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WORKING PAPER

Seeking Nuclear Security
Through Greater
International Coordination

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March 2010

This publication is part of CFR's International Institutions and Global Governance program and has been made possible by the generous support of the Robina Foundation.

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INTRODUCTION

In September 2008, Mohamed ElBaradei, former director general of the International Atomic Energy Agency (IAEA), described nuclear terrorism as the number one threat to world security.¹ Before then, ElBaradei had repeatedly pointed out that terrorist organizations are seeking nuclear materials. “If they get it, they will use it,” he warned in 2006. Since then, the IAEA has released data from its Illicit Trafficking Database, which confirmed at least fifteen cases of nuclear trafficking in 2008 alone—a statistic that might represent only the tip of the iceberg.² The release of this information coincided with the official launch of nuclear energy programs in countries where governance is patchy, regulation is weak, and terrorists are known to operate.³

The release of IAEA data also followed reports that blueprints for nuclear weapons may have been available on the black market; armed gunmen had broken into South Africa’s nuclear reactor at Pelindaba; and Taliban suicide bombers had attacked a facility that was producing components for Pakistan’s nuclear weapons program.⁴ More recently, news that illegal arms shipments have been intercepted in Southeast Asia and the Persian Gulf en route to Iran (and reportedly to terrorist groups in the Levant), have raised fears that future hauls could include nuclear materials.⁵ ElBaradei’s stark warnings and the international events that surrounded them have had a significant impact on the international community.

In April 2009, President Barack Obama identified nuclear terrorism as the gravest threat to the United States and called for stringent international efforts to break the nuclear black market.⁶ In the same speech, he laid out a plan to improve nuclear security, which included convening a nuclear security summit in Washington, DC, in April 2010. Evidence that his speech did not fall on deaf ears abounds in the international press, but perhaps the strongest evidence that his nuclear security agenda is being taken seriously can be found in UN Resolution 1887, which was unanimously adopted by the Security Council in September 2009. The resolution expresses grave concerns about the threat of nuclear terrorism, recognizes the need for all states to prevent terrorists from obtaining nuclear resources, and calls upon states to secure all vulnerable nuclear materials within four years.⁷

Debates in the main decision-making bodies in Vienna and New York reveal strong resistance to such measures. Too many states are unwilling to transfer power from the national to the international level because they are wary of new and burdensome obligations (especially when these are imposed by international bodies that they consider to be dominated by Western security agendas). As a result, the nuclear security instruments that have been developed rely on voluntary buy-in from states and lack mechanisms for compliance and verification. The mandates of international oversight bodies remain similarly weak.

A long-term strategy for dealing with this weakness in the evolving nuclear security regime is urgently needed. The strategy will hinge on the time-consuming but essential task of forging consensus to prioritize and coordinate international efforts to prevent what Graham Allison has called “the ultimate preventable catastrophe”—a nuclear terrorist attack.⁸ Where direct efforts to promote nuclear security via multilateral institutions are delayed or blocked due to a perceived lack of legitimacy, competing priorities, and ideological divisions, states and international organizations should continue to improve bilateral and plurilateral⁹ initiatives—and, where necessary, develop indirect strategies to secure high-risk materials. The United States has a crucial role to play in coordinating these near-term strategies, and in promoting international consensus on the need to strengthen the international bodies tasked with overseeing the nuclear terrorism regime as a whole.

THE EVOLVING NUCLEAR SECURITY REGIME

The IAEA defines “nuclear security” as the prevention and detection of (and response to) theft, sabotage, unauthorized access, and illegal transfer of or other malicious acts involving nuclear materials and other radioactive substances. The meaning of the term has evolved since 1945, when it was first used to describe efforts made by Cold War adversaries to ensure the arms race would not end in accidental nuclear disaster. Since the fall of the Soviet Union in the early 1990s, much has been done to address the challenges of securing vulnerable fissile materials across the globe from thieves and smugglers. More than any other event, the terrorist attacks of September 11, 2001, highlighted the devastation that could be inflicted if nuclear materials were involved in an attack. Since then, the term “nuclear security” has become more closely associated with the prevention of nuclear terrorism.

Aware of these dangers, countries in the West have supported bilateral, plurilateral, and international activities to secure loose nuclear materials. However, these activities have been uneven, leading Kenneth N. Luongo to note in a recent Stanley Foundation report: “Significant challenges not only persist but also continue to spread.”¹⁰

The critical challenge facing the international community is how to set effective global nuclear security standards and ensure that they are implemented. At present, there are serious weaknesses in the evolving regime. At the international level, there are flaws in the instruments that have been developed to address nuclear terrorism threats; at the national and regional levels, implementation of nuclear security measures is inconsistent. Despite all the talk of action, too often it does not translate into concrete measures.

IMPORTANT MULTILATERAL NUCLEAR SECURITY INSTRUMENTS

Six important multilateral instruments underpin the emerging nuclear security regime. They include:

1. UN Security Council Resolution 1373;
2. UN Security Council Resolution 1540;
3. the International Convention for the Suppression of Acts of Nuclear Terrorism (known as the Nuclear Terrorism Convention);
4. the Convention on the Physical Protection of Nuclear Material (CPPNM) and its amendment;
5. the Physical Protection of Nuclear Material and Nuclear Facilities INFCIRC/225/Rev.4 (INFCIRC/225); and
6. the IAEA Code of Conduct on the Safety and Security of Radioactive Sources (known as the Code of Conduct).

These six legal instruments share three common flaws: unclear obligations, many of which are voluntary and are not legally binding; insufficient monitoring of implementation; and poor use of existing multilateral tools.

UN Security Council Resolution 1373

UNSC Resolution 1373, adopted in 2001, calls for all states to become parties to the relevant international conventions and protocols relating to terrorism—of which the CPPNM is one—as soon as possible. The

resolution obliges states to criminalize assistance to terrorist activities, deny financial support and safe haven to terrorists, and exchange information for the prevention and prosecution of criminal acts. It also emphasizes the need to strengthen a global response to the challenge of illicit trafficking.¹¹ Resolution 1373 is not focused on weapons of mass destruction (WMD) per se, but as Elizabeth Turpen notes: “WMD was already on the minds of the resolution’s drafters. Two paragraphs of the resolution—3 and 4—specifically address terrorist possession of WMD-related materials and trafficking in such materials.”¹²

UN Security Council Resolution 1540

UN Security Council resolutions 1373 and 1540 are the only universally binding instruments that impose nuclear security obligations on all states. Resolution 1540 goes further than its predecessor, in that it exclusively addresses WMD security commitments, setting these out in a series of provisions. Under the resolution, adopted in 2004, all states are required to adopt and enforce “appropriate effective measures” to prohibit any nonstate actor from manufacturing, acquiring, possessing, developing, transferring, or using nuclear weapons, and to establish domestic controls to prevent their proliferation. That includes implementing accountancy and control measures; physical protection measures; border controls; measures to detect, deter, and combat illicit trafficking; and import and export controls.¹³

Resolution 1540 is the most important pillar of the evolving nuclear security regime, but its implementation has been slow and patchy. During the 2009 Comprehensive Review of the Status of Implementation of Resolution 1540, the Expert Group revealed particularly low levels of implementation in certain areas, especially in the physical protection of nuclear materials, in measures for border and export controls of nuclear-related materials, and in all aspects of state enforcement of national controls.¹⁴

A number of factors are hindering the implementation of Resolution 1540. Some hinge on the reservations of some states over the legitimacy of the Security Council imposing mandatory obligations on all states.¹⁵ Others are due to state capacity problems and competing priorities. And still others are due to the weak mandate of the 1540 Committee, which does not have the resources or the authority to undertake an effective oversight role.¹⁶ The last factor stems in part from the way the resolution was passed—after Osama bin Laden said al-Qaeda had “a duty” to acquire nuclear weapons, the Security Council hastily pushed the resolution through (omitting vital verification and enforcement provisions in the process).¹⁷ From the onset, the hurried resolution triggered resentment among some UN member states, which questioned the Security Council’s decision to circumvent the traditional UN–treaty-making process and considered the resolution part of the U.S.-led counterterrorism agenda.¹⁸

The Nuclear Terrorism Convention

The Nuclear Terrorism Convention was adopted in 2005 under the auspices of the United Nations. It details offenses relating to unlawful possession and use of radioactive materials, and the use or damage of nuclear facilities. The convention requires parties to criminalize these offenses and to physically protect nuclear and radiological materials as recommended by the IAEA. In addition to these obligations, the convention is significant because it requires states to cooperate with one another and with the IAEA in their efforts to prevent, detect, and respond to nuclear and radiological terrorism threats. The convention thus plays an important role in establishing nuclear security as an international norm and in legitimizing UN and IAEA authority in shaping and overseeing the nuclear security regime. The adoption and activation of this long-awaited (and highly contested) instrument signaled a turning point in the evolution of the global nuclear security regime.

But the Nuclear Terrorism Convention is not without its problems. Nearly five years have passed since the convention was adopted and three years since it entered into force; yet, it has only sixty-five parties. Important states that have not signed include Indonesia, Iran, Iraq, Myanmar, North Korea, Pakistan, and Vietnam. Moreover, of the nuclear weapon states, only Russia and the United Kingdom have currently ratified it, which sends the wrong message to the international community. U.S. ratification has been delayed due to concerns over the information-sharing provisions and the legal restrictions that the convention could place on military strikes on foreign nuclear facilities, but the Senate has now consented to ratify the treaty.¹⁹

The CPPNM and Amendment

The Convention on the Physical Protection of Nuclear Material is the only international legally binding agreement on the physical protection of nuclear materials used for peaceful purposes.²⁰ The CPPNM provides requirements for protection during international transport and establishes a framework for cooperation in the protection, recovery, and return of stolen materials. The convention also lists offenses that states should make punishable, and for which extradition should be accommodated. Under the CPPNM, IAEA member states are only required to implement measures deemed necessary in accordance with their national security requirements.²¹ As of February 2010, the convention had 142 parties. It has not, however, been signed by important states that have nuclear research facilities and nuclear energy plans (such as Thailand and Vietnam), or—more significantly—by others that have suspected or confirmed nuclear weapons programs (such as Iran and North Korea).

The amendment to the CPPNM was passed in 2005 but will only enter into force after two-thirds of the current 134 parties to the CPPNM ratify it. The amendment will facilitate cooperation to recover nuclear materials, prevent (or mitigate) the consequences of radiological sabotage, establish new norms for the physical protection of nuclear materials, and encourage parties to criminalize offenses in their domestic law. It will also significantly extend the IAEA nuclear security mandate by conferring additional functions on the agency.

But experts cite inherent problems in the CPPNM and its amendment.²² First, the physical protection measures mandated are unclear, and that ambiguous language could be used as an easy out for states that do not wish to prioritize nuclear security.²³ Second, the CPPNM and its amendment allow states to evaluate their own nuclear security, so other states or organizations (such as the IAEA) cannot reasonably demand that a member state strengthen its physical security. Third, neither the CPPNM nor the amendment requires periodic reporting to an international organization, or specifies peer reviews of an individual country's physical protection measures.²⁴ Fourth, some member states lack the financial means to ensure the physical security of their nuclear materials (such as developing countries that house research reactors fueled by highly enriched uranium).

The Physical Protection of Nuclear Material and Nuclear Facilities

The Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225) is a set of recommendations to establish effective physical protection measures. It is the closest thing the international community has to a set of guiding principles for securing loose nuclear materials and preventing nuclear terrorism. INFCIRC/225 provides best practices from which countries can begin to develop their nuclear security systems. It originated from an IAEA document published in 1972; since then it has been revised four times.

INFCIRC/225/Rev.4 covers the physical protection of both peaceful and military nuclear materials in use, storage, and transport, whether domestic or international.²⁵

INFCIRC/225/Rev.4 is deficient on a number of levels. First, the recommendations are nonbinding only, meaning states have no obligation to implement them. States can therefore use these guidelines as a whole, in part, or not at all. Second, a number of measures that would have strengthened physical protection were weakened or dropped to get the revisions passed. As a diplomat noted recently, these guidelines are the lowest common denominator in accepted rules for physical protection (and most are not strong enough to ward off any potential thief or attacker).²⁶ Of course, a state may seek assistance from the IAEA to clarify these recommendations and apply them to its particular security environment. Nonetheless, some experts are unhappy that appropriate security measures are not more clearly defined at the outset and that the bar is not set at a universally high level.

Code of Conduct on the Safety and Security of Radioactive Sources

The Code of Conduct is a nonbinding, international legal instrument that provides guidelines and sets standards for the control of civilian radioactive sources that may pose a safety and/or a security risk. It was originally developed by the IAEA Secretariat in the late 1990s—at the request of the Group of Eight (G8)—and was reviewed, revised, and strengthened following the terrorist attacks of 9/11. The text of the revised code was approved by the IAEA Board of Governors in September 2003 and “welcomed” by the general conference (although the nonbinding nature of the instrument was stressed). Subsequently, the IAEA Secretariat developed practical guidance on how to comply with the code, which it published in March 2005. It also set up a formal process of information exchange, which is intended to help the agency evaluate progress in implementation.

Since the code was published in January 2004, most states²⁷ have pledged their political commitment to it (some of the notable exceptions being Egypt, Iran, Malaysia, Myanmar, North Korea, Saudi Arabia, and Singapore). But few have completed the self-assessment questionnaire, which is intended to help the IAEA evaluate implementation of the guidelines.²⁸ The status of national implementation is therefore difficult to gauge, although most of the indicators suggest that political commitment has been slow to translate into concrete action. Important states that have not been engaging fully in the process of information exchange over their use and control of radioactive sources include Argentina, Israel, Japan, Pakistan, Ukraine, and many countries in the European Union. In addition, China—alone among the nuclear weapon states—has not submitted a completed questionnaire to the IAEA.

REGIME OVERSIGHT AND ASSISTANCE INITIATIVES

A number of international bodies and initiatives are engaged in overseeing and strengthening the nuclear security regime. But their work is hampered by unclear and limited mandates, inconsistent support, and a lack of consensus on whether nuclear security should be an international priority.

The two main multilateral bodies involved in this work are: the IAEA, which has a long-established and expanding nuclear security program that runs parallel to its safeguards, safety, and nuclear technology outreach, and the 1540 Committee, which reports to the UN Security Council and oversees implementation of Resolution 1540. Although both bodies have the potential to play strong oversight roles, their authority, mandates, and resources are limited, leaving serious gaps in the regime. Numerous bilateral and plurilateral

initiatives have been launched to fill these gaps (with some success), but they lack the comprehensive reach and perceived legitimacy of multilateral organizations that exist under the UN framework.

Multilateral Oversight

IAEA Nuclear Security Program

The IAEA provides guidance and assistance to states on a wide range of nuclear security measures to improve the physical protection of nuclear and other radioactive materials. The IAEA has undertaken efforts to coordinate and expand these activities, which the IAEA Department of Nuclear Safety and Security brought under the umbrella of a nuclear security program in 2002.²⁹ Specific services provided under this program include missions to reduce inventories of high-risk materials (including highly enriched uranium) and to improve state capabilities in the following areas: implementing the guidelines set out in INFCIRC/225/Rev.4; preventing, detecting, and responding to nuclear and radiological terrorism, illicit trafficking, and nuclear and radiological emergencies; promoting nuclear security at major public events; and human resources for every area of nuclear security training.

There are some significant strengths in the IAEA Nuclear Security Program. On the one hand, it is well established and—for the most part—well respected by member states. The program is supported by in-house scientists and laboratories, and it is assisted by member states in its goal of securing vulnerable materials around the world. Some member states, for example, have provided extra-budgetary funding and contributed experts and training.

On the other hand, the work conducted under the IAEA nuclear security program suffers from a number of difficulties. Most problems stem from the agency's lack of authority to assess or verify the nuclear security efforts of member states, the reluctance of states to grant it that authority, and the unwillingness of the IAEA Secretariat to promote or lobby for an expanded mandate. These handicaps have anchored the agency to its traditional assistance role—it may intervene only at the request of the state in question, and it may assess (and in some cases, implement) nuclear security measures only when invited to do so.

1540 Committee and Expert Group

The 1540 Committee was established to identify operational best practices and disseminate the experiences of states working to implement Resolution 1540. But the committee's role is severely restricted because it lacks the mandate to evaluate assistance needs and compliance. A logical role for the committee would be to match requests for support with offers from donor states, and yet this important task is not undertaken by the committee beyond keeping a record of requesting states and offers of assistance. The reasons are partly political—some states suspect the assistance clause in Resolution 1540 is a Western tool to dominate the global security agenda.³⁰ To some extent, the Expert Group (eight handpicked nuclear security experts who advise the committee) tries to compensate for this weakness by helping gauge compliance and assistance through research and consultations it undertakes for the committee. However, debates in the UN Security Council show that some states—including Russia and China—are wary of the 1540 experts too, and are keen to prevent any expansion of their role.³¹

Plurilateral Initiatives

Global Partnership

At the Kananaskis Summit in 2002, members of the G8 launched the G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction. Under the Global Partnership, leaders of the G8

countries committed to prevent terrorists (or those who would harbor them) from acquiring or developing WMD and related materials, equipment, and technology. The partnership is essentially an assistance program to help countries—starting with Russia—address nonproliferation, disarmament, counterterrorism, and nuclear safety issues.³² Although the partnership started with G8 donors, contributions have gone well beyond those countries. The goal is to generate an additional \$1 billion per year from international donors, beyond U.S. contributions.³³ These funds are directed toward nuclear safety, dismantlement of Russian nuclear submarines, and the destruction of nonnuclear WMD stockpiles.³⁴

Recently, there has been debate among security experts over the wisdom of expanding the partnership's mandate beyond the original focus on the former Soviet Union. Some believe that will shift the emphasis from the urgent role of securing fissile materials to the more protracted, long-term goal of building legal infrastructure for nuclear security.³⁵ The concern is that this expanded mandate could dilute the partnership's important work, weighing it down with many of the same political divisions that hamper the IAEA Nuclear Security Program. One of the strengths of the Global Partnership has been its issue-specific regional focus, which has allowed it to make major, concrete contributions to global nuclear security.

Global Initiative to Combat Nuclear Terrorism (GICNT)

In 2006, the United States and Russia created the Global Initiative to Combat Nuclear Terrorism (GICNT). In their joint statement, they called upon like-minded nations to expand and accelerate efforts to combat nuclear terrorism. Through their participation in the GICNT, countries voluntarily reinforce international cooperation in combating this threat.³⁶ The GICNT is intended to plug gaps in the existing nonproliferation and counterterrorism architecture—especially those created by the fact that the CPPNM amendment is not yet in force. Its emphasis is on securing civilian rather than military nuclear facilities, specifically on preventing terrorists from attacking nuclear reactors and nuclear power stations. For this reason, it draws its participants from both public and private sectors and tries to create partnerships between them.

The GICNT appears to be most effective at sharing expertise for capacity building. According to the GICNT chair's statement in June 2009, GICNT partners, "have conducted over thirty Global Initiative workshops, conferences, and exercises aimed to build capacity to prevent, detect, and respond to acts of nuclear terrorism."³⁷ In 2009, the partners also committed to increase their cooperation by developing and improving accounting, control, and physical protection systems for nuclear and other radioactive materials; enhancing security of civilian nuclear facilities; and strengthening operational detection and forensics capabilities.

Although the GICNT is a relatively new initiative, certain challenges are becoming apparent. The development and use of nuclear detection technologies, for example, has been an important focus of recent GICNT meetings. But the challenge facing GICNT partners is to coordinate and harmonize their nuclear forensics activities, including in the areas of research, development, and individual state-led projects. That presents the initiative with significant difficulties, as its membership has rapidly expanded from its original thirteen members to its current membership of seventy-six.

Proliferation Security Initiative (PSI)

Like the GICNT, the Proliferation Security Initiative (PSI) is a voluntary, plurilateral initiative that was designed to plug gaps in the multilateral WMD regime.³⁸ However, unlike GICNT, the focus of the PSI is not on preventing nuclear terrorism but on promoting counterproliferation cooperation among like-minded states, and especially on curtailing North Korea's nuclear-related trade.

With over ninety members, the PSI could become an important part of the nuclear security regime if it is

used to intercept cargoes that are suspected of being destined for terrorist organizations. However, many states (including China) resist joining the initiative due to concerns over the legality of U.S.-led interdiction activities that operate outside the UN framework. Other states are reluctant to join officially because they view it as an unwelcome component of U.S. strategic dominance. Finally, some states are wary of steps that could be construed in Beijing as a political decision to strategically align with the United States against China.

World Institute for Nuclear Security

The World Institute for Nuclear Security (WINS) was launched in 2008 in Vienna to help secure nuclear and radioactive materials and facilities worldwide. Its goal is *not* to set regulatory standards, act politically, speak on behalf of the nuclear industry, or promote or discourage any part of the nuclear fuel cycle. Rather, it aims to provide an international forum for nuclear security professionals to meet, discuss, and decide how to implement best practices.³⁹

WINS is especially focused on ensuring that nuclear operating organizations take proper responsibility for security at all levels, and it encourages boards of governors to embrace nuclear security as an issue of corporate governance. Whether it will succeed in this goal depends to a large extent on how it is viewed by industry, and on whether the organization can build a sense of urgency around the need to create a nuclear security culture in the private sector. It is still too early to judge how successful this venture will be. It would be interesting to gauge how it is perceived by developing states, given that the organization was launched by Western states and is primarily staffed by Westerners. But WINS is clearly attempting to fill the important private sector gap in the nuclear security regime.

Bilateral Initiatives

U.S. Nuclear Security Assistance

Although U.S. participation in international nuclear security programs started before the 1990s, it was the demise of the Soviet Union that brought the threat of loose nuclear materials and expertise to the forefront. Current U.S. nuclear security efforts include programs managed by the departments of Energy, Defense, and State. In 1991, Congress initiated the Cooperative Threat Reduction (CTR) program to reduce U.S. vulnerability to WMD from the former Soviet Union. Often referred to as the Nunn-Lugar program, this congressional effort gave the Defense Department the authority and funding for the CTR program. Through the CTR program, the Defense Department provided assistance to the eligible states of the former Soviet Union to promote denuclearization and demilitarization. The CTR program has also been a major engine behind the launch of broader plurilateral nuclear security initiatives, including the G8 Global Partnership, GICNT, and WINS.

As a leader in these initiatives, the United States has become the most important force in shaping the norms of the emerging nuclear security regime. Most states appreciate this as a major contribution to global security. But others resent it, especially in the global South, where a number of developing states regard U.S. nuclear security leadership as part of the unpopular war on terrorism or view it as a form of technology denial. These attitudes help explain why U.S. offers of capacity-building assistance are not accepted by some countries that need it most, such as Indonesia, Malaysia, Pakistan, and South Africa. It also helps explain why, despite the assistance clause in Resolution 1540, the potential synergies between well-funded, state-led nuclear security outreach programs and multilateral initiatives are underexploited.

This situation is unlikely to change unless the United States alters the perceptions of pivotal developing states regarding the motives that drive its bilateral and plurilateral nuclear security initiatives. Such steps

include more effective information sharing; expanded international debate over nuclear security risks and how to overcome them; and consistent demonstration of U.S. commitment to multilateral nuclear security instruments and the WMD regimes in general. The ideal vehicles for these diplomatic efforts are international forums, such as the April 2010 Nuclear Security Summit in Washington, DC, and the May 2010 Nuclear Nonproliferation Treaty (NPT) Review Conference in New York.

European Union (EU) Assistance

Like the United States, the European Union is taking a leadership role in the provision of bilateral assistance. Following the breakup of the Soviet Union, the European Union created the Technical Assistance to the Commonwealth of Independent States (TACIS) program to address nuclear safety and security problems associated with that breakup. With regard to nuclear security, TACIS activities have mainly focused on analytical capabilities for characterizing nuclear materials intercepted from illicit trafficking.⁴⁰

Two thematic institutes in the EU Joint Research Center (JRC) deal with safeguards and nuclear security. First, the Institute for the Protection and Security of the Citizen (IPSC) has expertise in containment, surveillance, process monitoring, near-real-time accountancy (which provides updates of nuclear material balances), and nuclear material accountancy and control (including technologies such as mass and volume measurements). Nuclear material accountancy comprises recording and reporting of stockpile weapons, components, and nuclear materials.

Second, the Institute for Transuranium Elements (ITU) plays a significant role in detecting illicit trafficking, and its expertise lies in the areas of radiometrical measurements techniques, material science, particle analysis, fuel cycle materials, and corresponding training. Since the 1990s, the JRC has used these and other institutes to develop a nuclear security strategy known as the Model Action Plan (working with the IAEA and Interpol), which aims to create a coherent and integrated approach to address illicit trafficking of nuclear weapons and materials through prevention, detection, and response.

In addition to the programs outlined above, the European Union has other programs to address the capacity challenges associated with implementing the nuclear security obligations set out in Resolution 1540. As part of its proactive agenda, the European Union has supported the 1540 Committee and UN Office of Disarmament Affairs in their outreach activities in regions where 1540 implementation is low. At times, this outreach has been well targeted and effective; at others it has been less so, undermined by a lack of sensitivity to the particular needs, concerns, and capabilities of developing states.⁴¹

Other Bilateral Assistance Programs

The United States and European Union may lead the field in their bilateral assistance programs and in their support for plurilateral and multilateral nuclear security initiatives, but other states are also playing important roles, albeit more quietly. All are Western states. They share the sense of urgency around nuclear and radiological terrorism prevention, and many of their activities have provided crucial capacity-building assistance. One example is New Zealand's Pacific Security Fund, which has supplied equipment and training to help Pacific Island countries implement their UN Resolution 1540 obligations. An advantage of this program is that it is provided by a state that is familiar with the region, trusted by most regional actors, and considered relatively independent of external influence. One of its disadvantages is that its funding and resources are limited and thus its opportunities to strengthen the nuclear security regime are not fully exploited.⁴²

SUMMARY: CURRENT WEAKNESSES IN THE REGIME

However comprehensive its tools, instruments, and institutions, the global nuclear security regime is fundamentally weak because implementation lies with individual states.

Each year, more tools are added, more institutions created, and more initiatives launched at the bilateral, plurilateral, and multilateral levels. Bit by bit, the major gaps in the regime are being filled by states and organizations that regard nuclear security as a priority. The launch of WINS in 2008 is a good example of how, when a serious gap is identified (in this case, the need to engage the private sector in global nuclear security efforts), motivated states and individuals with the vision and the necessary expertise will come forward to try to close it.

The problem, however, is that effective nuclear security depends on buy-in from *all* states. Most states accept this and are willing to address threats to the nuclear materials in use and transport on their territories. But other states—especially those in the developing world—do not regard it as a priority. They either consider it an unnecessary burden or, in extreme cases, part of a wider, unethical, Western-led security agenda that is reinforcing the North-South divide. These differences in perspective help explain why the regime lacks legally binding requirements for maintaining high levels of security, and operates without a multinational authority to evaluate the effectiveness of physical protection measures in each state.⁴³

STRENGTHENING THE NUCLEAR SECURITY REGIME

Any regime is only as strong as its weakest link. There are too many weak links in the current nuclear security regime to be confident that it can deal effectively with the threat of nuclear and radiological terrorism. That problem is widely recognized by the international community, and it has led to a number of national and international studies that have explored strategies for strengthening the regime. Most of these comprise “wish lists” because the analysis does not consider the reasons the regime has evolved in the way it has (that is, without verification and enforcement mechanisms). Thus, they fail to address the political obstacles that stand in the way of change.

Given the resistance to obligations that impinge on national sovereignty and the lack of an international consensus on the need to prioritize nuclear security, the regime relies heavily on a process of voluntary uptake and consultation. The many international bodies that oversee the regime’s legal instruments have to coax states to cooperate and tread carefully around political sensitivities, for fear of undermining the goodwill on which implementation depends.

What Is Needed: The Wish List

Experts at international organizations, governments, nongovernmental organizations (NGOs), think tanks, and academic institutions around the world have generated a wish list of ideas for increasing nuclear security. Many of these proposals—or at least their seeds—were sown by Matthew Bunn and George Bunn before the terrorist attacks of 9/11 took place.⁴⁴ The fact that so many of the proposals are still a distant dream in 2010, nearly ten years after much of the world woke up to the horrors posed by terrorism, speaks volumes about the practical and political hurdles that stand in the way of implementation.

1. The IAEA as the Ultimate Nuclear Security Authority

Number one on the wish list will be the most difficult to achieve. The ideal scenario is that states would give an international body (preferably the IAEA) the authority to define, review, and monitor national nuclear security standards and to evaluate compliance.⁴⁵ That would require states to negotiate—under the guidance of the IAEA—binding agreements that set those standards, giving the IAEA a precise mandate to evaluate whether the standards are being met. The IAEA has worked to define standards over many years, but they are currently used as guidance rather than legal requirements.

The standards set by the IAEA during this process would clarify the “appropriate effective” steps set out in Resolution 1540 and solidify commitments outlined in the CPPNM, its amendment, INFCIRC/225, and the Code of Conduct. Most importantly, it would establish the minimum threat against which all nuclear and radiological materials need to be defended. Once these standards are set, the IAEA would monitor compliance, becoming the verification body for all major nuclear security instruments, including Resolution 1540. The IAEA would conduct regular reviews of nuclear security measures and report any cases of noncompliance to the IAEA Board of Governors. If a state, having been warned of its noncompliance under any of the binding agreements and given a deadline to rectify the situation, failed to do so, the matter would be reported to the UN Security Council for further action.

2. National and Regional Cooperation

Number two on the wish list comprises urgent steps that states and regional organizations can take to reduce vulnerability to nuclear terrorism through their own national and regional efforts. That includes reducing the number of nuclear weapons; cutting stockpiles of highly enriched uranium and weapons-usable plutonium down to minimum levels (with the long-term goal of elimination); transitioning research reactors that are fueled by highly enriched uranium to low-enriched uranium or shutting them down; repatriating highly enriched uranium to secure locations; and phasing out the civil use of highly enriched uranium altogether.

It also includes urgent measures to secure the most dangerous radiological sources worldwide, ensuring that these materials—which could be used in a dirty bomb—cannot be acquired for malicious purposes. That step requires prioritizing nuclear security; signing, ratifying, implementing, and enforcing all of the current nuclear and radiological security instruments; and engaging in the highest levels of international cooperation to identify threats, foil terrorist plots, and prevent nuclear smuggling. Confidence building would be an important part of this dynamic—states would be as transparent as possible with one another and with regional and international bodies in their disclosure of their nuclear security arrangements. Such an approach would encourage states to regularly update their security systems as the threat environment changes, boosting confidence in the regime. Greater transparency would also facilitate the crucial task of identifying weak links in the chain, which is currently difficult to do because of a lack of information.

To facilitate this process, states and regional organizations would set up national and regional centers, which would coordinate nuclear security efforts and serve as a common point of contact for the IAEA and WINS.⁴⁶ These centers, which would be funded by states and by the private sector, would run workshops and training programs for government officials, nuclear operators, and managers; establish nuclear security research programs in collaboration with international and national tertiary institutions; host nuclear security databases and reference materials; and arrange nuclear security symposiums. Through this international network of centers, the public and private sectors could engage in information sharing and help educate a new generation that is well informed and forward thinking on nuclear security issues.

3. Private Sector and Civil Society Responsibility

Number three on the wish list deals specifically with steps that the private sector and civil society could take to strengthen nuclear security arrangements. If the nuclear industry and civil society were fully engaged, the international community could be much more confident that standards set by international bodies and implemented by governments ensured nuclear security.

In the ideal scenario, the nuclear industry in every country would take urgent steps to create a strong nuclear security culture among regulators and private sector operators, under the guidance of the IAEA and WINS.⁴⁷ All nuclear organizations would accept that nuclear security is a responsibility that has to be taken seriously at all levels, from the boardroom to the factory floor. Guidelines on best practices (developed by the IAEA and WINS) would be adopted and regularly reviewed by senior managers and boards of directors, who would work with national and international bodies (including intelligence agencies) to identify potential threats to their operations and implement Design Basis Threat (DBT) assessments—a methodology developed by IAEA experts to help states and private sector managers and operators assess the potential insider and external threats that need to be taken into account when designing physical protection systems for specific nuclear materials and facilities.⁴⁸ Lessons on how to build this security culture would be drawn from the efforts of the nuclear industry to establish a stronger safety culture following the nuclear accident at Chernobyl.

OBSTACLES TO STRENGTHENING THE REGIME

Practical Difficulties

There are obvious practical hurdles that stand in the way of converting these proposals from dream to reality. One of the biggest is funding. The investment required to expand the nuclear security regime to the extent that is envisaged would be huge, and it is clear that the international bodies involved in oversight are already financially overstretched. Most of the current IAEA nuclear security budget comes from voluntary funding,⁴⁹ and although the IAEA General Conference did approve a small budget in 2009, it will still need voluntary supplements to pay for the planned work. The amount pledged often differs from the amount that is actually received, making planning difficult. And donors place limitations on how voluntary funds are used, creating practical difficulties in nuclear security plan activities.

Other obstacles exist too, from limited human resources to technological deficiencies. But perhaps the most important question is this: Would the international community provide the political support for the type of expansion of the nuclear security regime that would be required to make it effective? Much depends on whether states are willing to invest the necessary authority in the IAEA (or another appropriate international body), and whether they are prepared to cede some of their sovereignty to the global level in the interests of the greater good. If they are not willing to take this step, which is essential for coordination, verification, and enforcement, all the practical hurdles become irrelevant.

Resistance to Expanding IAEA Authority

The IAEA is the logical choice for coordinating and managing global nuclear security. It already contributes significantly to the international nuclear security regime by participating in the development and enhancement of the international body of instruments. Additionally, it is the only organization that regularly

visits member states and nuclear facilities. The agency has engineered a successful nuclear security program that benefits actors at the national, regional, and international levels. Moreover, within certain limits, IAEA nuclear security efforts are viewed as legitimate by most states because the agency has years of experience and an expert staff. Confidentiality practices further motivate states to participate in the Nuclear Security Program. Recently, IAEA nuclear security successes have prompted more national interest in its nuclear security assistance missions and led to more requests for advisory and evaluation services.⁵⁰

Despite these achievements, the IAEA remains handicapped. It has no standing authority to require states to establish nuclear security systems and assistance can be provided only upon request.⁵¹ Moreover, the IAEA does not have the authority to perform follow-up missions to verify the physical protection of nuclear materials in states.⁵² Although INCIRC/225/Rev.4 does require states to take all measures necessary for the physical protection of nuclear materials and equipment, there are still gaps in this obligation and the IAEA is not authorized to require comprehensive nuclear security measures by all states.

Of all the options available for strengthening the global nuclear security regime, expanding IAEA authority would offer the most significant and immediate benefits, with the smallest practical hurdles to implementation. Compared with any other body, it would be relatively easy (in practical terms) for IAEA inspectors to perform nuclear assessments and report their findings to the United Nations.

The problem—which is never directly addressed in the official IAEA literature, missing from most external assessments of the IAEA nuclear security role, but recognized by any diplomat who has served in Vienna—is that IAEA members are deeply divided over the issue of priorities. Many resist efforts to expand the IAEA nuclear security mandate. That comes across strongly in committee debates, general conference and board of governors meetings, and working group discussions. Whereas most Western states are keen to expand the IAEA role and authority in the “3Ss” (safety, security, and safeguards), many developing states believe the IAEA is already doing enough in those areas, and that efforts to expand its role further undermine its core role: to assist states in the utilization of nuclear technology for peaceful purposes. Furthermore, some developing states also hint at deeper concerns that Western states are using the IAEA to fulfill their own security agenda.⁵³

Divisive Diplomacy and the Legitimacy Problem

Tensions between developed and developing states over the future of the IAEA are being exploited by states that believe it is in their interest to keep the agency divided. Statements by Iran at the 2009 IAEA General Conference show this strategy at work. Iranian vice president Ali Akbar Salehi stressed that independence of the IAEA is being undermined “through undue interference and political pressure.”⁵⁴ He went on to condemn a growing trend of “authoritarianism and arrogance,” which his country “courageously and almost single-handedly challenges.” While most states dismiss such statements and criticize Iran’s defiant nuclear diplomacy, there is sympathy for Iran’s position among developing states that regard standardization of nuclear obligations and binding agreements as a constraint on development and a challenge to national sovereignty. Malaysia’s statement to the 2009 IAEA General Conference illustrates this clearly, cautioning “against the disproportionate focus on perceived threats to nuclear security that could result in unjustifiable denials [of nuclear technology].”⁵⁵

A number of developing states also sympathize with other aspects of Iran’s position. They see the U.S. position on nonproliferation and nuclear security as hypocritical. The fact that the United States—which possesses the biggest nuclear arsenal in the world—dominates the nuclear nonproliferation regime is considered illegitimate at best. States that take this view want to expand the membership of the IAEA Board of Governors so that Western states are less able to dictate IAEA decision-making.⁵⁶

The same states also want to limit IAEA nuclear security (and safeguards) mandates—an agenda that acts as a brake on the nuclear security regime.⁵⁷ Many Western states are trying to release this brake by emphasizing the universal threat of nuclear terrorism, but they are failing to persuade others. As U.S. ambassador Gregory L. Schulte argued at an IAEA Board of Governors meeting in June 2009, some states “dismiss nuclear security as a special interest of a few countries,” and until that perception changes, the brake will remain in place.⁵⁸ Opportunities for building this consensus are likely to be taken by the Obama administration, which is conscious of the legitimacy deficit that has been growing over the years, and has pledged a commitment to fulfill U.S. disarmament obligations while pursuing active nuclear nonproliferation agendas. The problem, however, is that such a consensus is going to take time to build, and the threat posed by nuclear terrorism is an urgent one.

RECOMMENDATIONS: WHAT IS DESIRABLE AND POSSIBLE?

Divisions in the IAEA and disagreements over its future role raise the question: What should and can be done to strengthen the nuclear security regime, absent an international consensus to dramatically increase IAEA authority?

An alternative would be for the UN Security Council to develop a new organization based on the legal and administrative legitimacy of the 1540 Committee and the operational infrastructure of the IAEA. But this initiative would run into the same resistance that is limiting the IAEA nuclear security role. The creation of a formal, dedicated nuclear security body under the auspices of the UN Security Council would depend on building the same consensus that is missing. It is therefore more realistic to treat these institution-building initiatives as long-term goals, which would be facilitated by greater international acceptance of the nuclear security norm.

In the meantime, short-term initiatives, which are less likely to be impeded by political obstacles, are also needed to build that norm. These include efforts by proactive states to lead by example by going above and beyond expectations in their efforts to create effective national nuclear security systems; to improve and expand bilateral assistance and plurilateral collaboration, focusing on encouraging increased participation in these initiatives from the developing states; and to cooperate with states and international agencies to strengthen multilateral nuclear security instruments and bodies.

Lead by Example Through National Implementation

Some of the steps set out in numbers two and three on the wish list (national, regional, and private sector measures) are already being taken by states and organizations that are committed to strengthening the nuclear security regime. But more needs to be done to demonstrate this commitment and firmly establish the nuclear security norm. If states that are the strongest advocates of nuclear security are transparent about their physical protection measures—and it is clear to all that they are going above and beyond their obligations—expectations of what constitutes appropriate behavior in the realm of nuclear security will grow (even if IAEA legal authority lags behind).

Demonstration of commitment includes ratifying and implementing the major nuclear security instruments (especially the CPPNM Amendment, Nuclear Terrorism Convention, INFCIRC/225/Rev.4, and the Code of Conduct) without delay, and reporting on steps taken under these agreements at every appropriate opportunity (for example, in the IAEA General Conference and Board of Governors, in the UN First Committee, and at NPT Review Conference and Preparatory Committee meetings). Initiatives to set up

national and regional nuclear security centers would also demonstrate commitment, as would good faith negotiations for the Fissile Material Cutoff Treaty (FMCT) and other national and bilateral efforts to reduce highly enriched uranium in civil use. At the substate level, annual reports by boards of directors in the nuclear industry on their nuclear security record would demonstrate that responsibility for establishing strong nuclear security systems is also being taken by the private sector.

There are also indirect steps that states can take to strengthen the nuclear security regime. These include efforts to demonstrate a balanced approach to the 3Ss and to disarmament. A regime that lacks verification and enforcement tools relies on voluntary buy-in and goodwill, which is more likely to be forthcoming if states that are leading the call for stronger nuclear security measures demonstrate that they are meeting all of their nuclear obligations. States can help demonstrate this balanced commitment by reporting on the steps they have taken to fulfill their nonproliferation and disarmament obligations in appropriate international forums, including in the May 2010 NPT Review Conference. That will weaken the arguments of states that claim that imbalance (and, at worst, hypocrisy and arrogance) lie at the heart of the nuclear security regime.

Improve and Expand Bilateral Assistance and Plurilateral Collaboration

The United States, European Union, and other Western states already do a great deal to assist with nuclear security capacity building, both through bilateral assistance efforts and plurilateral initiatives. But there is more that could be done, and there are opportunities to make existing efforts more effective.

For example, bilateral assistance could be improved by providing it at the appropriate technical level; by following through on training programs and equipment provision to ensure that it is being used correctly; and by investing more in nuclear forensics research, training, and assistance. States could also take steps to strengthen plurilateral nuclear security initiatives, including efforts to improve intelligence sharing with partner states to help secure vulnerabilities and counter threats. Consolidating support for the GICNT, Global Partnership, PSI, WINS, and other plurilateral initiatives would help in this endeavor, particularly if more developing states can be persuaded to join and engage in nuclear security collaboration with Western partners. Getting China on board with these initiatives—and encouraging it to take a leadership role on nuclear security capacity building in East Asia—would greatly facilitate that process.

But engaging developing states (including China) in bilateral and plurilateral nuclear security initiatives is more difficult than it sounds. As Brian Finlay and Elizabeth Turpen recently noted, “Convincing [governments in the Global South] to make greater investments in counterproliferation activities while their public education and health infrastructures suffer from neglect is not an easy—or even reasonable—task.”⁵⁹ Developing states have valid, legitimate concerns about the burden of mounting international security obligations, and so the onus must be on the advanced governments of the North to take all possible steps to address these.

One way they can do this is to search for synergies between nuclear security measures and national development goals and, where possible, provide assistance that will facilitate both. The assistance clause in Resolution 1540 provides an opportunity for developed states to assist developing ones in strengthening their physical protection systems via technical, legal, and financial aid that can also contribute to civic, scientific, commercial, and governmental capacity building. That is beginning to happen in the Caribbean,⁶⁰ Southeast Asia, and the South Pacific.⁶¹ But much more needs to go into ensuring that the “development benefits” of nuclear security assistance are recognized by potential recipient states; that the evolving global nuclear security regime is not perceived to be based on technology denial. Ensuring that IAEA technical assistance programs continue unhindered and receive adequate funding is crucial in this respect,

as is the need to acknowledge and support the important role that “trusted partners” can play in bilateral capacity-building assistance.

It is one thing for a developing state to accept assistance in the form of equipment and training, but it is another for the developing state to use that assistance effectively. To ensure that assistance efforts are not wasted, donor states need to do more to convince recipient states that the threat of nuclear terrorism is real and needs to be prioritized, and that strong nuclear security systems can facilitate (rather than impede) trade. Rather than simply stating that the threat exists and its consequences would be dire (the current approach of U.S. and EU officials), governments in the advanced states need to provide evidence and compelling arguments that this is indeed the case. Studies, drawing as widely as possible on intelligence findings and on the analysis of scholars from around the world (not just the West), would greatly assist with this task, as would academic studies and media programs that explore the potential impact of a radiological or nuclear attack on a city in the developing world.

Cooperate to Strengthen Nuclear Security Instruments and Bodies

Proactive states, private sector representatives, international organizations, and NGOs need to support the IAEA’s expanding nuclear security role through information sharing, education initiatives, and where possible, generous contributions to IAEA programs. Giving the IAEA greater authority would be the best step toward a more secure nuclear environment, but given the political sensitivities surrounding such a move, the next best thing would be for international actors to boost the IAEA’s role by assisting with the implementation of the current nuclear security program and plan.

As a part of its 2010–2013 plan, the IAEA is continuing to develop its 3Ss initiative, which aims to develop a “one house” approach to the agency’s work. That would include finding synergies among the 3Ss to reduce costs, prevent duplication, increase efficiency, and, where possible, reduce the burden of mounting nonproliferation obligations.⁶² Other important elements of the plan that will expand the agency’s nuclear security role include enhancing IAEA information sharing; promoting the role of DBT assessments (and assisting with them); coordinating assistance requests and donations; improving IAEA monitoring of physical security measures (as required under the Nuclear Terrorism Convention); and facilitating entry into force of the CPPNM amendment.

While supporting the IAEA Nuclear Security Program, states need to address the difficult issue of how to build consensus over expanding its authority. The fundamental question remains how to increase support for the IAEA nuclear security role—especially in the realm of monitoring and legally binding standard setting—among states that are resisting change. That goes to the heart of the evolving international system, to debates over national versus global governance, which have become mired in disagreements over human rights and human security and the notion of “cosmopolitan sovereignty.” Those backing more robust norms in the evolving nuclear security regime need to do more to understand the nature of these debates so they can successfully engage in consensus building. At times, they may have to adopt diplomatic strategies in international forums to facilitate this process (for example, by providing greater support for technical cooperation programs in “fence-sitter states,” those states that could be persuaded to support the expansion of IAEA authority if given enough incentives and assurances).

CONCLUSION

As the world plans for the expansion of civil nuclear power, the task of ensuring that terrorist groups do not acquire nuclear and radiological materials has become even more urgent and difficult, requiring greater international cooperation to secure existing stocks of fissile material and deny illicit access to relevant equipment and expertise. The world needs a comprehensive nuclear security regime with a clear mandate, rigorous standards, and means for thorough implementation, verification, and enforcement.

Ideally, the IAEA is the right organization to manage all the components of a strong nuclear security infrastructure. The agency has an established program that defines nuclear security standards and assists states in their endeavors to shore up vulnerabilities. It is unique in that it has both the technical and (for the most part) political bona fides to manage a global nuclear security regime. If given the authority, the IAEA could assess and coordinate the implementation of any actions that need to be taken, and verify the continuous level of nuclear security of the state. However, the agency does not have the authority to independently evaluate states' nuclear security. Developing states, in particular, are unwilling to cede protection of their nuclear facilities to the agency, and this has left the IAEA relegated to the role of an adviser.

This problem of the IAEA's limited authority is tied to fundamental debates in the international community over how to deal with threats in a globalized world. Many states have accepted that the complex, transnational nature of twenty-first century threats means that decision-making authority must shift from the national to the international level. Resources need to be pooled; expertise needs to be shared and centralized; and common standards need to be set, monitored, and enforced in the interests of a safer world. But not all states are convinced of this, and some are suspicious that states advocating global governance are using their power to dominate the global security agenda. Correcting these perceptions is a difficult and important task, as they have become deeply embedded in the nuclear nonproliferation regime and throughout the UN system.

Proactive states could adopt a series of measures that would strengthen the regime despite these political hurdles, but the important long-term goal of multilateral institution building remains. Beyond the short-term fixes, the pivotal question confronting the international community is: How can states build consensus on the need to prioritize nuclear security? A consensus began to develop after the Chernobyl accident vividly demonstrated the safety risks associated with nuclear energy. That raises a chilling question: Do we need a similarly dramatic event to generate a universal sense of urgency on nuclear security?

One answer to the question of how to build consensus may lie in promoting comprehensive intelligence sharing at the regional and international levels, so political leaders everywhere are aware of the genuine nature of the threat. Another may lie in promoting awareness of the threat and its potentially catastrophic consequences at the grassroots level (especially in the developing world, where, despite Western concerns over vulnerabilities, most people believe nuclear and radiological attacks are very unlikely to occur on their territory. Film and new media may be the best vehicles to promote this awareness, via collaborative projects that could bring together universities and private sector organizations around the world to assist in nuclear security education.

What else can the United States do, as the leader of the regime, to generate a spirit of global solidarity around bilateral, plurilateral, and multilateral nuclear security initiatives? Unfortunately, opportunities for the United States to build this type of solidarity following the attacks of 9/11 were not fully recognized, and the Obama administration must now work doubly hard to demonstrate that the U.S. commitment to nuc-

lear security is not founded on a self-interested agenda of technology denial but on a desire to prevent the horrors of nuclear terrorism from occurring anywhere in the world.

Steps that would assist this process include U.S. ratification, implementation, and enforcement of multilateral nuclear security instruments; bilateral and plurilateral efforts to improve information sharing and capacity building (especially where they can be linked to development goals); and diplomatic leadership in international forums aimed at promoting balanced, well-informed discussion of all nuclear challenges, from nuclear security to disarmament. The upcoming Nuclear Security Summit and NPT Review Conference provide immediate opportunities for the Obama administration to do that and to begin building consensus on the need to expand the authority and mandates of UN bodies tasked with overseeing the nuclear security regime.

Endnotes

1. Paul-Anton Kruger, Interview with IAEA Director General Mohamed ElBaradei (translated from German), September 25, 2008, <http://www.iaea.org/NewsCenter/Transcripts/2008/sz250908.html>.
2. *IAEA Annual Report 2008*, GC(53)/7, p. 73, http://www.iaea.org/Publications/Reports/Anrep2008/anrep2008_full.pdf.
3. Mark Fitzpatrick (ed.), *Preventing Nuclear Dangers in Southeast Asia and Australasia* (London: International Institute for Strategic Studies, 2009).
4. Ian Traynor, "Nuclear Bomb Blueprints for Sale on World Black Market, Experts Fear," the *Guardian*, May 31, 2008; Michael Wines, "Break-In at Nuclear Site Baffles South Africa," *The New York Times*, November 15, 2007; Jane Perlez, "64 in Pakistan Die in Bombing at Arms Plant," the *New York Times*, August 21, 2008.
5. "North Korea Arms Headed to Iran Seized in UAE," *Daily Telegraph*, August 29, 2009; "North Korean Arms Shipment Said to be for Iran," *Reuters*, January 30, 2010.
6. The White House, Office of the Press Secretary, Remarks of President Barack Obama, Prague, Czech Republic, April 5, 2009, http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/.
7. Security Council Resolution 1887 (2009), September 24, 2009, S/RES/1887 (2009).
8. Graham Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe* (Times Books, August 2004).
9. "Plurilateral initiatives" are state-led initiatives that involve three or more participants. They are distinct from "multilateral initiatives," because they are not established under the auspices of the UN or its agencies, such as the IAEA. The U.S.-led Proliferation Security Initiative (PSI) is thus an example of a plurilateral initiative whereas the Convention on the Physical Protection of Nuclear Material (CPPNM) is a multilateral initiative.
10. Kenneth N. Luongo, "Securing Vulnerable Nuclear Materials: Meeting the Global Challenge," Stanley Foundation Policy Analysis Brief, November 2009.
11. National Nuclear Security Administration, "International Safeguards: Challenges and Opportunities for the 21st Century," Office of Nonproliferation and International Security, U.S. Department of Energy, October 2007, p. 41.
12. Elizabeth Turpen, "Nuclear Security: Key Instruments and Initiatives," Stanley Foundation Working Paper, December 2, 2009.
13. "Promoting Nuclear Security: What the IAEA is Doing," IAEA, <http://www.iaea.org/Publications/Factsheets/English/nucsecurity.pdf>.
14. 1540 Expert Group, "Assess the impact of resolution 1540, including through measures taken after the adoption of resolution 1540." Background paper presented by the 1540 committee experts according to the document on modalities for the consideration of a comprehensive review (S/2009/170), pp. 4–7.
15. As noted in George Bunn, "Enforcing International Standards: Protecting Nuclear Materials From Terrorists Post-9/11," *Arms Control Today*, January/February 2007, http://www.armscontrol.org/2007_01-02/Bunn.
16. Friedrich Steinhäusler, "Legal Instruments to Prevent Nuclear WMD Use by Nonstate Actors," *Strategic Insights*, Volume VIII, Issue 1 (January 2009), <http://www.nps.edu/Academics/centers/ccc/publications/OnlineJournal/2008/Dec/steinhauslerDec08.html>.
17. Tanya Ogilvie-White, "Nonproliferation and Counterterrorism Cooperation in Southeast Asia: Meeting Global Obligations through Regional Security Architectures," *Contemporary Southeast Asia*, Volume 28, Issue 1 (April 2006). See also Brian D. Finlay, "Bridging the Security/Development Divide with UN Security Council Resolution 1540: A Case Study Approach," Stanley Foundation Working Paper, September 2009, p. 5.
18. Tanya Ogilvie-White, "Facilitating Implementation of UN Security Council Resolution 1540 in Southeast Asia and the Pacific," in Lawrence Scheinman (ed.), *Facilitating Implementation of Resolution 1540: The Role of Regional Organizations* (UNIDIR, 2008).
19. These concerns have been addressed by attaching a series of reservations and understandings to U.S. ratification (including an opt-out of the resolution's binding dispute resolution mechanism). Report of the Committee on Foreign Relations, 110th Congress, September 11, 2008, http://www.fas.org/irp/congress/2008_rpt/suppression.html.
20. "International Legal Instruments Relevant to Nuclear Security," Implementation of the IAEA Nuclear Security Plan 2006–2009: Progress Report," August 2009.
21. Steinhäusler, "Legal Instruments to Prevent Nuclear WMD Use by Nonstate Actors."
22. *Ibid.*
23. Discussed in conversation with Matt Bunn February, 18, 2008.

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24. Ed Lyman, "Role of Nuclear Material Accounting and Control in the NPT," prepared for the IEER Conference: Nuclear Dangers and the State of Security Treaties, UN New York, April 2002, <http://www.ieer.org/latest/npt02el.html>. See also Grigori Berdennikov, "Dealing with the Risks of Nuclear Terrorism: Physical Protection, Nuclear Safety and other Initiatives," Briefing Seminar on the Preparations for the Preparations, The 2002 Preparatory Committee for the NPT Review Conference of 2005, p. 7, <http://cns.miis.edu/research/npt/pdf/berden.pdf>.
25. National Nuclear Security Administration, "International Safeguards: Challenges and Opportunities for the 21st Century," Office of Nonproliferation and International Security, U.S. Department of Energy, October 2007, p. 41.
26. Private discussions with diplomat in Vienna, September 2009.
27. Critical states that have not yet pledged their political commitment to the Code of Conduct include Egypt, Iran, Malaysia, Myanmar, North Korea, Saudi Arabia, and Singapore.
28. The current status of the code, including status of self-assessments, can be found at http://www.iaea.org/Publications/Documents/Treaties/codeconduct_status.pdf (last updated February 2010).
29. "The IAEA's Programme and Budget," IAEA, August 2007, p. 182, http://www.iaea.org/About/Policy/GC/GC51/GC51Documents/English/gc51-2_en.pdf.
30. Olivia Bosch and Peter Van Ham (eds.), *Global Non-Proliferation and Counter-Terrorism: The Impact of UNSCR 1540* (Brookings Institution Press, Chatham House, and the Clingendael Institute, 2007), p. 12.
31. Russia and China have been particularly critical of the work of the 1540 Expert Group, claiming that their work is of "poor quality" and that they have engaged in studies that have not been authorized by the 1540 committee, going beyond their mandate. This view is shared by a number of developing states, which have argued that the Expert Group is dominated by Western interests. See Security Council debates on 1540, for example, S/AC.44/SR.30 (October 14, 2009) and S/AC.44/SR.29 (October 29, 2009).
32. "Statement by G8 Leaders: The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," *G-8 Information Centre*, June 27, 2002, <http://www.g7.utoronto.ca/summit/2002kananaskis/arms.html>.
33. Luongo, "Securing Vulnerable Nuclear Materials."
34. "Statement by G8 Leaders," *G-8 Information Centre*.
35. Author correspondence with David Santoro (Liu Institute, University of British Columbia), February 2010; Stephen Bunnell, "G-8 Nonproliferation Effort to Shift Focus," *Arms Control Today*, September 2008, http://www.armscontrol.org/act/2008_09/G8; Amy F. Woolf, "Nonproliferation and Threat Reduction Assistance: U.S. Programs in the Former Soviet Union," CRS Report for Congress, February 4, 2010, <http://www.fas.org/sgp/crs/nuke/RL31957.pdf>.
36. "Announcing the Global Initiative to Combat Nuclear Terrorism," The White House, July 15, 2006; Luongo, "Securing Vulnerable Nuclear Materials."
37. "Joint Co-Chair Statement at 2009 Plenary Meeting," Bureau of International Security and Nonproliferation, June 16, 2009.
38. For a concise statement of the objectives of the PSI, see the description of the initiative that is provided on the U.S. Department of State website, <http://www.state.gov/t/isn/c10390.htm>.
39. Roger Howsley, "The World Institute for Nuclear Security: Filling a Gap in the Global Nuclear Security Regime," *Innovations*, Volume 4, Issue 4 (fall 2009), pp. 203–208.
40. Dares et. al., "Nuclear Safeguards and Nuclear Security Related TACIS Projects Implemented by the JRC," ESARDA Bulletin, No. 40, December 2008.
41. EU assistance programs have suffered from some of the same problems as outreach efforts by UN agencies, such as the IAEA, International Maritime Organization (IMO), and World Customs Organization (WCO), which attend regional 1540 workshops with the goal of informing states of their 1540 obligations and how these can be met. Much of this assistance is not well targeted—it assumes a level of technological development and knowledge that does not exist in some regions, and so is wasted on participants who need a much more basic level of assistance. For more details on this problem, which is based on workshop attendance and observation, please contact tanya.ogilvie-white@canterbury.ac.nz.
42. Ogilvie-White, "Facilitating Implementation of UN Security Council Resolution 1540 in Southeast Asia and the Pacific."
43. Bunn, "Enforcing International Standards."
44. Matthew Bunn and George Bunn, "Nuclear Theft and Sabotage: Priorities for Reducing New Threats," *IAEA Bulletin*, Vol. 43, No. 4, 2001, pp. 20–29.
45. A detailed wish list of what the IAEA could do, if given the mandate, is discussed in "Reinforcing the Global Nuclear Order for Peace and Prosperity: The Role of the IAEA to 2020 and Beyond," report prepared by an independent commission at the request of the director general of the IAEA, May 2008.
46. This point about the need for national nuclear security centers is raised in the "President's Findings" from the International Symposium on Nuclear Security, March 30–April 3 2009, Vienna, Austria. In regions where nuclear technology is not as widely in use, it would make more sense to establish these centers on a regional level.
47. For more information on these issues, see Roger Howsley, "The World Institute for Nuclear Security: Filling a Gap in the Global Nuclear Security Regime," *Innovations*, Volume 4, Issue 4 (fall 2009), pp. 203–208.

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48. DBT methodology is incorporated into INFCIRC/225.Rev.4 and clearly set out in IAEA Nuclear Security Series No. 10. Information on the development, function and implementation of DBTs is available on the IAEA website at <http://www-ns.iaea.org/security/dbt.htm> and http://www-pub.iaea.org/MTCD/publications/PDF/Pub1386_web.pdf.
49. Andrea Cavina, "IAEA Nuclear Security Programme: Computer Security at Nuclear Facilities," Office of Nuclear Security, Department of Nuclear Safety and Security, IAEA, Eurosafe, Paris, 2008, http://www.eurosafe-forum.org/files/Presentations2008/Seminar%204/Slides/4.1_IAEA_Cavina_Eurosafe_2008_v3.pdf. Or see "Short of Funds and Resources, UN Nuclear IAEA at a Crossroads, Warns Chief," UN News Centre, September 2008, <http://www.un.org/apps/news/story.asp?NewsID=28347&Cr=IAEA&Cr1>.
50. Report by the Director General, "Nuclear Security Report 2008: Measures to Protect Against Nuclear Terrorism," IAEA Board of Governors General Conference, GOV/2008/35-GC(52)/12, August 2008, p. 1, http://www.iaea.org/About/Policy/GC/GC52/GC52_Documents/English/gc52-12_en.pdf.
51. Discussed in conversation with Matt Bunn, February 18, 2008.
52. National Nuclear Security Administration, "International Safeguards: Challenges and Opportunities for the 21st Century," Office of Nonproliferation and International Security, U.S. Department of Energy, October 2007, p. 40.
53. Statement of the G77 and China during the fourth meeting of the informal open-ended process of member states to discuss the future of the IAEA, delivered by Argentina on May 21, 2009, <http://www.g77.org/vienna/IAEAWGFA0509.htm>.
54. Statement by H. E. Dr. Ali Akbar Salehi, vice-president of the Islamic Republic of Iran to the 53rd Regular Session of the General Conference of the IAEA, September 2009.
55. Statement by Dr. Daud Mohamad, director general, Malaysian Nuclear Agency, Head of Delegation of Malaysia to the 53rd Regular Session of the General Conference of the IAEA, September 16, 2009.
56. Statement of the G77 and China during the final meeting of the informal open-ended process of member states to discuss the future of the IAEA.
57. These views can be found in G77 statements in IAEA Board of Governors meetings, the 2009 IAEA General Conference, and the informal working group on the future of the IAEA.
58. Embassy of the United States, "A World Without Nuclear Weapons: Transforming the President's Vision in Prague to a New Spirit of Vienna," Final Statement to the IAEA Board, Ambassador Gregory L. Schulte, U.S. permanent representative to the IAEA, June 15, 2009, <http://vienna.usmission.gov/061809final.html>.
59. Brian Finlay and Elizabeth Turpen, "The Next 100 Project: Leveraging National Security Assistance to Meet Developing World Needs," Report by the Stimson Center and Stanley Foundation, 2009, p. 2.
60. Michael Ryan Kraig, "United Nations Security Council Resolution 1540 at the Crossroads: The Challenges of Implementation," The Stanley Foundation, October 1, 2009.
61. Ogilvie-White, "Facilitating Implementation of UN Security Council Resolution 1540 in Southeast Asia and the Pacific."
62. IAEA Nuclear Security Plan 2010-2013, GOV/2009/54-GC(53)18, August 17, 2009.

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