Center for the Study of Weapons of Mass Destruction

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International Partnerships to Combat Weapons of Mass Destruction

by Paul I. Bernstein

occasional paper

Center for the Study of Weapons of Mass Destruction

National Defense University

Since its inception in 1994, the Center for the Study of Weapons of Mass Destruction (previously the Center for Counterproliferation Research) has been at the forefront of research on the consequences of weapons of mass destruction (WMD) for American security. Originally focusing on threats to the Armed Forces, the WMD Center now also applies its expertise and body of research to the challenges of homeland defense and security. In February 2004, President George W. Bush commended the Center for providing "vital insight into the dangers of a new era."

The broad mandate of the Center includes research, education, and outreach. Its research focuses on understanding the security implications of weapons of mass destruction, as well as the challenge of fashioning effective responses to them. Education and outreach programs seek to enhance awareness in the next generation of military and civilian leaders of the WMD threat as it relates to defense and homeland security policy, programs, technology, and operations. As a part of its outreach efforts, the WMD Center hosts annual symposia on key issues, bringing together experts and participants from the government and private sectors.

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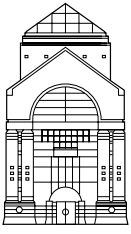

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Acknowledgments

This occasional paper of the National Defense University's Center for the Study of Weapons of Mass Destruction (WMD Center) examines the role, manifestations, and challenges of international cooperation to combat the weapons of mass destruction (WMD) threat and poses important questions for future leaders to address in moving international cooperation forward in this area.

The foundation for the paper is the presentations given and discussions conducted during the WMD Center's seventh annual symposium, *Building International Partnerships to Combat Weapons of Mass Destruction*, held at the National Defense University on May 16–17, 2007. In several areas, the author has expanded upon those discussions and examined broader issues and considerations impacting international cooperation against the WMD threat.

While all symposium sessions were off the record and all comments delivered on a nonattribution basis, the WMD Center wishes to thank the many speakers and panelists for their contributions to that event and, hence, to this paper. In particular, the WMD Center thanks the Honorable Stuart Levey, Under Secretary of the Treasury for Terrorism and Financial Intelligence, and the Honorable John Rood, Acting Under Secretary of State for Arms Control and International Security, for delivering the symposium's keynote addresses.

The WMD Center also expresses its special appreciation to the symposium's international speakers, who in many cases traveled great distances to participate and in all cases made invaluable contributions to the symposium's success. They include Ambassador Peter Burian of Slovakia, Ambassador Alan Charlton of the United Kingdom, Mr. Ivan Dvorak of the Czech Republic, Ambassador Friedrich Gröning of Germany, Mr. Gu Guoliang of China, Ambassador Raminder Singh Jassal of India, Ambassador Dennis Richardson of Australia, Mr. Guillaume Schlumberger of France, and Mr. Kazuyoshi Umemoto of Japan.

Additionally, the symposium owes its success to the following key participants: Ambassador David Abshire, Ambassador William Bellamy, Mr. Joseph Benkert, Ms. Lisa Bronson, Dr. Ashton Carter, Dr. Lewis Dunn, Dr. Roger George, the Honorable Christopher (Ryan) Henry, Ambassador Robert Joseph, Rear Admiral John Miller, USN, Dr. Tara O'Toole, Mr. Vayl Oxford, Dr. James (Ben) Petro, Dr. James Tegnelia, and the Honorable William Tobey.

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International Partnerships to Combat Weapons of Mass Destruction

The Partnership Imperative

Building international partnerships is a central element of U.S. strategy to combat weapons of mass destruction (WMD). U.S. policy recognizes that the proliferation problem is far too large, complex, and important for any one nation to tackle alone. Meaningful and sustained progress in combating WMD requires active collaboration among all states that have a stake in managing the problem and the will and capacity to contribute. Current policies build on a foundation of global cooperation that dates back decades, even as they reflect significant changes in emphasis to adapt to contemporary proliferation challenges.

These challenges result in large part from the ongoing and in some respects intensifying impact of globalization. As many have observed, the phenomenon is twofold—technological and political—and both dimensions are making the WMD proliferation problem more complex and difficult to manage. Technologies with broad legitimate uses that could be applied to unconventional weapons continue to spread globally at a rapid rate, and the growing demand (and competition) for energy, in particular, has the potential to fuel nuclear proliferation pressures in strategically important and sometimes unstable parts of the world. Politically, globalization has contributed to the erosion of traditional state power and boundaries and served to empower both smaller states that are seeking to challenge the status quo and nonstate actors—ranging from individuals to transnational networks—with independent and often extremist agendas. The results are clear enough: significant proliferation challenges from states whose WMD programs confer on them disproportionate strategic importance; growing interest on the part of terrorists to acquire WMD; and weak states and poorly governed spaces where illicit radical and criminal networks flourish. As these phenomena converge, new proliferation pathways are likely to emerge.[1]

As proliferation dynamics continue to be shaped by globalization, the limits of traditional nonproliferation diplomacy and strategies have become more apparent. The international nonproliferation regime of treaties and institutions is an important political and legal foundation in the fight against WMD, especially in establishing norms of behavior and providing the basis for action to punish noncompliance by states. But this regime, despite its longstanding legitimacy, alone cannot deal effectively

with the toughest proliferation challenges we face. It has structural weaknesses not easily overcome and an uneven track record in confronting and reversing noncompliance, and it is not well suited to attack directly the problem posed by nonstate actors such as terrorists and clandestine WMD procurement networks.

A principal thrust of American policy, therefore, has been to complement traditional nonproliferation and disarmament diplomacy with new policy instruments that are focused more on practical cooperation with security partners to enhance prevention efforts, better enforce compliance, and build defense and response capabilities. In recent years, Washington has spearheaded a number of initiatives focused on different aspects of the proliferation challenge whose purpose is to create a framework for action among like-minded nations. By design, these initiatives are not engaged in creating large, standing organizations or bureaucracies, but seek instead to adopt actionable principles that enable concrete steps to reduce the WMD threat and increase the capacity of states to act. Some of these initiatives are global in nature—that is, they invite the broadest possible participation. Prominent examples include the Proliferation Security Initiative and the Global Initiative to Combat Nuclear Terrorism. Others, such the Group of 8 (G–8) Global Partnership and the Global Nuclear Energy Partnership, are designed to leverage the capabilities and resources of more advanced and prosperous states.

This approach rests vitally on the responsible exercise of national sovereignty in combating WMD. This is no less important than sustaining the authorities vested in the institutions that govern the international treaty regime. Security partners are asked to recognize and act on the obligation all states share to address WMD challenges through cooperative activities that are consistent with existing international and domestic law and ensuring that their national territory is not a source of proliferation threats. To cite one example, United Nations (UN) Security Council Resolution 1540 obligates states to adopt national laws to prevent nonstate actors from acquiring WMD and related materials and equipment.[2]

By effectively marshalling coalitions of the willing to act against proliferation threats, international initiatives have begun to alter the dynamics of global cooperation in combating WMD. Progress is being made through a flexible network of partnership activities that gives many nations an active stake in the fight against WMD and opportunities to

contribute to shared security goals. In particular, these initiatives respond to the unique challenges posed by relatively new proliferation problems such as sophisticated WMD black markets and WMD terrorism—problems that are not limited to individual states of concern but rather are transnational in nature and that therefore require active collaboration to address. These initiatives foster common understanding of the threat, intelligence- and information-sharing, enhanced capacity and interoperability, and habits of cooperation that over time can be leveraged to address a number of security challenges. Collaborative efforts have progressed despite widespread hostility to many aspects of current U.S. foreign policy. Thus, even countries that opposed the war in Iraq have been strong supporters of other U.S. initiatives to counter WMD proliferation. To a significant degree, then, U.S. leadership is expected and accepted and will remain indispensable to sustain existing activities, catalyze new efforts, encourage broad participation, and help leverage the collective will, resources, and power of partner states to achieve progress.

The discussion that follows is not intended to be comprehensive in addressing every international program or cooperative initiative that has been established in recent years. Rather, it highlights a number of important activities that exemplify the effort to establish new mechanisms for partnership, as well as some challenge areas where additional focused work is required.

New Dynamics of Cooperation

Proliferation Security Initiative

A proactive approach to interdiction has become a prominent component of combating WMD strategy, in recognition of trends in the trade and trafficking of WMD- and missile-related materials and technologies that demand a systematic and broad-based response. That response has taken shape principally through the Proliferation Security Initiative (PSI), a growing coalition of nations committed to impeding the transfer and transport of WMD-related goods in ways that are consistent with existing international and domestic law but outside the framework of any treaty or multilateral export control regime. Launched in May 2003, just weeks after the U.S. invasion of Iraq, PSI exemplifies how political

support for combating WMD goals can be converted into operational capacity to achieve concrete security benefits without creating a formal organization or bureaucracy. The PSI began with 11 charter nations, but today over 80 countries have endorsed its Statement of Interdiction Principles. More than 25 exercises have been conducted, and a number of successful interdictions have taken place, including operations that blocked export to Iran of controlled equipment relating to its missile and nuclear activities.

The PSI Principles were developed to reinforce political will, cooperation, and legal frameworks . . . and deny proliferators the ability to operate. Thus, the principles recognize that each sovereign state has national authorities, the ability to use them broadly, including in conjunction with international legal authorities and in cooperation with like-minded nations, to bring effective pressure against the proliferation trade.

—former U.S. Under Secretary of State
Robert G. Joseph

Just as important, participation in PSI has emerged as an important standard of good nonproliferation behavior, and in this sense the initiative represents a form of norm-building—one that results from the political commitment of a significant segment of the international community to define certain activities as unacceptable and to act collectively to thwart and delegitimize those activities. The willingness and capacity of states to enforce national and international laws in order to interdict illicit shipments are now seen as a test of their commitment to an activist global effort to combat WMD. As the de facto norm represented by PSI takes hold, this could serve to exert pressure on important countries that have yet to become full participants in PSI, such as China and India.

The informal procedures and practices by which PSI has been executed, and its clear adherence to international legal standards, have been instrumental in achieving the widespread support it enjoys. Broadening participation even further is one of a number of challenges facing the PSI community. Greater international support is key to expanding the initiative's operational reach, improving operational capacity, and increasing responsiveness to interdiction opportunities. Broader participation in the Asia-Pacific region is one priority. The importance of this region cannot be overstated; one of the most dynamic hubs of the global economy, it is home to some of the world's busiest ports, airports, shipping lanes,

and transshipment centers—including some that figured prominently in the A.Q. Khan nuclear black market.

While an increasing number of Asian states are participating in PSI activities, such as the October 2007 Pacific Shield 07 exercise off the coast of Japan, several key regional powers remain reluctant to embrace PSI. These include India, Malaysia, Indonesia, China, and South Korea. The reasons vary. The Indian government faces domestic political pressure to resist participating in a U.S.-led initiative that some view as undermining India's foreign policy independence. The government of Malaysia has expressed concern about both the legality of PSI and the prospect of increased international involvement in the Straits of Malacca—a concern shared by Indonesia.[3] Additionally, some reports note that these and other Asian governments may be suspicious of U.S. intentions with respect to PSI given that Washington has not ratified the UN Convention on the Law of the Sea.[4] China and South Korea are more concerned about how North Korea might react to their participation in PSI, especially at a time when the ultimate outcome of the Six-Party Talks remains uncertain. As this process continues to unfold, both Beijing and Seoul remain wary of actions that could increase regional tensions, especially since some participants have characterized recent PSI exercises such as Pacific Shield 07 as being directed, as a practical matter, at the regime in Pyongyang.[5] It remains to be seen whether the new conservative government in South Korea will be more willing than its predecessor to become part of PSI.[6]

There have been calls, including from President George W. Bush, to expand the scope of PSI to include interdiction of financial payments between proliferators and their suppliers, and proliferation networks more broadly.[7] Others have argued that the informal nature of PSI limits its effectiveness and sustainability and that it should yield to some type of standing organization, formal membership, and more institutionalized means of communication.[8] A more severe critique suggests that the impact of PSI has been exaggerated and that resources and political capital are better directed toward more aggressive efforts to secure WMD materials at their source.[9]

Admittedly, it can be difficult to assess the effectiveness of PSI given its vague measures of success and the secretive nature of many interdiction operations. Beyond what government officials choose to discuss publicly about actual interdictions, however, it seems clear that PSI is

helping to advance a global network of combating WMD partner relationships, establish a new norm of nonproliferation behavior, create new modes of security cooperation, and enable more effective interagency collaboration in a number of countries.

G–8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction

The Global Partnership offers a different model of international cooperation, one that leverages the unique capabilities and resources of more prosperous nations to implement targeted WMD risk reduction programs. Established at the G–8 summit in 2002 in Kananaskis, Canada, the Global Partnership committed the G–8 nations to raise up to $20 billion by 2012 to support a series of projects addressing nonproliferation, disarmament, counterterrorism, and nuclear safety and security issues, principally in Russia but also in other countries. By 2004, an additional 13 European and Asian nations as well as the European Union had joined the Partnership and pledged financial contributions toward the $20 billion goal, which now appears to be within sight (see table 1).[10] Even taking into account the $10 billion pledged by the United States, the securing of these commitments in full will represent a significant infusion of global resources toward combating WMD and a greater degree of burdensharing.

Table 1. Global Partnership Members

G–8 Partners	Additional Partners	
Canada	Australia	Norway
France	Belgium	Poland
Germany	Czech Republic	South Korea
Italy	Denmark	Sweden
Japan	Finland	Switzerland
Russia	Ireland	
United Kingdom	Netherlands	
United States	New Zealand	

As it enters its sixth year, the Global Partnership is generally viewed as a mixed success. Focused on securing or eliminating WMD materials at their source, Global Partnership programs have contributed directly to reducing WMD threats in a number of ways.

Chemical weapons destruction. This was the highest priority established in 2002, given the size and poor security of Russia's stockpile and Moscow's requirement to destroy it by 2012 under the terms of the Chemical Weapons Convention. Significant Global Partnership resources—more than $2 billion from 17 countries and the European Union—have supported the development of several facilities that have allowed Russia to destroy about one-quarter of its 40,000-ton chemical stockpile. Billions more will be required to complete the job, but the effort is now far better organized and equipped.[11]

Nuclear submarine dismantlement. This, too, has been a priority area, for both security and environmental reasons, and Partnership funds have helped Russia to accelerate the pace of dismantlement, develop infrastructure for spent fuel storage and radioactive waste management, and undertake environmental cleanup projects. More than a dozen Partner nations have contributed to these activities, which include the dismantlement of 21 submarines.[12] In addition to the remaining submarines awaiting dismantlement, the issue of 46 decommissioned nuclear-powered vessels has yet to be addressed by the Global Partnership but is being discussed with Russian authorities.[13]

Physical protection of nuclear materials. Work in this area builds on cooperative threat reduction activities begun by the United States and Russia in the 1990s to improve security at Russian nuclear materials storage facilities. As of December 2007, upgrades had been completed at more than 85 percent of "sites of concern," including all 39 Russian navy nuclear sites and all 24 Russian Strategic Rocket Forces sites, with work at more sites scheduled for completion in 2008.[14] In addition, 178 buildings containing hundreds of metric tons of weapons-useable Russian nuclear material have been secured.[15]

Fissile material disposition. This encompasses a number of activities, including the U.S.-Russia Megatons to Megawatts Program, under which the United States is purchasing and down-blending 500 metric tons of highly enriched uranium (HEU) from Russian warheads;[16] a $1 billion effort to shut down Russia's remaining plutonium production reactors

and replace them with fossil fuel plants; a multilateral effort to dispose of 34 tons of Russian plutonium; and a number of "global clean-out" activities, agreed to at the 2004 G–8 Summit, focused on eliminating the use of HEU in research reactors worldwide and securing and removing fresh and spent HEU fuel.[17]

Employment of former weapons scientists. While the prevention of "brain drain" was established as a major Global Partnership goal in 2002, in practice these activities remain centered in the International Science and Technology Centers (ISTCs) in Moscow and Kiev established under earlier U.S.-Russian initiatives. According to the G–8's most recent report on the Global Partnership, since 2002 more than 1,400 research projects have been funded through ISTC, involving more than 17,000 former weapons scientists.[18] Several Partner donors help fund these projects. Some outside assessments, however, point to this element of the program as chronically underresourced.[19]

These accomplishments notwithstanding, much work remains to be done to realize the full potential of the Global Partnership. While the original goal of $20 billion is close to being achieved, by most accounts it is clear that considerably more than that will be required to complete specific projects and more broadly to achieve threat reduction progress commensurate with Partnership goals. More fully translating funding commitments into actual programs remains a challenge as well. A recent review of Global Partnership activities concluded that about $8 billion had been expended through early 2007.[20] Outstanding issues related to liability, taxation, and access that often have made it difficult to begin or complete projects need to be resolved. Funding priorities and day-to-day activities should reflect the need to reduce the most pressing threats, in particular nuclear and biological terrorism, more than has been the case to date.[21] Finally, G–8 leaders must give serious consideration to expanding the Global Partnership to include both new donors and new recipients, so that assistance in reducing WMD threats can be made available wherever it may be needed.

Targeted Financial Measures

Disrupting the financial flows that fuel proliferation is a powerful new tool that the international community is using with growing sophistication. Regular coordination between security agencies and finance

ministries is now an imperative. Like terrorists, proliferators require access to the global financial system and routinely abuse this system to bankroll their activities. Institutions and individuals enabling this abuse are subject to pressure and sanctions that, if properly targeted, can impede the ability of proliferators to operate. It is important to distinguish such measures—which are directed at individuals, key regime members, front companies, and financial institutions—from more traditional sanctions regimes, as noted by Stuart Levey, Under Secretary of the Treasury for Terrorism and Financial Intelligence:

> Some of these targeted measures require financial institutions to freeze funds and close the accounts of designated actors—effectively denying these actors access to the traditional financial system. At times, the action includes bans on travel or arms transfers, which further confine and isolate the target. To maximize the effect, we try to apply these measures in concert with others. . . . These kinds of measures have several advantages over broad-based sanctions programs. First, by singling out those responsible for engaging in the illicit activity—rather than targeting an entire country—they are more apt to be accepted by a wider number of international actors and governments. Second, targeted financial measures warn innocent people not to deal with the designated target. And third, these measures serve as a deterrent. Those who are tempted to deal with targeted high risk actors are put on notice: if they continue this relationship, they may be next.[22]

Recent actions suggest that targeted policies against financial institutions and others who facilitate proliferation can be effective in exposing and complicating the WMD activities of states of concern and even influencing their policies. The government of North Korea, for example, clearly was surprised by the disruptive effects of actions taken against a Macao-based bank that Pyongyang used to support illicit activities. The designation, in September 2005, of Banco Delta Asia (BDA) as a "primary money laundering concern" led the bank to freeze $25 million in North Korean assets. More consequentially, it also led a number of financial institutions to curtail or terminate business with both BDA and the regime in Pyongyang.[23] This targeted financial measure ultimately created leverage in the Six-Party Talks, as U.S. negotiators were able to use

the promise to lift the designation against BDA and work to release the funds as a bargaining chip in reaching the denuclearization agreement announced in February 2007.[24]

Both unilateral and multilateral actions and authorities underpin the increasing use of targeted financial measures. In the United States, Executive Order 13382, issued in June 2005, is designed to freeze proliferators' assets that come under U.S. jurisdiction and deny proliferators access to the U.S. financial system. To date, 35 entities and 3 individuals have been designated for their links to WMD-related activities in Syria, North Korea, and Iran. The United States most recently expanded this list in October 2007, designating a number of Iranian individuals and entities, including two state-owned banks (Melli and Mellat), the Islamic Revolutionary Guard Corps (IRGC), and the Ministry of Defense and Armed Forces Logistics.[25] Two additional entities, Bank Saderat and the Quds Force—the foreign operations arm of the IRGC—were designated under a different Executive order focused on support to terrorism. Even on their own, U.S. actions can have a global impact, given the central role of the dollar and U.S. institutions in the international financial system. At the same time, the continued effectiveness of U.S. financial measures will require their careful, selective application to avoid generating a backlash in the broader international community aimed at reducing reliance on U.S. financial instruments.

In any case, achieving wider and more lasting effects requires an organized and sustained international response. Increasingly, as finance ministries around the world have become sensitized to the problem, multilateral actions are enhancing U.S. efforts. Four UN Security Council resolutions adopted since 2006 provide the basis for designating and freezing the assets of entities and individuals linked to the WMD programs of North Korea and Iran.[26] The European Union has enacted two rounds of its own sanctions, expanding the list of entities and individuals

As banks do their risk-reward analysis, they must now take into account the very serious risk of doing business in Iran, and what the risks would be if they were found to be part of a terrorist or proliferation transaction.

—U.S. Deputy Secretary of the Treasury
Robert Kimmitt

cited by the United Nations and adopting more far-reaching measures to limit arms sales and travel by Iranian officials.[27]

Additionally, the concerted U.S. effort to increase international financial and economic pressure on the Iranian leadership—by sharing information about Tehran's abuse of the global financial system with governments, publics, and private sector leaders—has had an impact.[28] Increasingly, the machinery of that system has taken steps to broaden international participation in financial sanctions. For example, in October 2007, the Financial Action Task Force, a group of 34 states created by the Group of 7 (G–7) to combat money laundering and financing of terrorism and proliferation, advised financial institutions of its member states to consider the risks in doing business with Iran and adopted guidelines for member states to follow in implementing the financial measures in UNSC Resolution 1737.[29] These actions to advance implementation of Security Council resolutions were reinforced just one week later by G–7 finance ministers.[30]

While implementation of UN and European Union measures has been uneven, by many accounts financial measures directed at Iran are having an impact. A growing number of banks are unwilling to conduct business with Tehran; according to U.S. officials, foreign-based branches and subsidiaries of Iranian-owned banks are increasingly isolated, and there has been a significant drop in foreign investment—particularly in the energy sector, where Iran needs overseas partners to develop its oil reserves. U.S. measures announced in October 2007 appear to be complicating new oil projects by targeting major oilfield engineering firms controlled by government entities such as the IRGC. Oil firms in Russia, China, and Europe now find it difficult to move forward with development projects. The government of France has asked its largest companies not to bid for projects in Iran.[31]

That said, it is uncertain how effective targeted financial measures directed at Iran ultimately will be. The November 2007 National Intelligence Estimate on Iran's nuclear intentions and capabilities suggested that international pressure and scrutiny may influence Iranian decisionmaking.[32] If true, then the expansion of targeted financial sanctions may prove an effective instrument in shaping Tehran's calculus. At the same time, the effect of financial measures may be mitigated by high oil

revenues and steps taken to limit the impact of sanctions on the regime and the economy.[33] Even taking these uncertainties into account, the emergence in recent years of targeted financial measures directed at proliferators—and the clear demonstration that they can raise significantly the cost of engaging in illicit activities—sends a strong signal that the international community is prepared to act collectively against those who would abuse the global financial system in pursuit of the most destructive weapons.

United Nations Security Council Resolution 1540

United Nations Security Council (UNSC) Resolution 1540 represents yet a different model of international cooperation in countering weapons of mass destruction. Rather than a political initiative designed to marshal a coalition of the willing, Resolution 1540 provides a universal framework for all states to develop and implement measures to prevent the proliferation of WMD. Adopted unanimously in April 2004, Resolution 1540 established for the first time binding obligations on UN member states to refrain from supporting by any means nonstate actors seeking to produce or acquire WMD, to criminalize the proliferation of WMD to nonstate actors, and to adopt and enforce effective domestic controls on WMD, their means of delivery, related materials, and means of financing proliferation activities. To raise awareness of Resolution 1540 and oversee its implementation, the UNSC 1540 Committee was established. Resolution 1673, adopted in April 2006, called for intensified efforts to implement Resolution 1540 and extended the mandate of the 1540 Committee through April 2008.

More than 140 states have submitted initial reports on the steps they have taken or plan to take to implement Resolution 1540. Efforts are being made through regional outreach activities to encourage and assist the roughly 50 states—largely in Africa, the Caribbean, and the Pacific—that have yet to submit an initial report. While some states have the means to meet these obligations on their own or with only modest help, many countries have limited capacity to do so and require significant assistance from the international community. In its April 2006 report, the 1540 Committee identified several important gaps in the ability of states to implement fully Resolution 1540: accounting, physical protection, law enforcement, border controls, export and transshipment controls, and

financial controls.[34] Four years after its adoption, it is abundantly clear that implementation of Resolution 1540 will be a long-term process requiring sustained political commitment and the broadest possible degree of international cooperation. However, despite some reservations (particularly in the G–77 group of developing states), Resolution 1540 appears to be increasingly accepted as a legitimate legal and political standard and an important mandate for national action and international cooperation.

The 1540 Committee increasingly serves as a clearinghouse for facilitating needed assistance in capacity building, matching requests for and offers of assistance, and actively promoting the role of donor nations, international and regional organizations, multilateral export control regimes, nongovernmental organizations, and academia. Aggressively mobilizing and targeting available expertise and resources are perhaps the major challenges facing the committee as it seeks to develop a coherent and innovative strategy for assistance based on tailored outreach and assistance efforts and the development of national action plans and roadmaps.[35]

Going forward, the committee—and the Security Council, as it considers extending the committee's mandate beyond April 2008—will need to address a number of important issues:

- *Compliance and evaluation.* How will the committee assess the progress states are making in implementing Resolution 1540? What constitutes compliance with the resolution's standard of "appropriate and effective" measures? Should a set of "best practices" supporting capacity building be adopted?
- *Priorities.* Should implementation efforts be informed by a greater sense of priority? Should assistance be concentrated on states where implementation would have a greater relative impact in reducing proliferation risks? Acknowledging the requirement for adherence to all obligations, should there be an effort to establish implementation priorities for individual states, especially those with capacity limitations? Should the committee assume a more proactive role in shaping national priorities—for example, through the national action plans?
- *Committee mandate and structure.* Should the committee's mandate be made permanent? Does the committee require additional authorities, resources, or expertise to act effectively in promoting implementation and coordinating assistance from suitable public or private entities? Is such coordination sufficient, or should the committee be partnered

more formally with organizations already organized to provide technical assistance to states, such as the International Atomic Energy Agency (IAEA) and the Organization for the Prohibition of Chemical Weapons? How can existing cooperative initiatives, such as the G–8 Global Partnership, be leveraged to strengthen implementation?

Reducing Nuclear Dangers

International cooperative activities reflect a strong emphasis on reducing the danger posed by nuclear threats. The strong nuclear focus underscores the acute concerns nations have with respect to the acquisition of nuclear weapons, particularly by rogue or radical states, and the possibility of nuclear terrorism. Cooperative efforts span several key dimensions of the problem: nuclear terrorism, nuclear energy and the fuel cycle, and nuclear detection and forensics.

Global Initiative to Combat Nuclear Terrorism

The Global Initiative seeks to strengthen mechanisms for multilateral and bilateral cooperation to prevent nuclear terrorism and to provide the practical means to implement measures codified in recently adopted international legal frameworks—in particular, the International Convention for the Suppression of Acts of Nuclear Terrorism, the Convention on the Physical Protection of Nuclear Material and Nuclear Facilities (as amended in 2005), and UNSC Resolutions 1373 and 1540.[36] Spearheaded by the United States and Russia, the Global Initiative recognizes that nuclear terrorism threatens not just a handful of states, but also all responsible nations, and thus requires coordinated action to enhance national and international capacity. Announced by Presidents Bush and Vladimir Putin in July 2006, the Global Initiative emphasizes improving capabilities in the following areas:

- accounting, control, and physical protection of nuclear and radioactive materials
- security of civilian nuclear facilities
- detection, search, confiscation, and safe control
- denying safe haven and financial resources to nuclear terrorists
- national legal and regulatory frameworks
- response, mitigation, and investigation
- information-sharing.[37]

As of February 2008, 66 nations had joined the Global Initiative.[38] Members endorsed a Statement of Principles in November 2006, considered an initial work plan in February 2007, and in June 2007 identified more than 25 specific activities to be conducted through 2008—to include expert meetings, tabletop and field exercises, and various forms of mutual assistance—designed to critically assess and enhance capabilities across all of the Global Initiative objectives. A number of capacity-building activities have been completed. Underscoring the critical importance of law enforcement to the success of the Global Initiative, in June 2007 the U.S. Federal Bureau of Investigation hosted a conference on international nuclear terrorism law enforcement. This event gathered more than 500 professionals from 28 countries with the goal of fostering a common understanding of both nuclear terror threats and best practices for law enforcement, intelligence, border control, and nuclear security. Additionally, under the auspices of the Global Initiative, the United States is engaged in bilateral discussions with a number of governments on intelligence-sharing, joint exercises, and training. The Department of State is establishing specialized partner capacity-building teams located at U.S. Embassies to provide tailored, task-specific technical and operational assistance to Global Initiative partners.

> *We have many collective plans. Many countries participating in the initiative have proposed taking various measures to fine-tune practical work in the area in order to deprive terrorists of every chance to use nuclear energy in criminal interests.*
>
> —Russian Deputy Foreign Minister Sergei Kislyak

As the Global Initiative adds partners and implements its work program, it will be important to harmonize its work with parallel efforts under way by the international community to reduce nuclear threats and improve nuclear security, including the G–8 Global Partnership and the Global Threat Reduction Initiative (GTRI), a U.S.-led effort to remove weapons-usable material from potentially vulnerable sites and convert research reactors around the world to use low-enriched uranium not suitable for manufacturing nuclear weapons.[39] Additionally, the private sector has an important role to play in meeting the goals of the Global Initiative, not least with respect to the security of civilian nuclear power facilities, suppression of illicit trafficking through ports, airports, and other key transport nodes, and the development of advanced technologies.

Global Nuclear Energy Partnership

The Global Nuclear Energy Partnership (GNEP) seeks to address a specific proliferation challenge: the proliferation risks associated with the expansion of civilian nuclear power. The GNEP seeks to marshal advanced nuclear technology capabilities to facilitate this expansion in a way that limits and reduces proliferation dangers. Among its key features are the development of proliferation-resistant technologies to recycle spent fuel, so as to avoid creating large new stocks of weapons-usable materials, and the creation of a fuel services consortium that would provide, at reasonable prices, an assured supply of fresh reactor fuel to and recovery of used fuel from nations that forego the development or acquisition of enrichment and reprocessing technologies. In this way, it is hoped that emerging nuclear power needs can be met while limiting the spread of the most sensitive fuel cycle technologies that contribute to the manufacture of nuclear weapons.

> *We are determined to play an active role in making the advantages of the peaceful use of nuclear energy available to a wide range of interested States, in particular developing countries, provided the common goal of prevention of proliferation of nuclear weapons is achieved.*
>
> —Presidents George W. Bush and Vladimir Putin, Declaration on Nuclear Energy and Nonproliferation

Since it was unveiled by the Department of Energy (DOE) in February 2006, GNEP has generated significant debate on a number of fronts, including the degree to which the technologies it is promoting are in fact proliferation-resistant, waste management challenges, the merits of moving quickly toward commercial-scale facilities, and the nonproliferation risks associated with recycling plutonium. The debate surrounding some of these issues is highly technical and falls outside the scope of this paper.[40] But it is fair to say that more work is required to examine and validate the technology concepts behind GNEP as part of a longer-term research and development effort. Accordingly, prudence suggests that nonproliferation efforts, such as planning for future safeguards requirements, proceed on the assumption that the goals of GNEP may change over time or may not in the end fully be achieved.[41] Indeed, DOE's

Strategic Plan for GNEP cautions against unrealistic expectations for its nonproliferation benefits:

> *there is no technology 'silver bullet' that can be built into an enrichment plant or reprocessing plant that can prevent a country from diverting these commercial fuel cycle facilities to non-peaceful use.* From the standpoint of resistance to rogue-state proliferation there are limits to the non-proliferation benefits offered by any of the advanced chemical separation technologies, which generally can be modified to produce plutonium if a nation is willing to withdraw from its Non-Proliferation Treaty or violate its NPT or safeguards obligations.[42]

In any case, any nonproliferation benefits that might be realized through the technology innovations envisioned by GNEP are many years—probably decades—away. Progress toward establishing a nuclear fuel services consortium can be achieved far more quickly, but here the challenges are more political in nature. To be sure, there is by now widespread appreciation that the center of gravity of the nuclear proliferation problem is the "loophole" in the Nuclear Non-Proliferation Treaty (NPT) that allows nuclear aspirants to develop the means to manufacture nuclear weapons under the cover of civilian power programs. In light of the North Korea experience and the ongoing struggle with Iran, and as more states proceed with plans to pursue a nuclear energy infrastructure, there is a growing sense of urgency about the need to limit the spread of enrichment and reprocessing technologies while accommodating growing interest in nuclear power.[43] Both the security and economic rationales for doing so are strong. States choosing to pursue nuclear power principally for energy purposes—as opposed to hedging their security bets—must be given an economically attractive option to do so—that is, one that does not require developing a closed fuel cycle and making a huge investment in fuel production, storage, and disposal capabilities. The fuel services consortium envisioned in GNEP, as well as other national fuel center initiatives, emphasizes economic incentives and reduced risk for states and would be voluntary in nature rather than codified as part of the international nonproliferation regime.[44]

Still, many nations are sure to resist any effort perceived as limiting their access to peaceful nuclear technology as discriminatory and

contrary to their rights under Article IV of the NPT. While the GNEP Statement of Principles is clear that participating states will not forfeit any rights, the initiative is nonetheless viewed by many in the context of President Bush's 2004 call to the Nuclear Suppliers Group to permanently deny enrichment and reprocessing technologies to states that do not already possess them, even if these states are members in good standing of the NPT.[45] Thus, the fear persists that GNEP will lead to a permanent two-tier system comprised of those who provide enrichment services and those who must purchase them. In this context, the possibility exists that GNEP will actually stimulate interest on the part of some states to acquire independent enrichment capabilities. Taking these considerations into account, IAEA Director General Dr. Mohamed ElBaradei's proposal to create a multilateral framework for the nuclear fuel cycle leading, through a phased process, to the conversion of enrichment and reprocessing facilities from national to multilateral operations may be a more politically palatable approach for some, even if it is more cumbersome to bring to fruition.[46]

Technical and political concerns have not, however, prevented GNEP from making progress as an international forum for consideration of nuclear energy and nonproliferation challenges. As of February 2008, 21 countries had become members of GNEP.[47] In addition to the Statement of Principles, an Action Plan has been adopted that outlines initial priorities, milestones, and mechanisms for cooperation, and establishes two working groups on infrastructure development and reliable nuclear fuel services.[48] At the same time, a number of important nuclear energy states—including Argentina, Brazil, India, and South Africa—remain outside GNEP.

Nuclear Detection

The United States is engaged in a concerted effort to improve capabilities for detecting nuclear and radiological materials at overseas ports of departure and domestic ports of entry. Many nations are participating in the effort, led by the Department of Homeland Security (DHS) Domestic Nuclear Detection Office (DNDO), to create a global architecture for nuclear detection and reporting. A global architecture will build on national systems; as these mature, they will form the basis for regional networks, which can then be integrated into a global architecture that

operates within existing national and international legal authorities. To facilitate the development of national capabilities, DNDO, under the auspices of the Global Initiative to Combat Nuclear Terrorism, has proposed collaboration on a model guidelines document for the development of national detection architectures.

Today, overseas detection assets fall under the rubric of a number of U.S. programs. The *Second Line of Defense* (SLD) program, managed by DOE, helps foreign partners prevent illicit nuclear and radiological trafficking by installing detection equipment at key sites such as airports, seaports, and border crossings. The SLD Core Program has provided equipment and training to Armenia, Azerbaijan, Georgia, Greece, Kyrgyzstan, Lithuania, Russia, Slovakia, Turkmenistan, and Ukraine. To date, 117 sites have been equipped in Russia, and the United States has agreed to equip all of Russia's border crossings by the end of 2011, for a total of 350 locations. Outside of Russia, the program has identified more than 100 additional sites to receive detection equipment. The SLD program also encompasses the Megaports Initiative, which provides radiation detection equipment to enhance cargo screening at key international seaports. As of January 2008, Megaports capabilities were operational in ports in 12 countries and were in various stages of implementation at 17 other ports. Current planning calls for installing nuclear screening capabilities at 75 ports by 2014.[49]

The *Container Security Initiative* (CSI) and *Secure Freight Initiative* (SFI) are related DHS-managed programs. The Container Security Initiative targets high-risk containers at ports of departure for enhanced screening and is installing Megaports nuclear detection assets at 58 ports around the world. Through CSI efforts at these ports, approximately 90 percent of all trans-Atlantic and trans-Pacific cargo imported into the United States is now subject to prescreening. The Secure Freight Initiative is a pilot program mandated by the Security and Accountability for Every Port Act of 2006. All U.S.-bound containers are being scanned at three ports in Honduras, Pakistan, and the United Kingdom to determine if 100-percent scanning can be achieved by combining nonintrusive imaging equipment and radiation detection equipment.[50]

Initiatives such as these have advanced international cooperation in nuclear detection of the U.S. supply chain, and this may have deterrent effects that are difficult to discern and evaluate. Yet there are also inherent

limitations to these strategies that argue for realistic expectations. These include the porous nature of international borders, reliance on foreign border forces that may be ineffective or unreliable, the existence of alternative smuggling routes, and the difficulty in detecting highly enriched uranium.[51] In recent congressional testimony on the Secure Freight Initiative, a senior DHS official noted the political, logistical, technological, and funding challenges in expanding the scope of container screening activities globally.[52]

Nuclear Technical Forensics

As with detection, technical forensics has become a major thrust in the effort to deter and prepare for the possibility of a nuclear terror attack. Here, too, success will depend on international cooperation, in particular collaborative efforts to develop databases of nuclear sources against which information from an intact or detonated nuclear or radiological device can be assessed to support an attribution process. Limitations in U.S. forensics capabilities are widely acknowledged, especially the declining number—and increasing age—of scientists with required expertise in radiochemistry. In a nuclear emergency, personnel with the necessary skills may be needed to support other urgent technical missions in addition to forensics. In this sense, international cooperation can serve as a force multiplier by making available a broader cadre of experts to assist in forensic investigation. The broader the range of cooperation in this area, the better the prospects for determining the source of an attack and marshalling the international community to hold to account those responsible and take action to prevent and deter further attacks.

The U.S. Government should extend its ongoing initiatives to counter WMD terrorism to include provisions for prompt technical and operational cooperation in the event of a nuclear detonation anywhere in the world. . . . The wider the participation in this effort, the more confident the processes of nuclear forensics will be.

—Joint Working Group of the American Physical Society and the American Association for the Advancement of Science

Working out formal modes of cooperation also makes sense given the simple fact that in the event of a nuclear detonation, debris will be transported globally and will be analyzed by laboratories in many nations. With respect to specific

areas for cooperation, the highest payoff most likely lies in comprehensive international databases and sample banks to enable debris to be assessed against actual, as opposed to calculated, signatures. As one recent assessment has suggested, the ideal database would be supplemented by sample banks and managed to allow for complete and prompt access in response to a nuclear event, and to protect national and commercial secrets.[53]

Some progress is being made along this front by the Nuclear Smuggling International Technical Working Group, established in 1996 to foster cooperation in countering nuclear trafficking. In addition to the development of forensic databases, the group's efforts focus on establishing protocols for evidence collection and laboratory investigation, evaluating methodologies for forensic analysis, and conducting lab-to-lab exercises.[54] Recent reviews of collaborative opportunities in nuclear forensics identified a number of possibilities:

- joint research to develop improved capabilities to collect debris, take field measurements, perform rapid automated analysis, and maintain chain of custody
- improved methods of analysis, in particular techniques that measure new properties of debris material influenced by manufacturing process or location, promise greater sensitivity, require reduced sample sizes, and allow for signature discovery on the nano-scale
- advanced statistical techniques to reduce uncertainties and determine confidence levels in scientific conclusions
- taggants to provide a unique signature to nuclear fuel during fabrication that can be recovered during forensics analysis.[55]

Strengthening Biodefense and Biosecurity

Advances in the life sciences and in the very nature of international society and the global economy mean that biological weapons (BW) pose a strategic threat to all nations. Attacks using disease agents have the potential to be highly lethal on a broad geographic scale, and there are no material limits to multiple attacks. Biotechnology is a highly capitalized global enterprise, and life science infrastructures are spreading at a steady pace. As a result, the sources of knowledge that could lead to unanticipated and dangerous advances in the threat are increasingly dispersed around the world, embedded in legitimate science and manufacturing processes. And while there may be uncertainties about the

intentions and capabilities of terrorists with respect to biological weapons, we know that al Qaeda has a demonstrated interest in these weapons and a continuing intent to conduct high-impact, large-scale attacks.

These factors, which point to the confluence of science, technology, economics, and politics, make abundantly clear that national solutions and responses are insufficient to manage this problem effectively. Preventing, deterring, and preparing for biological attacks are inherently global challenges. And while there is an impressive amount of work being done—in bilateral and multilateral governmental forums, under the auspices of the Biological Weapons Convention and other treaty organizations, in a broad array of international organizations, and in the scientific community—the international community overall is only in the initial stages of constructing a coherent strategy and supporting capabilities for biosecurity. Consider three major challenges facing effective global collaboration.

One major challenge is *threat perception and leadership awareness*. International partners do not yet share a common understanding—or "common operating picture"—regarding the scope and urgency of the BW challenge. For some, biodefense and biosecurity are principally public health issues, rather than a national security challenge requiring broad-based preparedness efforts. Further, even highly experienced leaders are unfamiliar with biological warfare, infectious disease, the nature of epidemics, and the range of response options. This complicates development of a sense of shared risk and responsibility across governments.

A second challenge is the sheer *complexity* of the problem. Effective strategies will lie at the intersection of multiple sectors—security, health (public, plant, and animal), medicine, economics, law enforcement, and the scientific process itself—and thus engage a range of expert and stakeholder communities. This presents significant challenges both within and between governments working to strengthen preparedness and response. High-profile simulations suggest that a major bioweapons incident would impose difficult demands on governments and place tremendous strains on political relationships and security commitments, even among close allies.[56]

Complexity challenges current modes of organization and interaction. Thus, a third challenge is the *weak institutional framework* that currently exists. Governments are engaged widely on this problem, but

there is no transnational body whose principal mission is to serve as a coordinating authority. Similarly, more than 30 international organizations are involved in some aspect of biosecurity; they are addressing important elements of the problem, but their efforts are not integrated in any meaningful way. Exercises demonstrate that many nations plan to rely on support from international organizations in responding to bioterror events (see table 2). While many of these organizations offer outstanding expertise, their capacity for action on the ground in responding to complex events is limited.[57]

Overcoming these challenges will not be easy. An action plan to systematically strengthen the global community's ability to cope with BW threats should consider the following elements.[58]

First, governments must increase their own capacities to prevent, detect, and respond to bioweapons attacks across the multiple sectors noted above, while working to establish collaborative relationships to maximize the utilization of finite resources. De facto "biosecurity alliances" would focus on building collective capacity for threat assessment, surveillance, and situational awareness; joint training and exercises; joint development and production of medical countermeasures and diagnostic tools; and sharing of experts, medicines, and other response capabilities in the event of an attack. Countries with more established programs or advanced capabilities should be prepared to provide assistance.

Second, governments and international organizations need to work more closely together to establish modes of practical cooperation and identify areas where national policies may conflict with the advice that organizations provide. In some circumstances, international organizations may be uniquely qualified to assist in managing a particularly challenging task, such as developing and maintaining an equitable and effective system for allocating available vaccines and treatments. But they will

Because of the inherently international nature of bioterrorism and agroterrorism preparedness and response, it is vital that countries coordinate across both national and organizational borders to create international relationships as well as intersectoral relationships.

—Dr. Marc L. Ostfield, Senior Advisor for Bioterrorism, Biodefense, and Health Security, U.S. Department of State

Table 2. Major International Bioterrorism Exercises

Event	Scenario	Participants
Global Mercury (2003)	Smallpox	Senior health ministry officials from eight countries, plus European Union (EU) and World Health Organization (WHO)
Silent Twilight (2004)	Smallpox	Eurasian states, plus Switzerland, Turkey, the United States, EU, North Atlantic Treaty Organization, Organization for Security and Co-operation in Europe, and WHO
Atlantic Storm (2005)	Smallpox	Former senior officials from nine countries, plus EU and WHO
TOPOFF 3 (2005)	Plague Mustard Gas	First responder organizations in Canada, United Kingdom, and United States
Black ICE (2006)	Smallpox	Five organizations from the United Nations system and seven independent organizations
Black Death (2007)	Plague	Senior law enforcement officials from nine countries and five international organizations

be able to do so only if they have the political and practical support of governments.

Third, international organizations need to coordinate more effectively with each other to develop integrated approaches that leverage the diverse range of expertise and capability they represent, harmonize potentially conflicting priorities and organizational cultures, and make efficient use of available resources (financial, technical, and logistical). This is particularly true for organizations dealing with security and law enforcement on one hand, and humanitarian and public health issues on the other. Some experts have suggested establishing an international matrix for biosecurity that would link existing entities more robustly and enhance their regulatory powers to create a stronger and more cohesive, if still somewhat disaggregated, institutional capability for international oversight of the life sciences.[59]

Fourth, consideration should be given to establishing a coordinating authority to facilitate cooperative efforts by governments and international organizations, assess gaps and redundancies in response planning and capabilities, and recommend strategies to enhance global biosecurity. These functions extend beyond the capabilities and mandates of existing technical organizations. Exercises point to the need for such an authority to enhance unity of effort and elicit stronger commitments from governments, though where it should reside, how it should be organized, and what powers it should have are not self-evident. Some experts have suggested looking to the United Nations, building on the counterterrorism strategy adopted by the General Assembly in 2006 and the Secretary-General's Biotechnology Initiative.[60] However, some governments oppose the creation of a new international institution, preferring to focus on strengthening coordination among states and nongovernmental organizations.

Fifth, beyond building capacity and strengthening institutions, it is just as critical to foster a global culture of biosecurity, in order to shape the "cultural battlespace" where the fight against biological weapons is being waged. A culture of biosecurity should sensitize all sectors to the requirements of effective BW preparedness and response, encourage an appropriate balance between public health and national security concerns, and reinforce for individual scientists and practitioners the norms against abusing information, materials, or techniques from the life sciences to support weapons programs.[61]

The U.S. Biological Threat Reduction Program (BTRP) provides one foundation for advancing this ambitious agenda. Since the early 1990s, the BTRP and its predecessor programs have made significant contributions to preventing BW proliferation in Azerbaijan, Georgia, Kazakhstan, Russia, Ukraine, and Uzbekistan, with emphasis on eliminating BW infrastructure, improving biosafety and biosecurity, and supporting cooperative biological research. The accomplishments that can be attributed at least in part to BTRP are discussed in a recent assessment performed at congressional direction by the National Academy of Sciences.[62] The principal recommendations of this study, however, emphasize the importance of building on BTRP to create and execute a biological threat reduction strategy defined by sustained collaborative partnerships, robust international networks, and comprehensive technical engagement. Only in this

way, it is argued, can the international community have a reasonable prospect of meeting the challenge posed by the continued spread of dual-use biotechnology capabilities.

To enable this transition, the following key steps are recommended by the National Academy:[63]

- transform BTRP from a "Washington-directed program of assistance to a genuinely collaborative program of partnerships . . . built on strong relationships between important scientific, public health and agricultural institutions and specialists." Should the program expand beyond the states of the former Soviet Union, "collaboration rather than assistance should be a guiding principle wherever possible."
- give greater emphasis to a "comprehensive, multi-faceted approach to international engagement for achieving biosecurity, public health, and agricultural objectives," to include countermeasures development, facility security, surveillance, biosafety, laboratory and production best practices, and research.
- give BTRP a "central role in supporting development of international networks of institutions and specialists with common interests in biological research, public health, agriculture, and biosecurity." International networks are "an essential mechanism in building trust among governments engaged in activities with dual-use dimensions and providing insights as to intentions of colleagues at the facility level." Such networks also would support the early identification of disease outbreaks and development of public health capabilities.
- given concerns about poor security conditions at biotechnology and life sciences facilities in regions such as the Middle East, South Asia, Southeast Asia, Africa, and Latin America, ensure that BTRP is prepared to apply its capabilities in response to urgent requirements that could emerge outside of the former Soviet Union.

Security Cooperation

Strategic Framework

From the outset, U.S. strategy for combating WMD has recognized the importance of engaging with allies and other security partners to increase the capacity of friendly states to assist in preventing, deterring, defending against, and responding to WMD threats. The international initiatives promoted by the Bush administration are intended to foster stronger partnerships and cannot succeed without concrete and sustained

cooperation. In the Defense Department, security cooperation and building partner capacity have become increasingly salient elements in defense strategy in general and in the parallel campaigns against global terrorism and weapons of mass destruction in particular. In these efforts, capable partners can reduce the burden on U.S. forces and contribute to regional and global defense in depth. The 2006 Quadrennial Defense Review highlights the importance of security cooperation and improving partner capabilities, and recent defense guidance directs that security cooperation activities be more tightly integrated into the operational plans developed by the geographic combatant commands to achieve national security goals.

> *The U.S. Armed Forces should undertake cooperative activities with regional military partners that promote improved partnership capacity to combat WMD. These activities should foster common threat awareness, coalition building, and interoperability.*
> —National Military Strategy to Combat Weapons of Mass Destruction

The 2006 *National Military Strategy to Combat Weapons of Mass Destruction* establishes "security cooperation and partner activities" as one of eight military mission areas, emphasizing the importance of security partners both to the military's role in nonproliferation activities and to coalition operations to counter WMD or in WMD environments.[64] To better focus work in this mission area, the Defense Department is crafting a supporting strategy to build partner capacity and integrate the broad range of activities already under way or needed to take security cooperation to the next level. This international strategy envisions the creation of regional networks comprised of states committed to working with the United States to improve national and collective capabilities in the areas of proliferation prevention, interdiction, missile defense, passive defense, consequence management, research and development, and training and education. These regional networks would build on existing bilateral and local relationships developed under the aegis of the geographic combatant commands and potentially could be connected through broader structures such as the Global Initiative to Combat Nuclear Terrorism, which currently has 66 member nations.

An example of how this strategy might be pursued is the International Counterproliferation Program's recent WMD exercise in the Black

Sea region. This U.S.-sponsored exercise involved more than 390 individuals, including U.S. Government officials and subject matter experts, as well as WMD personnel from Bulgaria, Georgia, Moldova, and Romania. The scenario of the 5-day exercise involved the trafficking of weapons of mass destruction across borders by a sophisticated network of criminals and terrorists, and allowed participating governments to exercise both national and international operational procedures. A simulated command post exercise and a coordinated field exercise near Bucharest, Romania, allowed the four partner countries' national organizations to assess their readiness for a WMD event. Additionally, the exercise provided practice in a simulated environment in which governments could conduct integrated deterrence, detection, response, and investigation of WMD and related materials.[65]

A more focused international strategy to combat WMD and strengthen partner capacity will build on tailored approaches that have been taking shape for a number of years based on the unique requirements and challenges of individual regions and combatant command areas of responsibility.

Europe

U.S. European Command (USEUCOM) has established a number of multinational forums (called *clearinghouses*) that serve as vehicles for theater engagement and coordination in its area of responsibility. The objective is to maximize collaboration with limited resources by organizing at the subregional level. Three clearinghouses have been established. The Southeast Europe clearinghouse encompasses Albania, Croatia, and Macedonia (the Adriatic Charter nations), as well as Bosnia and Herzegovina, and Serbia and Montenegro. The South Caucasus clearinghouse serves as a forum to coordinate security cooperation with Armenia, Azerbaijan, and Georgia. The Africa clearinghouse joins 13 African nations with USEUCOM, the North Atlantic Treaty Organization (NATO), the European Union, and the United Nations.[66]

In NATO, members committed in 2002 to improve operational capabilities to fight new threats such as terrorism and WMD. The Prague Capability Commitments included a pledge to enhance national and collective capabilities to defend against chemical, biological, radiological, and nuclear (CBRN) weapons. Not all the initiatives identified at that time

have come to fruition, but NATO has nonetheless taken important strides in developing a WMD defense concept and improved operational capabilities against threats posed by both state and nonstate actors.[67] NATO's Multinational CBRN Defence Battalion is intended to be a high-readiness unit able to deploy quickly to support NATO missions of any kind in any location. Thirteen nations are represented in the battalion, which achieved full operational capability in June 2004 and is capable of reconnaissance, detection, sampling, and decontamination operations. The Joint CBRN Defence Centre of Excellence opened in November 2007 in Vyskov, Czech Republic, to serve as a multinational resource for expertise, education and training, and the development of concepts, doctrine, lessons learned, and standards. Eight nations participate in the Centre, which is working toward accreditation for its education and training activities. On a different track not tied to the 2002 Prague commitments, the Alliance continues to investigate technical and operational concepts for a layered theater ballistic missile defense capability.

East Asia

The U.S. Pacific Command (USPACOM) engagement strategy emphasizes developing cooperative mechanisms directed toward partner capacity building in areas such as interdiction, WMD elimination, implementation of UNSC Resolution 1540, consequence management, and WMD terrorism. Bilateral working groups are one focus. With Japan, USPACOM and the Office of the Secretary of Defense have established a CBRN Defense Working Group whose objective is to improve the readiness and interoperability of U.S. and Japanese forces to conduct and sustain operations in the event of a WMD attack, to include execution of consequence management operations. Recent activities have addressed issues such as decontamination, WMD medical preparedness, and opportunities for cooperative research and development. A Counterproliferation Working Group established with South Korea is focused on developing WMD elimination capabilities.[68] USPACOM is also working with the Philippines to deny terrorist networks the ability to obtain WMD capabilities as part of its regional war on terror engagement strategy.

The command also participates in the Multilateral Planning and Augmentation Team (MPAT), a cadre of military planners from 33 nations with interests in the Asia-Pacific region. MPAT facilitates the

rapid establishment and/or augmentation of multinational coalition task force headquarters, concentrating on smaller scale contingencies and operations other than war, including terrorism. With its focus on operational issues, it also emphasizes developing standard operating procedures (SOPs) to guide multinational responses to crises; these procedures recognize that defense ministries and armed forces cannot provide effective crisis planning and response alone. For this reason, the efforts and capabilities of a number of international organizations, nongovernmental organizations, and UN agencies are integral to MPAT's work. MPAT has developed SOPs for contingencies involving CBRN and toxic industrial materials. One addresses coalition task force operations in a CBRN environment, the other how to organize for and direct consequence management operations. Recent exercises have focused on consequence management and pandemic influenza.[69]

Southwest Asia

The U.S. Central Command (USCENTCOM) approach to building partner capacity emphasizes the use of largely bilateral activities to encourage host nations to develop integrated civil-military response capabilities. While some multilateral structures exist, advancing a broad-based multilateral strategy is difficult given the politics of the region and the degree of mistrust that exists among some governments. The Command leverages a diverse set of activities at the tactical, operational, and strategic levels:

- Commander, USCENTCOM visits to host nation senior military and civilian officials, including chiefs of defense staff
- Cooperative Defense Program workshops and exercises in passive defense, consequence management, medical countermeasures, missile defense, and shared early warning
- International Military Education and Training activities
- Foreign Military Sales
- Bilateral Air Defense Initiative to develop common approaches to the regional ballistic missile threat
- International Counterproliferation Program activities
- Proliferation Security Initiative
- Regional Disaster Management Center of Excellence in the Horn of Africa
- Disaster Preparedness Program in Central and South Asia

- host nation partnerships with state National Guard units in the United States.

Mind the Gap

The unified commands are well engaged in regions of strategic importance developing the mechanisms that can support partner capacity building and meaningful cooperation. Perhaps the most important challenge to sustaining effective theater engagement is the growing perception among many partners of a capabilities gap with the United States—a belief that, regardless of their force modernization efforts, they will continue to fall further behind an increasingly sophisticated U.S. military. This is true for both the conventional warfighting capabilities typically associated with the capabilities gap, as well as more specialized areas of the combating WMD mission. It also may be an issue for nonmilitary (for example, homeland security) capabilities for addressing the WMD threat. The implications of this (real or perceived) gap are potentially serious if partners otherwise willing to assume regional security burdens come to believe they are unable to do so because they cannot operate effectively with U.S. forces. Going forward, security cooperation policies should focus on reducing this gap, especially with our closest and most important partners.

The Way Ahead

Initial progress in advancing new types of international cooperation for combating WMD is promising, but there remain major challenges to developing a network of partnership activities that can be sustained over the long term. The efforts of the last several years have provided a strong beginning, but more work must be done to ensure these initiatives take root and continue to offer meaningful collaboration with practical security benefits. A number of questions merit attention.

Are there too many initiatives asking too much of countries that may have limited capacity? The multiplicity of initiatives reflects the complexity of the threat and the aggressive search for innovative means to attack it. Engaging the international community broadly across the many functional dimensions of the problem (political, military, financial, legal) requires putting in place a range of mechanisms for collaboration. From

the U.S. perspective, there is merit in such an approach: it provides flexibility in marshalling small or large groups of partners into coalitions to work specific problems and thus enables tailored strategies. At the same time, the sheer number of combating WMD initiatives can place strains on the ability of states to contribute. This is revealed by the gap, in some cases, between commitments and actions. A good example, discussed above, is implementation of UNSC Resolution 1540, where the gaps are significant and will only be closed through the sustained political commitment of those who need help to create capacity and those capable of providing such assistance. Where we have a strong stake in the success of an initiative, addressing capacity problems should be a policy priority.

Will these initiatives have staying power? It is reasonable to ask whether the existing commitments nations have made can be sustained over the longer term. At one level, this is a political challenge for the United States. Some partner nations question whether the United States will remain committed to this general approach to the WMD problem, and to specific initiatives, particularly given the change in administrations that will occur in 2009. In the policy reviews that will take place, which programs will remain priorities? This concern underscores the recognized leadership role of the United States in forging international collaborative efforts. If the United States does not continue to push on key initiatives and exert proactive leadership, the political commitments other states have made could weaken. Washington must remain mindful of the fact that for many governments, joining and participating in U.S.-led initiatives entail a considerable political and resource investment, especially at a time when there is significant anti-American sentiment. For its part, it is reasonable for the United States to ask: Who else will step forward to assume a leadership role in this arena? The United States has facilitated leadership opportunities for states within the framework of existing cooperative efforts, but who will offer the next compelling idea for a partnership initiative?

At another level, the question of staying power is an organizational and management challenge. Can activities that by design have no permanent, standing support organization be self-perpetuating? What is the minimum degree of institutional structure required to ensure sustainability, especially in the face of changes at the political level? Is the U.S. Government organized to manage effectively the growing number of

partnership activities? The "policy entrepreneurship" that gave rise to the wide range of initiatives now under way is essential to devising innovative approaches to tough policy challenges. At some point, however, there also may be a need for more formal or centralized coordination and harmonization of these activities to ensure unity of effort.

How can other important stakeholders be integrated? Despite broad involvement by nations and international bodies in many new initiatives, there is room to expand participation in the combating WMD global network of partnerships that can enhance both its effectiveness and its legitimacy.

First, better integration of *rising powers,* in particular (but not only) China and India, could yield important combating WMD benefits. These states are not isolated from the partnership network, but neither are they fully integrated. These are countries whose power and influence are growing, and who are emerging as regional political and economic leaders. They also have growing infrastructures in critical sectors such as nuclear energy and biotechnology where proliferation risks could emerge, and are increasingly influential players in other commercial sectors relevant to combating WMD (such as international finance and banking). Bringing them more fully into the mainstream of global combating WMD efforts could build on existing areas of cooperation, such as the Six-Party Talks in the case of China, and a number of bilateral U.S.-India activities. Similarly, Washington should consider how best to include less powerful but still potentially important nations in regions such as Southeast Asia, Africa, and South America. These regions may appear less strategically important today from a proliferation standpoint but conceivably could emerge in the future as areas of concern.[70]

Second, the *private sector* has a large stake in managing the proliferation problem. WMD events of even less-than-catastrophic proportion could have a dramatic impact on global commerce and put at risk key sectors and many individual businesses. Participating in proliferation-related transactions and networks, even unwittingly, can cost businesses and banks dearly, both financially and reputationally. Moreover, the business community may possess unique sources of information about WMD-related activities that can assist national and international combating WMD efforts. In some areas, the private sector is already an important partner; the major effort of recent years to secure the global maritime supply chain

relies critically on close and extensive cooperation with private port operators. As another example, the United States has enlisted the support of the private banking sector to facilitate targeted financial measures against selected organizations and individuals in Iran. More needs to be done to mobilize the business community as a full partner in combating WMD. Areas for consideration include the following:

- Encourage private sector entities to endorse key international initiatives such as the Global Initiative to Combat WMD and the Proliferation Security Initiative, and encourage member states to work with the commercial sector to enhance implementation.
- Develop partnerships with critical industries, such as nuclear energy and biotechnology, that have the potential to shape the future proliferation landscape in profound ways, with the goal of enhancing awareness of proliferation risks and encouraging voluntary adoption of appropriate safeguards and regulatory mechanisms.
- Encourage key industries and commercial sectors to adopt and promote best practices and codes of conduct geared to the management of proliferation risks. Over time, best practices and codes of conduct can help to create a "culture of nonproliferation" and a norm of behavior. Measures adopted by the U.S. chemical industry provide one useful model and point of departure.[71]
- Strengthen information-sharing between government and the private sector through regulatory mechanisms and improved technology.
- Work with the international insurance and risk assessment industries to support the development of an effective private market for mitigating and insuring against the risks of WMD attacks.[72]

Third, in regard to the *global community of interest,* experience has demonstrated, sometimes painfully, that no one country or national intelligence apparatus has sufficient information to understand fully all aspects of the WMD challenge. Indeed, intelligence agencies operating largely on the basis of classified information will see at best only some pieces of the puzzle. There is a growing appreciation of the need to exploit more aggressively and systematically the broader reservoir of knowledge that exists among experts and specialists around the world, both in and outside government. Tapping this tacit knowledge requires creating a networked community of interest focused explicitly on WMD threat and response. A promising example of this approach is the Global Futures Forum, an initiative of the Central Intelligence Agency to create a collab-

orative forum, both virtual and face-to-face, for multidisciplinary strategic level dialogue and research. In addition to proliferation, communities of interest are being established around such related problems as radicalization, terrorism and counterterrorism, illicit networks, pandemics, and social networks.

Quo vadis 2009 policy? Any new U.S. administration will want to put its own mark on the nonproliferation and combating WMD agenda and can be expected to make changes and adjustments. With respect to partnership activities, objective assessments of strategy and policy should yield useful lessons about both the forms of cooperation and the challenges to achieving real impact on the ground. They also should conclude that international cooperation is only increasing in importance and that the concerted effort to put in place a matrix of partnership activities has in fact yielded security benefits. Building on success should, therefore, be a guiding principle for the new team taking the reins of national policy. Even for those initiatives that have had a productive track record, a strong effort will be required in the period ahead to sustain the political commitment and practical engagement of security partners both large and small. Indeed, the many partners who have joined various elements of the fight against WMD will be watching carefully for significant changes in the direction and emphasis of U.S. policy. The next administration should give early attention to these issues, with an eye toward establishing a framework for action that will strengthen the international consensus that has enabled the considerable degree of practical cooperation achieved in recent years.

Notes

[1] For a discussion of how globalization is shaping proliferation dynamics, see Kenneth D. Luongo and Isabelle Williams, "The Nexus of Globalization and Next-Generation Nonproliferation," *Nonproliferation Review* 14, no. 3 (November 2007), 459–473. See also The Fund for Peace, "Threat Convergence: Possible New Pathways to WMD Proliferation?" Conference Report, Winter 2006, available at <http://www.fundforpeace.org/programs/tc/threat-convergence.php>.

[2] For a discussion of sovereignty as an element of U.S. nonproliferation policy, see Jofi Joseph, "The Exercise of National Sovereignty: The Bush Administration's Approach to Combating Weapons of Mass Destruction Proliferation," *Nonproliferation Review* 12, no. 2 (July 2005), 373–387.

[3] See Stephanie Lieggi, "Proliferation Security Initiative Exercise Hosted by Japan Shows Growing Interest in Asia But No Sea Change in Key Outsider States," *WMD Insights*, issue 21(December 2007-January 2008), available at <www.wmdinsights.com/PDF/WMDInsights_Dec07-Jan08Issue.pdf>.

[4] Ibid. The article goes on to note that "[T]his concern is intensified by arguments of U.S. pundits opposed to UNCLOS warning that ratification would endanger PSI activities. According to officials from the Bush Administration, which now favors U.S. ratification of the convention, Malaysia and Indonesia have both given indications that they would be more willing to participate fully in PSI if the United States joined the sea convention."

[5] Ibid. This report also speculates that concern about Japan's increasing military profile has contributed to China's reluctant stance toward PSI.

[6] See "S. Korea May Join US-Led Security Program," Associated Press, February 27, 2008, available at <http://ap.google.com/article/ALeqM5jPOFaJLWLCLPblfR9YJdqedPrlyAD8V2K6N80>; and "South Korea Could Join PSI, Report Says," *Global Security Newswire*, January 14, 2008, available at <http://www.nti.org/d_newswire/issues/print.asp?story_id=C7F34122-82FF-48EE-8819-A4C30B-B77CBA.html>.

[7] President George W. Bush, remarks on weapons of mass destruction proliferation, Lisbon, Spain, March 5, 2004.

[8] See Alex Reed, "The Proliferation Security Initiative: Too Much, Too Soon," The Henry L. Stimson Center, August 13, 2007, available at <http://www.stimson.org/pub.cfm?ID=533>.

[9] Ibid.

[10] See Paul F. Walker, "Looking Back: Kananaskis at Five—Assessing the Global Partnership," *Arms Control Today* (September 2007) for a recent unofficial accounting of Global Partnership commitments. See also the Global Partnership Resource Page maintained by the James Martin Center for Nonproliferation Studies at <http://cns.miis.edu/research/globpart/funding.htm>. Nearly $18 billion in commitments have been made.

[11] Walker. According to this account, Russian authorities believe that completing the chemical weapons destruction process will require a total of $7 billion to $8 billion.

[12] "Report on the Global Partnership," G–8 Global Summit Heiligendamm, available at <www.g-8.de/nn_220074/Content/EN/Artikel/__g8-summit/anlagen/gp-report-final.html>.

[13] Ibid.

[14] National Nuclear Security Administration Fact Sheet, "NNSA: Working to Prevent Nuclear Terrorism," December 2007, available at <http://www.nnsa.doe.gov/docs/factsheets/2007/NA-07-FS-01.pdf>.

[15] Ibid. These include Russian navy reactor fuel sites, Rosatom military and civilian sites, and non-Rosatom civilian sites.

[16] Ibid. According to NNSA, 300 metric tons had been down-blended by the end of 2007 and are now being used to produce 10 percent of U.S. electricity.

[17] For a more detailed discussion of these activities, see Robert Einhorn and Michéle Flournoy, "Assessing the G8 Global Partnership: From Kananaskis to St. Petersburg," Center for Strategic and International Studies Strengthening the Global Partnership Project, July 2006, 9, available at <http://www.csis.org/media/csis/pubs/060701_g8_global_partnership.pdf>.

[18] "Report on the G–8 Global Partnership," 2.

[19] Einhorn and Flournoy, 16.

[20] Walker.

[21] Einhorn and Flournoy, 14. As noted by the authors, "Russia has declined to discuss biological security within the context of the Global Partnership, a point of contention with donor countries" (10).

[22] Stuart Levey, Under Secretary for Terrorism and Financial Intelligence, remarks before the 5th Annual Conference on Trade, Treasury, and Cash Management in the Middle East, March 7, 2007, available at <http://abudhabi.usembassy.gov/remarks_of_stuart_levey_.html>.

[23] As reported by Patrick Murphy, Leonard S. Spector, and Leah R. Kuchinsky, "Special Report: Financial Controls Emerge As Powerful Nonproliferation Tool; North Korea and Iran Targeted," *WMD Insights*, issue 15 (May 2007), available at <www.wmdinsights.com/PDF/WMDInsights_May07Issue.pdf>.

[24] Ibid.

[25] The White House, Executive Order 13382, "Blocking Property of Weapons of Mass Destruction Proliferators and Their Supporters"; and U.S. Department of State Fact Sheet, "Designation of Iranian Entities and Individuals for Proliferation Activities and Support for Terrorism," October 25, 2007, available at <http://www.state.gov/r/pa/prs/ps/2007/oct/94193.htm>. List of designations as of December 26, 2007. See also Peter Crail, "UN Iran Sanctions Decision Awaits," *Arms Control Today*, November 2007.

[26] The Security Council resolutions pertaining to North Korea are 1695 and 1718. Those pertaining to Iran are 1737 and 1747.

[27] Michael Jacobson, "Raising the Costs for Tehran," The Washington Institute for Near East Policy, PolicyWatch no. 1324, January 3, 2008, available at <http://www.washingtoninstitute.org/templateC05.php?CID=2700>.

[28] The U.S. outreach to the international financial community has included meetings with more than 40 banks worldwide. See Robert Kimmitt, "The Role of Finance in Combating National Security Threats," prepared remarks at The Washington Institute for Near East Policy, May 10, 2007, available at <https://www.washingtoninstitute.org/templateC07.php?CID=337>.

[29] "Guidance Regarding the Implementation of Activity-Based Financial Prohibitions of United Nations Security Council Resolution 1737," Financial Action Task Force on Money Laundering, October 12, 2007. See also "Guidance Regarding the Implementation of Financial Provisions of United Nations Security Council Resolutions to Counter the Proliferation of Weapons of Mass Destruction," June 29, 2007.

[30] Statement of G–7 Finance Ministers and Central Bank Governors, Washington, DC, October 19, 2007.

[31] On these points, see Stuart Levey, "Iran's Economic Suicide," *The Wall Street Journal*, October 2, 2007; Steven Mufson and Robin Wright, "Iran Adapts to Economic Pressure," *The Washington Post*, October 29, 2007, A1; and John Irish and Mohammed Abbas, "Gulf Bowing to U.S. Pressure Over Iran Bank Links," Reuters, January 14, 2008.

[32] National Intelligence Council, "Iran: Nuclear Intentions and Capabilities," November 2007, key judgments available at <http://www.dni.gov/press_releases/20071203_release.pdf>.

[33] Measuring the impact of sanctions, including financial sanctions, is recognized as a difficult task. The December 2007 report by the U.S. Government Accountability Office (GAO) questioned the impact of financial measures directed at Iran, and argued for a more systematic effort to evaluate their effectiveness. See "Iran Sanctions: Impact in Furthering U.S. Objectives Is Unclear and Should Be Reviewed," GAO-08-58, December 2007, available at <http://www.gao.gov/new.items/d0858.pdf>. Some commentators challenged the GAO's methodology and findings. See, for instance, Matthew Levitt, "GAO Misleads on Iran Sanctions," The Washington Institute for Near East Policy, January 17, 2008, available at <http://www.washingtoninstitute.org/templateC06.php?CID=1122>.

[34] Report of the Committee established pursuant to Resolution 1540 (2004), S/2006/257, United Nations.

[35] United Nations Security Council, 5806th meeting, December 17, 2007, briefings by Chairmen of subsidiary bodies of the Security Council, 5–7 (S/PV.5806).

[36] The White House, "Joint Statement by U.S. President George Bush and Russian Federation President V.V. Putin," July 15, 2006.

[37] See U.S. Department of State, "Statement of Principles for the Global Initiative to Combat Nuclear Terrorism," November 20, 2006, available at <http://www.state.gov/t/isn/rls/other/76358.htm>, and "U.S.-Russia Joint Fact Sheet on the Global Initiative to Combat Nuclear Terrorism," July 15, 2006, available at <http://www.state.gov/t/isn/rls/fs/69062.htm>.

[38] U.S. Department of State, "Current Partner Nations to the Global Initiative to Combat Nuclear Terrorism," February 14, 2008, available at <http://www.state.gov/t/isn/82787.htm>. The European Union and International Atomic Energy Agency enjoy observer status.

[39] According to the U.S. Department of Energy, since its inception in 2004 through the end of 2007, GTRI has removed approximately 39 nuclear bombs' worth of HEU and secured more than 565 radiological sites around the world containing enough material for approximately 8,500 dirty bombs. See National Nuclear Security Administration Fact Sheet, "GTRI: More Than Three Years of Reducing Nuclear Threats," December 2007, available at <http://www.nnsa.doe.gov/docs/factsheets/2007/NA-07-FS-03.pdf>.

[40] On the technical issues, see *Review of DOE's Nuclear Energy Research and Development Program*, National Research Council of the National Academy of Science, October 2007, chapter 4; Matthew Bunn, "Assessing the Benefits, Costs, and Risks of Near-Term Reprocessing and Alternatives," statement before the Committee on Senate Appropriations Subcommittee on Energy and Water Development, September 14, 2006; Richard K. Lester, "New Nukes," *Issues in Science and Technology* (Summer 2006), 39–46; Edwin S. Lyman, "The Global Nuclear Energy Partnership: Will It Advance Nonproliferation or Undermine It?" Union of Concerned Scientists, June 19, 2006; and Union of Concerned Scientists, "U.S. Nuclear Fuel Reprocessing Initiative," April 10, 2006.

[41] See "Falling Behind: International Scrutiny of the Peaceful Atom," Report of the Nonproliferation Policy Education Center on the International Atomic Energy Agency's Nuclear Safeguards System, September 2007, 8.

[42] Global Nuclear Energy Partnership Strategic Plan (GNEP-167312, Rev. 0), Department of Energy, January 2007, 3–10. Emphasis in original.

[43] Legislation under consideration in the U.S. Senate, "Nuclear Safeguards and Supply Act of 2007" (S 1138), includes the following "Declaration of New Policy":

> It shall be the policy of the United States to discourage the development of enrichment and reprocessing capabilities in additional countries, encourage the creation of bilateral and multilateral assurances of nuclear fuel supply, and ensure that all supply mechanisms operate in strict accordance with the IAEA safeguards system and do not result in any additional unmet verification burdens for the system.

[44] See Christopher A. Ford, "The Promise and Responsibilities of Peaceful Uses of Nuclear Energy," remarks to the 19th Annual United Nations Conference on Disarmament Issues, U.S. Department of State, August 27, 2007.

[45] President George W. Bush, remarks on Weapons of Mass Destruction Proliferation, February 11, 2004, The White House.

[46] "A New Framework for the Nuclear Fuel Cycle," Statement at the Special Event on the Nuclear Fuel Cycle by International Atomic Energy Agency (IAEA) Director General Dr. Mohamed ElBaradei, September 19, 2006. In December 2007, Congress authorized and appropriated $50 million toward the establishment of an international fuel bank to be managed by the IAEA.

[47] The 21 GNEP partners are Australia, Bulgaria, Canada, China, France, Ghana, Hungary, Italy, Japan, Jordan, Kazakhstan, Lithuania, Poland, Romania, Russia, Senegal, Slovenia, South Korea, Ukraine, United Kingdom, and the United States. Additionally, GNEP observers are the IAEA, Euratom, and the Generation IV International Forum.

[48] U.S. Department of Energy, "Global Nuclear Energy Partnership Inaugural Steering Group Meeting Makes Marked Progress," December 19, 2007.

[49] National Nuclear Security Administration Fact Sheet, "NNSA's Second Line of Defense Program," January 2008, available at <http://www.nnsa.doe.gov/docs/factsheets/2007/NA-07-FS-05.pdf>. See also Micah Zenko and Matthew Bunn, "Second Line of Defense Program," Nuclear Threat Initiative, November 20, 2007.

[50] "NNSA's Second Line of Defense Program." See also U.S. Customs and Border Protection, "CSI in Brief," October 3, 2007, and "Ports in CSI," December 28, 2007. Some observers question the wisdom of requiring 100 percent scanning, believing it will divert resources from containers considered to pose a high risk. Senator Susan Collins (R–ME), a co-author of the Security and Accountability for Every Port Act, recently stated at a hearing on the Secure Freight Initiative, "I continue to believe that requiring the scanning of all cargo bound for the U.S. at every foreign port is misguided. It is contrary to the risk-based, layered system of security established by the SAFE Port Act." See Jon Fox, "Scanning of Containers Abroad Daunting, U.S. Says," *Global Security Newswire*, October 17, 2007.

[51] Zenko and Bunn.

[52] Fox.

[53] *Nuclear Forensics: Role, State of the Art, Program Needs*, Joint Working Group of the American Physical Society and the Association for the Advancement of Science, February 2008, 28.

[54] Michael J. Kristo, "U.S. and Russian Collaboration in the Area of Nuclear Forensics," paper prepared for "The Future of the Nuclear Security Environment in 2015," international workshop sponsored by the U.S. National Academies and the Russian Academy of Sciences, November 12–13, 2007.

[55] *Nuclear Forensics*; and Kristo.

[56] See results of the Atlantic Storm tabletop conducted in 2005, available at <www.atlanticstorm.org>.

[57] U.S. Department of State, "Black ICE Bioterrorism International Coordination Exercise After Action Report," 2007, 12, available at <http://www.state.gov/documents/organization/79521.pdf>.

[58] Ibid. Some of the points that follow reflect the key themes and recommendations that emerged from the Black ICE exercise.

[59] Prominent among these experts is Barry Kellman of DePaul University. See his book *Bioviolence: Preventing Biological Terror and Crime* (New York: Cambridge University Press, 2007).

[60] A/RES/60/288, Resolution Adopted by the General Assembly, "The United Nations Global Counter-Terrorism Strategy," September 8, 2006. On the Biotechnology Initiative, see "Secretary-General, Receiving Schmidheiny Freedom Prize, Proposes Initiative to Expand Benefits of Biotechnology, Mitigate Risks," SG/SM/10747, November 20, 2006.

[61] In 2007, the United States initiated an International Roundtable under the auspices of the National Science Advisory Board for Biosecurity to foster dialogue among scientists, policymakers, and other experts on the security implications of dual-use research in the life sciences.

[62] National Research Council of the National Academy of Sciences, *The Biological Threat Reduction Program of the Department of Defense—From Foreign Assistance to Sustainable Partnerships* (Washington, DC: The National Academy Press, 2007), 2, 27–42.

[63] Ibid., 4–7, 21, 67–83.

[64] Chairman of the Joint Chiefs of Staff, *The National Military Strategy to Combat Weapons of Mass Destruction* (Washington, DC: The Joint Chiefs of Staff, February 13, 2006), 26–27.

[65] See "Defense Threat Reduction Agency [DTRA] Sponsors Black Sea Regional WMD Exercise," DTRA News Release, September 28, 2007.

[66] Presumably the Africa clearinghouse will transition to the recently established U.S. Africa Command.

[67] Initiatives identified for the 2002 Prague Summit were Deployable Analytical Laboratory, NBC Event Response Team, Virtual Centre of Excellence for NBC Defence, Biological and Chemical Defence Stockpile, and Disease Surveillance System.

[68] *WMD elimination* refers to activities to systematically locate, characterize, secure, disable, and/or destroy a state or nonstate actor's WMD programs and related capabilities.

[69] The MPAT Web site can be accessed at <http://www1.apan-info.net/Default.aspx?alias+www1.apan-info.net/mpat>.

[70] Department of State International Security Advisory Board, "Report on Building International Coalitions to Combat Weapons of Mass Destruction," February 5, 2007, 10, available at <http://www.state.gov/documents/organization/66363.pdf>.

[71] The American Chemistry Council and the Synthetic Organic Chemical Manufacturers Association have developed codes of conduct to guide the behavior of their members with respect to security management. See Thomas Lehrman, "Building Transformational Partnerships to Combat WMD Terrorism," remarks at the U.S. Military Academy, November 7, 2006, available at <http://www.state.gov/t/isn/rls/rm/77155.htm>.

[72] Ibid. See also International Security Advisory Board, 15–16.

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