A New Era for Nuclear Security

June 2016

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The 2016 nuclear security summit was a pivotal moment for the decades-long effort to secure nuclear material around the globe. More than 50 national leaders gathered in Washington for the last of four biennial meetings that have led to significant progress in strengthening measures to reduce the risk of nuclear theft.

These summits have played a critical role in nurturing that progress by elevating the political salience of nuclear security and providing a forum for world leaders to announce new commitments, share information, and hold one another accountable for following through on promised actions.

The international community is now entering the post-summit era, in which nuclear security will probably receive less-regular high-level political attention than it has in recent years. Yet, there is still critical work to be done to reduce the danger that nuclear weapons or the materials needed to make them could end up in the hands of a terrorist organization such as the Islamic State. Governments still do not agree on what nuclear security priorities are most pressing or how best to sustain the momentum generated by the summits. As the era of summity recedes, will states continue improving measures to prevent nuclear theft and sabotage, or will the summits turn out to have been a high-water mark for nuclear security efforts?

Progress at the 2016 Summit

Over the course of the summit process, the participating states committed themselves to dozens of cooperative initiatives seeking to strengthen aspects of nuclear security, reduced vulnerabilities in their security systems, and pledged to continue joint efforts through multilateral groups and international institutions. The 2016 summit, held March 31-April 1 in Washington, marked progress on all of these fronts.

Like the 2010 summit in Washington, the 2012 summit in Seoul, and the 2014 summit in The Hague, this year’s meeting produced a consensus-based communiqué. At the three most recent summits, smaller groups of participants also produced a series of joint statements and group commitments, or “gift baskets.” At this year’s summit, all but three states participated in at least one of 18 gift baskets or nine joint statements, which covered a range of areas, including insider threats, transport security, minimization of the use of highly enriched uranium (HEU), and cybersecurity. Among the most important outcomes of the recent summit was the establishment of a contact group, which will meet annually to discuss nuclear security.

Some of the major accomplishments of the summit are listed below.

Strengthening the commitment to nuclear security. China and India joined 36 states that had signed on to an important 2014 summit initiative on strengthening nuclear security implementation. Members of this group committed to “meet the intent” of International Atomic Energy Agency (IAEA) nuclear security principles and recommendations, conduct self-assessments, host periodic peer reviews of their nuclear security, and ensure that “management and personnel with accountability for nuclear security are demonstrably competent,” along with several other actions. This was an
important commitment for China and India, demonstrating a measure of transparency and reassurance on nuclear security. Prior to the 2016 summit, neither country had been open to participating in such initiatives although both nuclear-armed states face terrorist threats.4

The summit process also helped to build support for a foundational and legally binding international nuclear security instrument. After more than a decade, the 2005 amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM) reached the required number of ratifications to enter into force in May. The amendment outlines nuclear security principles and requires states to establish rules and regulations for physical protection. It also requires a review conference five years after entry into force and, if members choose to have them, additional review conferences at intervals of at least five years.5 The amended CPPNM, now officially known as the Convention on the Physical Protection of Nuclear Material and Nuclear Facilities, could be a helpful tool for states to hold one another accountable for maintaining physical protection and strengthening norms.

Reducing nuclear security vulnerabilities. In addition to announcing new commitments, the summits were occasions for states to report on steps they had taken to remove or eliminate HEU or plutonium, convert reactors, improve physical protection, strengthen regulation, and contribute support to the IAEA or other international nuclear security work.

At the recent summit, Japan and the United States announced the completion of a commitment they made in 2014 to remove more than 500 kilograms of nuclear weapons-usable material from Japan.6 Argentina announced it had eliminated the last of its HEU, making it the 18th state to clean out all of its nuclear weapons-usable material since the beginning of the summit process. Indonesia declared it had eliminated all of its fresh HEU and planned to get rid of all its HEU in 2016.

China announced the opening of its nuclear security center of excellence. Since 2010, China has worked with the United States to build the center as a hub for training, bilateral and multilateral best practice exchanges, and technology demonstration.7 The center will help China test and strengthen its own nuclear security measures and will provide a venue for cooperation with others in the region and beyond.

The White House reported that 20 states hosted or invited peer review missions through the IAEA or from other states. Many other states announced that they had strengthened nuclear security laws or regulations, upgraded physical security, or updated the list of threats against which their nuclear facilities must be protected.

Continuing the dialogue. An important new gift basket created a nuclear security contact group that will convene annually on the margins of the IAEA General Conference. The contact group will carry forward the consultative element of the summit process, providing a forum for senior government officials to meet and discuss current efforts, evaluate progress on previously made commitments, and identify future priorities. If states buy into the idea of the contact group and take action to strengthen it, the group, whose membership is open to states that did not participate in the summits, could be an important vehicle for sustaining international nuclear security cooperation.

The summit also produced statements on bilateral nuclear security discussions between key countries. For example, China and the United States agreed to increase cooperation on nuclear terrorism prevention and conduct an annual dialogue on nuclear security.

In addition, summit participants agreed to action plans for the IAEA, the United Nations, Interpol, the Global Partnership Against the Spread of Weapons and Materials of Destruction, and the Global Initiative to Combat Nuclear Terrorism (GICNT). The plans outline the roles these organizations will play in supporting ongoing nuclear security discussions now that the summits have ended.

Gaps and Missed Opportunities

In their communiqué, the participants in the 2016 summit pledged to “continuously strengthen nuclear security at national, regional, and global levels.”8 Striving for continuous improvement is the right way to frame the challenge of providing effective and sustainable nuclear security. Unfortunately, summit participants missed important opportunities to give added momentum to the
Still no global standard for nuclear security. Although the amended CPPNM establishes general security principles, it lacks specific standards or guidelines and applies only to materials in civilian use. UN Security Council Resolution 1540 requires states to provide “appropriate effective” protection for all materials, among other relevant measures, but does not specify what constitutes appropriate effective protection.\textsuperscript{9} IAEA recommendations, to which dozens of states have now publicly subscribed, provide somewhat more specificity, but their implementation is voluntary. Although the summit process certainly helped produce a shared understanding of the importance of nuclear security, it fell short of producing a consensus on a meaningful minimum global standard.

If a global standard was beyond reach during the summits, a public commitment to stringent nuclear security measures among the states possessing the biggest stocks of HEU and plutonium would have been a consequential step. Although China’s and India’s endorsements of the initiative on strengthening nuclear security implementation was an important development, Russia’s absence from the summit and Russia’s and Pakistan’s refusal to sign that statement is a significant gap in the patchwork of nuclear security commitments.

Furthermore, the summit outcomes were not comprehensive. Although the summit communiqués explicitly covered “all” nuclear material, most of the concrete progress from the meetings focused on civilian materials, largely ignoring the roughly four-fifths of the world’s remaining HEU and plutonium that is controlled by military organizations.\textsuperscript{10}

A mixed picture on implementation. Nuclear facilities in many countries still are not protected against the full range of threats. States with large stocks of nuclear weapons-usable material still contend with corruption and extremism.\textsuperscript{11} On the ground, security upgrades remain urgently needed in many spots around the world. One indication of the extent of the inconsistent application of physical protection measures is that, after all of the high-level attention since the 2010 summit, at least six countries—Argentina, Brazil, the Netherlands, Slovakia, Spain, and Sweden—still do not have armed guards at their nuclear facilities.\textsuperscript{12}

The collapse of U.S.-Russian bilateral cooperation is particularly alarming. Without Russian and U.S. commitments to rebuilding their bilateral nuclear security relationship, it will be impossible for the two states that possess roughly 80 percent of the world’s weapons-usable nuclear material to reassure one another that their nuclear security is sound.

Slippage of consolidation and minimization goals. The Obama administration put laudable effort into cleaning out HEU and plutonium from many countries and minimizing the use of HEU elsewhere. Yet, political obstacles will likely make substantial additional progress more difficult than in the past, in particular for the hundreds of kilograms of HEU in Belarus and South Africa. Conversion of additional HEU-fueled research reactors to use low-enriched uranium fuel, particularly but not only in Russia, is hampered by technical challenges and political inattention. Moreover, summit participants failed to reach agreement, even in principle, on stopping or reversing the buildup of separated plutonium.\textsuperscript{13}
Continuing culture of complacency in some countries. The summits put the notion of nuclear security culture on the agenda for many countries where it previously had been neglected. Nevertheless, workers, managers, policy officials, and even national leaders in many places still dismiss the threat of terrorist theft or sabotage as remote or implausible.\textsuperscript{14} Many organizations handling nuclear weapons, HEU, or separated plutonium do not have specific programs focused on strengthening security culture. The IAEA has still not published its nuclear security culture self-assessment guide.\textsuperscript{15} The summit process helped spark interest in strengthening security culture, but much more work is needed.

Need for more-robust channels for dialogue. The political momentum created by the summits will not likely be re-created through other organizations, although the contact group, IAEA ministerial meetings, a review conference for the amended CPPNM, and other forums certainly will provide important opportunities for discussion, reporting on progress, and further cooperation.

The recent summit’s action plans did not significantly expand or strengthen the global nuclear security architecture. The IAEA has assumed greater responsibility for convening high-level discussions on nuclear security and has intensified its nuclear security efforts since the first summit. Yet, the agency still deals only with civilian material and has no authority to require states to take any action on nuclear security.\textsuperscript{16} The nuclear security capacities of the UN and Interpol are even less robust, and the multilateral groupings, the GICNT and Global Partnership, remain unchanged by the action plans the summit participants produced.

Finally, Russia’s absence from the recent summit may bode ill for the successful implementation of the summit action plans. Moscow’s leadership and cooperation in all of the organizations referenced in the action plans will be necessary for many key nuclear security steps.

Progress in the Post-Summit Era

In the interest of promoting cooperation, the summits frequently focused on plucking low-hanging fruit, while failing to advance more-difficult discussions of threats and persistent challenges. Governments must focus not only on what is most feasible but also on what is most urgently needed in light of the evolving threats they face.\textsuperscript{17}

Nuclear security efforts should have a clear goal: ensuring that all nuclear weapons and the materials that could be used to make them, wherever they are in the world, are effectively and sustainably secured against the full range of threats that terrorists and thieves might plausibly pose.\textsuperscript{18} Building an international consensus around such a goal will be a major challenge for the next U.S. president and for like-minded leaders.

The 2016 summit communiqué alludes to the goal of continuous improvement. Achieving that goal will require work on several fronts. Here are some of the most important areas of focus.\textsuperscript{19}

Building up the commitment to stringent nuclear security standards. A legally binding set of
international standards for nuclear security is unfortunately out of reach for the present. Yet, a group of states like-minded emanating from within the contact group or a special working group of the GICNT could develop a set of principles and guidelines that they pledge to apply to all stocks of nuclear weapons, HEU, and plutonium and invite other states to join them. Such a commitment should include the provision of well-trained, well-equipped on-site guard forces; comprehensive measures to protect against insider threats; control and accounting systems that can detect and localize any theft of weapons-usable nuclear material; protections against cyberthreats that are integrated with other nuclear security measures; effective nuclear security rules and regulations and independent regulators capable of enforcing them; regular and realistic testing of nuclear security systems, including force-on-force exercises; a robust program for enhancing security culture; and regular assessments of the evolving threat of theft or sabotage. Following the example of the initial group of adherents, the accumulation of international support for more-comprehensive standards could grow over time.

In the meantime, leading states that are bound by the amended CPPNM should push to universalize the treaty, and the states that have joined the initiative on strengthening nuclear security implementation initiative should encourage others to commit to implement IAEA recommendations and accept peer review.

Implementing effective and sustainable security measures on the ground. Commitments to stringent standards are meaningful only if they translate into real improvements. Bilateral cooperation can help spur the actions that are needed. The United States should expand nuclear security cooperation with China, India, and Pakistan, sharing additional information on security arrangements without revealing sensitive information that would increase vulnerability to terrorist attack. The United States also will need to make a priority of discussions with a wide range of countries on enhancing their own nuclear security, providing resources when needed.

Despite tensions over Ukraine and other issues, Russia and the United States should agree to a package of cooperation that includes nuclear energy initiatives, which are of particular interest to Russia, and nuclear security initiatives, which are of particular interest to the United States. Although it is unlikely in the current political environment, one mechanism for achieving this goal would be to restart the U.S.-Russian Nuclear Energy and Nuclear Security Working Group, which facilitated dialogue from 2009 until it was suspended in 2014 because of tensions between the two countries. Cooperation should no longer be based on a donor-recipient relationship but on an equal partnership with ideas and resources coming from both sides.

Increasing efforts to reduce the number of sites where nuclear weapons and weapons-usable materials are stored. Today there are fewer locations where HEU and plutonium can be stolen because of removals motivated by the summit process. The consolidation process must continue. Stringent security requirements can help to incentivize the process of consolidation, as can well-funded programs for conversion of HEU-fueled reactors and removal of material. Russia and the United States, as the countries whose nuclear stockpiles are dispersed in the largest number of buildings and bunkers, should each develop a national-level plan for accomplishing their military and civilian nuclear objectives with the smallest practicable number of locations. The United States and other interested countries should ensure that plutonium and HEU bulk processing facilities do not spread to other countries or expand in number or scale of operations and that no more plutonium is separated than is used, bringing global plutonium stocks down over time.

Establishing a nuclear security culture that does not tolerate complacency about threats and vulnerabilities. Every country with relevant materials and facilities should have a program in place to assess and strengthen security culture, and all nuclear managers and security-relevant staff should receive regular information, appropriate to their role, on evolving threats to nuclear security. At the same time, interested countries should launch initiatives to combat complacency, including a shared database of security incidents and lessons learned; detailed reports and briefings on the nuclear terrorism threat; discussions among intelligence agencies, on which most governments rely for information about the threats to their country; and an expanded program of nuclear theft and terrorism exercises.
Building up channels for dialogue. Countries must continue to share information and devise plans to meet current nuclear security challenges. The IAEA ministerial-level meetings on nuclear security will provide an important forum. If parties to the amended CPPNM elect to meet every five years to review progress, this process could create important opportunities to place high-level pressure on states to step up nuclear security commitments and implementation.

A more comprehensive scope of cooperation, including on military materials, could take place in multilateral forums. The GICNT, co-chaired by Russia and the United States and still valued by both, consists of more than 80 states committed to the group’s statement of principles, which includes improving measures that reduce the risk of nuclear theft such as accounting, control, and protection of nuclear and radiological materials. The group has not focused on these preventive approaches so far, but it should in the future. This summer represents the GICNT’s 10th anniversary, which would be an excellent time to announce the creation of a GICNT working group focused specifically on strengthening security for nuclear materials and facilities. The GICNT could also be a useful forum for Russia and the United States to expand nuclear security cooperation.

The contact group created at the nuclear security summit this year holds promise for facilitating dialogue, sharing information, and germinating joint activities. Its openness to all IAEA members has the advantage of potentially attracting states beyond the ring of past summit participants. Its size and heterogeneity, however, may limit the depth and effectiveness of the discussions. The contact group should select an executive committee of member state representatives—perhaps former summit hosts plus Russia, if it chooses to join—to establish and coordinate its agenda for discussion.

Finally, summit-level nuclear security meetings could be continued on the side of Group of 20 meetings, perhaps once every four years. This would sustain the kind of executive-level political attention to nuclear security that summits provided.

The nuclear security summits periodically pressed participants to commit themselves to new and stronger measures for preventing nuclear terrorism. They facilitated a process of stocktaking and reporting on the concrete actions participants had taken. Moreover, they were a vehicle for forging stronger international collaboration on bolstering nuclear security around the globe. States must continue to build on the progress they made through the summit process. If they do, the 2016 summit will mark the beginning, rather than the end, of a new era of continuous improvement in nuclear security.

ENDNOTES


“Swedish Regulator Orders Tighter Security at Nuclear Plants,” Reuters, February 5, 2016, 
http://www.reuters.com/article/sweden-nuclear-security-idUSL8N15K3SS.


14. Matthew Bunn and Eben Harrell surveyed nuclear experts in states with nuclear weapons-usable material and found that some respondents did not find certain threats credible, despite extensive evidence to the contrary. See Matthew Bunn and Eben Harrell, “Threat Perceptions and Drivers of Change in Nuclear Security Around the World: Results of a Survey,” Belfer Center for Science and International Affairs, Harvard Kennedy School, March 2014, 


17. For a discussion of how the threat of nuclear terrorism has evolved over time, see Bunn et al., “Preventing Nuclear Terrorism,” pp. 14-26, 133-143.

18. Ibid., p. 96.

19. For the recommendations on which this section draws, see Bunn et al., “Preventing Nuclear Terrorism,” pp. 96-133.


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Source URL: https://www.armscontrol.org/ACT/2016_06/Features/A-New-Era-for-Nuclear-Security