also at the Washington Summit, Kazakhstan's president said that his country would consider hosting an International Nuclear Security Training Center, but there has been no further information on this project.⁶⁶

Though not listed as national commitments, other countries are also pursuing the creation of nuclear security centers of excellence for training and information sharing. For example, the Republic of Korea announced in September 2010 that it would open an International Nuclear Security Training Center in 2013.⁶⁷ This center is intended to support the peaceful use of nuclear energy while mitigating the risks of misuse. Also in 2010, the European Union launched its CBRN Center of Excellence Initiative to help support countries and regions maintain the institutional capacity needed to fight against chemical, biological, radiological, and nuclear (CBRN) threats.⁶⁸ It aims to establish centers of excellence in five regions of concern: South Caucasus/Ukraine/Southeast Europe, North Africa, West Africa, the Middle East, and Southeast Asia.⁶⁹ A regional Secretariat opened in Amman, Jordan in December 2011, and 19 projects have been selected for implementation.⁷⁰

Italy committed to establishing a school of nuclear security in Trieste that would help train personnel from developing countries. In April 2011, the "International School on Nuclear Security" was held at the International Centre for Theoretical Physics. The IAEA and Italian Ministry of Foreign Affairs cosponsored the school in collaboration with the Central European Initiative and Kuwait Foundation for the Advancement of Science.⁷¹

French President Nicolas Sarkozy announced in March 2010 that France would create International Nuclear Energy Institute (I2EN) to interact with the new nuclear security centers of excellence and expand training opportunities for nuclear professionals.⁷² France's September 2011 statement at the IAEA General Conference indicated that I2EN was operational, and the number of grants available to foreign students seeking nuclear training programs at its International Nuclear Academy would be increased.⁷³ Also, fulfilling France's commitment to incorporate nuclear security training into the European Nuclear Safety Training and Tutoring Institute's (ENSTTI) curriculum, in June-July 2011, ENSTTI held an "Introduction to Nuclear Safety" course in Munich, Germany that included a one-day track on nuclear security and nonproliferation.⁷⁴

Saudi Arabia satisfied its commitment to host a UN Security Council Resolution (UNSCR) 1540 conference for the Gulf Cooperation Council (GCC) in December 2010.⁷⁵ The regional workshop took place in Riyadh and focused on implementing UNSCR 1540 to prevent terrorist acquisition of weapons of mass destruction. Participants included representatives from Kuwait, Oman, Qatar, the United Arab Emirates, the United States, China, the United Kingdom, France, Russia, Mexico, and UN offices.

The Republic of Korea is hosting the 2012 NSS in Seoul on March 26-27, 2012. The leaders of over fifty countries and international organizations will attend. As at the Washington Summit, the primary focus of the agenda was nuclear material security; however, the Seoul Summit will also address radiological source security issues in greater depth and examine the interface between nuclear safety and security. Countries are expected to endorse a "Seoul Communiqué" that includes a commitment to minimize the civilian use of HEU and offer new additional national (or multinational) voluntary commitments.

NSS sherpas and sous sherpas engaged in a series of preparatory meetings in advance of the Seoul

Summit. Meetings took place in Argentina in November 2010, Austria in March 2011, Republic of Korea in June 2011, Finland in October 2011, and in India in January 2012.⁷⁶ Regional meetings to expand the number of countries engaged with NSS objectives were held, including in Poland and Chile.⁷⁷ Additionally, several expert dialogues have been organized since the Washington Summit by Korean and other international policy organizations in support of evolving the nuclear material security regime through the NSS process.

US support for the activities of WINS began with an initial funding pledge of \$3 million in 2009 and has continued with additional funds from the Departments of State and Energy.⁷⁸ As detailed in the WINS 2010 Annual Report, the United States has engaged with the organization in a number of forums for enhancing nuclear security culture and best practice implementation.⁷⁹ Additionally, as indicated in its national statement, the United States requested additional nuclear security funding in FY11. Nearly \$2 billion was sought by the administration to support international WMD security programs in NNSA and the Department of Defense (DOD), including an additional \$320 million specifically to support the four-year effort to secure vulnerable nuclear materials around the world.⁸⁰ However, Congress did not support the administration’s full request. The FY12 request for NNSA and DOD programs was lower than in FY11 but received stronger support from Congress in the final omnibus funding act.⁸¹ The United States provided \$3 million in FY11 and \$1.5 million in FY12 for a UNSCR 1540 implementation fund that is managed by the UN 1540 Committee to match donors and those in need of assistance, fulfilling their WMD security obligations.⁸²

Finally, the IAEA released its fifth revision of “Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities” in early 2011.⁸³ This document provides guidance and recommendations for creating and implementing physical protection measures for nuclear materials and facilities and was last revised in 1999. It is part of the IAEA’s Nuclear Security Series of publications that began in 2006. Additionally, the agency has launched a nuclear security information portal (NUSEC) to serve as a centralized hub of nuclear security topics and activities. It is also helping to coordinate the activities of the new nuclear security centers being created; a coordination meeting was held in June 2011.⁸⁴

NEW NATIONAL LAWS

Given that it is the responsibility of states to ensure that the nuclear material on their territories is protected, the Washington Summit documents encouraged participants to maintain and enforce effective national laws and regulations to keep materials secure as well as to criminalize any misuse or misconduct.

New National Laws		
<i>Country</i>	<i>Commitments</i>	<i>Status</i>
Armenia	Passed new export control law	✓
Egypt	Passed new comprehensive nuclear law in March 2010 that includes nuclear security	✓
Malaysia	Passed a new export control law	✓

Armenia passed new export control laws in November 2009. The legislation updated the country’s munitions controls and regulations and was accomplished in cooperation with the IAEA and US Department of State’s Export and Border Control program.⁸⁵ The laws incorporate international best practices on strategic export controls to meet UNSCR 1540 obligations. Additionally, in July 2010, Armenia adopted a new law and implementing decree for dual-use goods.⁸⁶

Egypt enacted a law in March 2010 on “Regulating Nuclear and Radiological Activities” that confirms the country’s adherence to all international, regional, and bilateral treaties and agreements it has ratified.⁸⁷ The law was passed as part of preparations to achieve the country’s goal of building four nuclear reactors by 2025.⁸⁸

In April 2010, Malaysia passed the “Strategic Trade Bill 2010,” which introduces new statutory penalties for companies that fail to comply with its export controls.⁸⁹ It was Malaysia’s first export control legislation specifically designed pursuant to UNSCR 1540 obligations and includes controls on both the physical and electronic movement of strategic goods and technologies.⁹⁰

GLOBAL INITIATIVE TO COMBAT NUCLEAR TERRORISM

The value of the GICNT in promoting nuclear security was recognized at the Washington Summit, and participants were encouraged to work together and expand cooperation under this and other multilateral initiatives that support improved nuclear security. Since its creation in 2006, GICNT has grown to include 82 countries and four official observers who voluntarily commit to implementing a set of nuclear security goals articulated in the group’s Statement of Principles.⁹¹

Global Initiative to Combat Nuclear Terrorism (GICNT) Support		
<i>Country</i>	<i>Commitments</i>	<i>Status</i>
Argentina	Join the GICNT	✓
Kazakhstan	Host a GICNT activity	✓
Philippines	Join the GICNT	✓
Republic of Korea	Host a GICNT activity	✓
Thailand	Join the GICNT	✓
Vietnam	Join the GICNT	✓
United States	Continue to support the GICNT and work to turn it durable international institution	✓

Argentina, Philippines, Thailand, and Vietnam fulfilled their pledges to join GICNT during the June 2010 Plenary Meeting.⁹² Mexico and Singapore were welcomed as new members at that meeting.

Kazakhstan fulfilled its commitment to provide the venue for a GICNT session by co-hosting the “Exercise on Countering the Financing of Nuclear Terrorism” with Australia and the United States and the “Inaugural Implementation and Assessment Group (IAG) Meeting” with Spain in September 2010.⁹³ A number of earlier GICNT activities also took place in Kazakhstan, including its “3rd Plenary Meeting” in

June 2007 and “Atom Anti-Terror 2008” exercise in June 2008.

In June 2011, the Republic of Korea hosted GICNT’s “2011 Plenary Meeting” and “Implementation Assessment Group (IAG) Meeting” in fulfillment of its national pledge.⁹⁴ Korea had previously sponsored the GICNT’s “Workshop on Detecting and Responding to Illicit Transport and Trafficking of Nuclear and Radioactive Materials” and the “3rd Exercising Planning Group Meeting” in April 2009.

The US national statement reiterated an April 2009 pledge to continue to fund and support GICNT and to turn it into a “durable international institution.”⁹⁵ In fiscal year 2012, \$6 million was provided for the Department of State’s WMD Terrorism program to help support GICNT.⁹⁶ Ideas under consideration by GICNT members for evolving it into a durable institution have been termed “enhancing implementation” and include “clearly identifying a policy making body, having a decision making mechanism that is open to all partners, better coordinating exercise planning, and... facilitating capacity building.”⁹⁷ At the 2010 GICNT plenary meeting, five accomplishments aimed at “enhancing implementation” were highlighted, including the creation of two priority functions for the group: nuclear detection and nuclear forensics.⁹⁸ At the June 2011 plenary, a third priority function area was adopted: response and mitigation.⁹⁹

PREVENTING NUCLEAR SMUGGLING

The Washington Summit emphasized the need for states to work together to prevent and respond to incidents of nuclear smuggling. One mechanism that supports this objective is the US Megaports Initiative—part of the US Second Line of Defense (SLD) program within NNSA that provides equipment, training, and technical support to partner countries to help prevent nuclear and radioactive material smuggling at maritime ports. Another mechanism is the US Nuclear Smuggling Outreach Initiative (NSOI). NSOI engages with countries to create Joint Action Plans to improve anti-smuggling capabilities and facilitate donor partnerships that fortify human and capital resources to prevent nuclear smuggling.

Preventing Nuclear Smuggling		
Country	Commitments	Status
Italy	Signed a Megaports Agreement with the United States	✓
New Zealand	Contribute to the U.S. Nuclear Smuggling Outreach Initiative	✓
Norway	Contribute \$500,000 in additional support to Kazakhstan’s efforts to upgrade portal monitors	✓
United Arab Emirates	Signed a Megaports Agreement with the United States	✓
United States	Develop and deploy new neutron detection technologies through an aggressive program of research, development, test, and evaluation	✓

The UAE signed an agreement with the United States in December 2009 to begin cooperative efforts to install radiation detection equipment and infrastructure at the ports of Abu Dhabi and Sharjah¹⁰⁰ Under the framework, UAE officials will be trained to use and maintain the equipment. This agreement was signed

in Abu Dhabi and builds on a Megaports Agreement signed with Dubai in 2005.¹⁰¹

Italy signed its agreement in March 2010, under which NNSA will work with the Customs Agency of the Italian Republic to deter, detect, and interdict nuclear trafficking at several Italian ports, including Genoa and Gioia Tauro.¹⁰² The agreement will enable NNSA to provide equipment and training for the ports and includes cost-sharing arrangements.¹⁰³

Under NSOI, New Zealand funded the provision of radiological monitoring equipment for the Boryspol International Airport in Kyiv, Ukraine in 2010.¹⁰⁴ This was the third NSOI-identified project that New Zealand has contributed to since 2007. Its 2007 NSOI-funding enabled the supply, installation, and training of officials on radiation detection monitors and secondary inspection equipment at a Ukrainian-Russian border crossing, and its 2009 NSOI-funding made similar radiation detection equipment and training possible in Kazakhstan.¹⁰⁵

In December 2010, a \$500,000 contribution by Norway to NNSA's SLD program was announced. The funding was provided to install radiation detection equipment at Kazakhstan's Almaty Airport.¹⁰⁶ Norway also contributed over \$837,000 to NNSA in 2009 to support anti-smuggling efforts in Kazakhstan.¹⁰⁷

The United States noted in its statement at the September 2011 IAEA General Conference that since the Washington Summit, it had deployed 19 radiation detection systems worldwide.¹⁰⁸ Additionally, a Government Accountability Office report from September 2011 indicated that neutron detection technologies that do not rely on helium-3 were "sufficiently mature" to be considered in future portal monitor deployment decisions.¹⁰⁹

G-8 GLOBAL PARTNERSHIP

The role and contributions of the Global Partnership were recognized in summit documents. The work plan welcomed additional programming to enhance nuclear material security by partners in this multilateral initiative. The Global Partnership was created in 2002 by the G-8 to provide \$20 billion over ten years for WMD safety, security, and nonproliferation projects in Russia and the former Soviet states. It currently has 15 partners beyond G-8 countries. Its geographic mandate was broadened in 2008, but operationally, work continues to be concentrated in Russia and the former Soviet states. At the time of the 2010 summit, the Global Partnership was set to expire in 2012.

G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction (Global Partnership)		
<i>Country</i>	<i>Commitments</i>	<i>Status</i>
Canada	Champion the extension of the Global Partnership	✓
United States	Call for a ten-year extension of the Global Partnership with an expanded scope and mission and commit up to another \$10 billion toward new projects	✓

At the May 2011 G-8 summit in Deauville, France, leaders agreed to extend the Global Partnership beyond 2012.¹¹⁰ While no expiration date was set or new funding detailed, leaders expressed their

objective of expanding the number of participants and enlarging the partnership's scope to include: nuclear and radiological security, biosecurity, scientist engagement, and facilitation of UNSCR 1540 implementation.¹¹¹ US funding continues to be requested and appropriated for nuclear security and other weapons of mass destruction safety and security programs activities that count towards the \$10 billion of new Global Partnership funding that President Obama committed.

CONCLUSION

The NSS process has had considerable success in bringing attention to the threat of nuclear terrorism and strengthening the existing nuclear materials security regime. With only a few months until the next NSS, approximately 80 percent of the national commitments made by 30 countries at the Washington Summit have been completed. The successes of the 2010 meeting have helped build a firm foundation for states attending the Seoul Summit to begin a push for more flexible and responsive nuclear material security structures and coalitions.

2010 Nuclear Security Summit National Commitment Implementation			
<i>National Commitment Area</i>	<i>Complete</i>	<i>In Progress</i>	<i>No Progress</i>
International Conventions	6	5	0
Removing and Securing HEU and Plutonium	5	2	0
Reactor Conversions & Shutdowns	1	4	0
New IAEA Cooperation	10	0	0
New Centers, Conferences, & Training Support	16	0	1
New National Laws	3	0	0
GICNT	7	0	0
Nuclear Smuggling Prevention	5	0	0
G-8 Global Partnership	2	0	0
Total Commitments	56	11	1
Total Percentages	82%	16%	2%

The involvement of heads-of-state makes the summit process a unique vehicle for breaking down the political barriers and bureaucratic inertia that might otherwise impede the nuclear material security regime's evolution into a robust and flexible system capable of addressing new threats. But political will is also required to channel the summit's potential into measurable progress. So far, the actions taken by states to implement the summit's objectives tell a positive story. It is fair to point out that the level of ambition demonstrated by states in their national commitments has varied considerably. Regardless, countries have largely maintained their focus on completing the agendas they set for themselves in the face of numerous other global challenges that have threatened to divert their leaders' attention. Future summits should capitalize on the current momentum to raise the nuclear security bar beyond what was set in Washington's consensus documents. Otherwise, subsequent summits that only support the status quo will not be able to hold the attention of the world leaders who agreed in 2010 that strengthening nuclear security and reducing the threat of nuclear terrorism will require "sustained and effective international

cooperation.”¹¹²

Despite many commitment implementation success stories, states have declined to adopt a common format for tracking and reporting on the implementation of the 2010 summit’s consensus and national commitments ahead of the 2012 summit. With the Seoul Communiqué essentially finalized, the opportunity has passed to include an endorsement of common tracking and reporting. Therefore, for the time being, stakeholders will need to rely on nongovernmental analyses based on open source materials and whatever states voluntarily choose to publish to gain a sense of what these meetings are accomplishing. This report is one attempt to help fill the information void. In addition, the NTI Nuclear Security Index provides a more sustained, comprehensive look at the status of nuclear security around the world since it will be published every two years. However, while nongovernmental efforts are important contributions to transparency, they will be unable to answer the looming question for NSS leaders in 2014: have they achieved their goal to “secure all vulnerable materials in four years?”¹¹³

A third summit will take place in 2014. The Netherlands, as the next host, should play a leading role in creating a credible process and sound methodology to underpin any declarations on the cumulative impact of the summits as well as on the advancement of the four year-goal. Gaining agreement among the diverse nations at the summit on a common format will be difficult, but the third summit’s host should have powerful allies in overcoming this challenge. The four-year goal was originally articulated by President Obama in April 2009 during a speech in Prague and subsequently supported at the G-8 Summit in June 2009 and at the UNSC in September 2009.¹¹⁴ Furthermore, Korea’s summit organizers have expressed the importance of holding a 2014 summit in order to assess what has been achieved during the four-year period.¹¹⁵

The host of the third summit could partner with previous summit hosts or other participants to make an additional multinational commitment at the 2012 summit to negotiate a common commitment tracking format in advance of the 2014 summit. Such a commitment could also be made independently by the Netherlands in Seoul this year, or announced subsequently. But broader support for this goal from the outset will enhance its likelihood of success. The Sherpa and Sous Sherpa Meetings to plan the 2014 summit are natural venues for negotiating this common format. Nearly every country that has supported the four year goal in other multilateral forums is also an NSS participant and, therefore, has a strong political stake in its outcome.

Special attention should be paid to offering the countries that objected to the tracking proposals at the 2010 Buenos Aires meeting a chance to participate in the initial drafting of any new tracking and reporting proposals introduced at the Sherpa Meetings. Their buy-in will be important; efforts should be made to address substantive concerns they may have about a common format. However, drafters must avoid sacrificing an effective, comprehensive methodology in exchange for consensus support. Ultimately, if a majority of countries can agree on a proposal, the holdouts will be incentivized to join. What head-of-state will want to go to the 2014 summit facing questions about the conspicuous absence of reporting on his or her country’s nuclear security efforts over the last four years? Such a scenario would not only be embarrassing, but it would also undermine the confidence building and cooperative actions that the NSS process has worked to create. Herein lies the true value of heads-of-state involvement in the NSS process: as a driver of action.

Since the 2014 summit could be the last such meeting, providing an accurate picture of the achievements since 2010 will be important, but it should do more than look backward. An assessment of successes during the 2012-14 period will also help leaders identify gaps in the current nuclear material security

regime and what more needs to be done. As many experts have pointed out, there is currently no international consensus on nuclear material security priorities or a baseline standard for judging the effectiveness of structures states have put in place.¹¹⁶ Despite nuclear terrorism’s transnational implications, nuclear material security remains a national responsibility with limited international transparency. Though summit organizers have indicated that the NSS process was never meant to be permanent, they should not end it without establishing durable vehicles and high-level networks that enable continued progress in strengthening the global nuclear security regime.

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