

# Promoting Greater Transparency for Effective Nuclear Security

## Summary Report & Initial Policy Recommendations

February 2013

NSGEG 

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The security of nuclear material is considered to be a national responsibility and nations generally limit information regarding their security practices and capabilities. However, this focus on strictly sovereign responsibility increasingly conflicts with the international responsibility to protect the global community from the unauthorized release of radiation and its consequences. The current nuclear security regime does not adequately account for the cross-border implications of nuclear material theft or use of a radiological dispersion device or improvised nuclear device.

Under the current system, nuclear security is not globally uniform. There is no specific obligation to implement any recommended international standards, and there is no requirement to share information with other nations though several international agreements encourage these actions. This creates significant challenges in assessing the adequacy of global nuclear security and complicates efforts to minimize potential vulnerabilities. The lack of transparency, in particular, allows weak links in the international nuclear security system to remain potential targets for exploitation by terrorists or other actors.

There needs to be a better balance between national sovereignty and global responsibility in the nuclear security area, and it needs to be paired with an effective international information sharing system. These are necessary for improving global protections against potential nuclear terrorism. States have ceded some sovereignty in other areas where actions on its territory could harm other states. At present, the nuclear security system operates on a need to know basis, but it is unclear if all relevant information is secret or should be. There needs to be a better equilibrium between confidentiality and knowledge for the purpose of improving international confidence in a nation's nuclear security. The detailed physical protection design, response force capability, specific location of materials, and threat intelligence are clearly sensitive issues. But, whether a nation has a design basis threat, is implementing the security recommendations of the International Atomic Energy Agency (IAEA), has a program for human resource development that makes use of IAEA training, invites peer review assessments, and includes nuclear material accounting and control requirements in its national regulatory system should not be sensitive elements in summaries of national nuclear security efforts.

The development of information sharing mechanisms will need to be done carefully and identify what information to be shared is most useful, who the recipients should be, what the information will be used for, and how sensitive information will be protected. There are a number of examples where sensitive national security information is exchanged among countries, including under the U.S.-Russia Cooperative Threat Reduction (CTR) program, the Open Skies treaty, the agreement on Conventional Forces in Europe, and within the Nuclear Suppliers Group (NSG) and Wassenaar Arrangement. The goal of greater transparency is to improve the global nuclear governance system and build public confidence by demonstrating international accountability.

Policymakers, industry leaders, and nuclear experts need to communicate to the public the steps being taken to enhance global nuclear security and its governance structures. Ensuring a safe and secure nuclear future will require bringing greater accountability to the international system and better aligning nuclear security with the requirements of other key nuclear disciplines including elements of safety and safeguards. The information sharing mechanisms in these other parts of the nuclear system offer examples of how regularized reporting, best practice exchanges, peer reviews, and other mechanisms have worked successfully and navigated the issue of protecting sensitive information.

An effective 21<sup>st</sup> century nuclear enterprise must demonstrate adeptness at operating in a diversified and constantly evolving threat environment. This will require taking actions beyond existing regulations and international agreements, not because there is a legal mandate to do so, but because leaders recognize that it is necessary, more effective, and cost-efficient over the long-term.

The Nuclear Security Summit (NSS) is a unique forum where transparency and other nuclear governance issues can be considered by the leaders of nearly 60 countries and international organizations. As preparation begins for the 2014 NSS in the Netherlands, governments, industry, and experts should consider how this event, and its parallel industry and experts' summits, can increase information sharing and transparency in the nuclear security regime to strengthen and improve it in the future.

## **Improving Information Sharing in the Current Regime**

The array of formal and informal initiatives that form today's nuclear material security regime were designed with limited information sharing mechanisms. The international treaties—the Convention on the Physical Protection of Nuclear Material and its amendment and the International Convention for the Suppression of Acts of Nuclear

Terrorism—have provisions for the development of guidance and for exchanging information on legal instruments and incidents that have already taken place. But the incentives and mandates for the information exchanges are weak.

United Nations Security Council Resolution (UNSCR) 1540 requires regular reporting from countries on how they are preventing the spread of weapons and materials of mass destruction and their delivery systems, but compliance with this mandatory reporting mechanism is uneven and submission quality varies, with some states being more forthcoming than others. Overall, the reporting on nuclear security is lacking, and a common tendency is to keep weaknesses secret while advertising strengths. However, some states are recognizing that their reporting can lead to new forms of cooperation and assistance—rather than sanctions and penalties. This is an important change in thinking—that information sharing can lead to international cooperation rather than criticism.

The IAEA is the principle organization with which countries share information about their nuclear security systems. But, nuclear security engagement with the IAEA is initiated by its member states. The Agency has no independent authority to ask for nuclear security information or evaluate it without the request of the host nation.

States may invite the IAEA to conduct an International Physical Protection Advisory Service (IPPAS) mission. This primarily assesses their nuclear security legislation and regulatory structures and provides recommendations for strengthening them. There is no requirement that a host nation allows the IAEA to review the security in place at its nuclear facilities, and the members of the IPPAS missions do not have security clearances. Results of the reviews are kept in strict confidence between the IAEA and the host country. Other IAEA member states are not privy to even the generic principles and lessons learned from other IPPAS missions that could benefit their own national security systems. However, the IPPAS system could be revised to make it a more effective and widely utilized tool, for example, by introducing a blind peer review of mission results. Additionally, the IAEA could offer to conduct IPPAS missions in a number of states each year, and these states could then accept or decline the offer.

Another approach is to appeal to the nuclear industry to help improve information sharing. In some countries nuclear facility operators share security information among themselves, but are wary of sharing it with facilities outside their borders. They are also reluctant to share it with their governments as doing so could lead to new regulations. Multinational nuclear corporations have security mechanisms that are utilized across national boundaries, but only within their corporate structure. This is an area where industry could incorporate some greater transparency in its reporting.

The NSG is another element of the current regime that could potentially play a role in increasing international nuclear security transparency and confidence. The NSG's guidelines require states to implement the IAEA's physical protection recommendations—Information Circular 225 Revision 5 on the Physical Protection of Nuclear Materials and Nuclear Facilities—and they require countries to have sufficient security measures in place before sensitive items are exported there. Exporting nations like the United States do perform inspections of facilities where its nuclear materials and components have been sent. But not all exporters do this regularly, and the inspection process is often limited.

Several of the world's leading nuclear power plant exporters have signed on to a "Principles of Conduct" that includes physical security checks that the exporter will investigate prior to supplying a nuclear power plant. A next step in this accountability process could be establishing an NSG mechanism to allow for the exchange of ideas and judgments on where it is safe to export. Countries would retain the right to make the final decision on exports, but if a denial took place, the exporter would have a forum to discuss its reasoning on the decision with the full NSG so that the entire membership could be better informed about risk.

Stronger transparency measures are already active in the nuclear safety and safeguards realms, but are resisted for nuclear security primarily because of secrecy issues and protective bureaucracies. Rather than simply assuming that "security is different" and transparency measures are non-starters, policymakers and nuclear operators should recognize the legitimate need of the general public to be informed about nuclear security requirements and achievements. Trusted networks for nuclear safety and safeguards may provide examples of information that could be shared to benefit the security regime.

The nuclear safety regime requires that nations report to the IAEA on their safety activities and this is supplemented with other voluntary reporting networks. Safe nuclear reactor and other facility operations are essential for public confidence and the corporate bottom line. While the safety regime is not perfect, it has responded to its insufficiencies when they are exposed. Nuclear safeguards information is generally sensitive, but the inspection process is intrusive and significant information is allowed to be shared between the IAEA and the host country under the safeguards agreement. In particular, safeguards are focused on nuclear material accountancy, and this is also an important issue for nuclear security.

Cross-functional exchanges between safety, safeguards, and security and better utilization of the information that is already being shared should be initial steps toward greater transparency and integration of the three nuclear regimes. There is a need to precisely

assess the obstacles that have been built into the current system and the rationales that are dictating what can and cannot be done. There is space for additional, productive information sharing, but political will is needed to unlock it.

The NSS process has been an important force in focusing high-level attention on the status and future of the global nuclear security regime. At the 2012 NSS, participants publicly issued nuclear security progress reports for the first time, and this was an important step forward. But each nation decided what it would report. Introducing a common structure for these reports could enhance their effectiveness.

The NSS also has been a catalyst for the creation of nuclear security centers of excellence around the globe. The premise of some centers is to improve nuclear security in the country that supports them. Others can and should be more than just nationally-focused and also play a role in supporting nuclear security information sharing. For example, one or more of the centers could create a model facility or simulation that could be used for evaluating nuclear security and transparency concepts on a national, regional, or international basis. These centers also could assemble nuclear security practitioners or a secretariat of experts to provide peer review of security approaches that are submitted for assessment. Related, the centers could be used to accredit the experts that will perform the assessments on IAEA IPPAS missions in order build expertise and allow for more assessments to be performed per year.

Informal information exchanges have proven valuable in other ad hoc initiatives, such as the Global Initiative to Combat Nuclear Terrorism (GICNT) and the G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (Global Partnership). The NSS, GINCT, and Global Partnership share the common attributes of limited membership, voluntary reporting, and lack of a formal institutional grounding. In addition, there are regional nuclear organizations, including in South America and Europe, that exchange information across borders that could be used as models for regional information sharing.

Despite information sharing shortcomings in the current regime, there are ways the existing structures can be used to make the system more effective and transparent.

*Recommendation 1: Bring nuclear safety, security, and safeguards experts together to identify what information is shared by operators, regulators, and states in each of these disciplines. Have them assess the benefits of the information sharing and peer reviews of it. Then, identify what nuclear security-related information can and should be shared more broadly (specifying with whom and for what purpose) and what barriers hinder these exchanges.*

*Recommendation 2: Assess the role that the nuclear industry can play in sharing experiences and best practices across borders on nuclear security, without compromising commercial or classified information. Evaluate the potential for, and procedure by which, operators could request an IPPAS assessment of their facility. Assess the value of creating a forum where nuclear exporters can discuss their reasoning for supplying or denying nuclear exports to particular clients based on security concerns so that all exporters are informed of any security-related risks or assurances that individual exporters discover.*

*Recommendation 3: Utilize the nuclear security centers of excellence to support information sharing to assist global nuclear security improvement. This can include the development of model or simulated facilities for the testing of transparency and security concepts and the creation of a cadre of peer reviewers of security practices, including training for IPPAS missions to countries and facilities.*

*Recommendation 4: Review regional organizations that exchange nuclear information, like European Nuclear Security Regulators Association, Euratom, and Argentine-Brazilian Agency for Accounting and Control, and determine how their procedures could be adapted to nuclear security information sharing on a regional basis.*

## **Incentivizing Transparency in the Nuclear Industry**

Incentive regimes are used in many industrial sectors to raise performance expectations, reward excellence, and facilitate peer learning. Voluntary incentives regimes provide a pathway to developing new norms and encourage transparency and standardization without coercion. Financial rewards, reputational benefits, and accreditation are among the most common motivators employed by fields that have utilized this approach. Compliance committees are sometimes convened to help participants streamline existing financial resources and activities to better implement goals. They may issue certifications of best practices, recommend training programs, and assist participants in meeting performance expectations through a variety of strategies and tactics. Some approaches target individuals while others focus on organizations or entire industrial sectors.

The efficiency and effectiveness of the nuclear security regime would benefit from the creation of an incentive system. Developing nuclear security accreditations for nuclear facilities and professionals using a voluntary incentives approach could create the conditions for improved quality and streamlined procedures within the current system. Accreditations could create multiple levels of improvement in the system. At the facility level, accreditations could help companies run their nuclear security programs more ef-

ficiently and open up new opportunities for financial benefit, for example insurance premium discounts. At the individual level, accreditations that are accepted across borders would facilitate the mobility of human resources, expand career opportunities, and create an international corps of knowledge and trained nuclear security professionals.

Accreditations for nuclear security professionals could be informed by IAEA guidance and offered by certified organizations. A single, global accreditation system run the by IAEA would be difficult to fund and organize, but a decentralized system with several authorized educators would be better suited for today's diversified global environment. The World Institute for Nuclear Security (WINS), the emerging network of nuclear security centers of excellence, and professional and academic institutions currently working with the IAEA could administer accreditation curriculums and certifications. A shorter term accreditation program made available to current nuclear security professionals with active careers could supplement newly-introduced master's programs in nuclear security. Ultimately, degree programs or a complete set of nuclear security accreditations could become qualifications required by employers. But in the near-term, a more limited voluntary accreditation system could more quickly introduce performance standards and recognize professional achievement.

The nuclear industry already recognizes the need to regularly certify many elements of their facilities, such as quality reviews of welds and steel. Facility-level nuclear security accreditations would extend these safety norms to security. They have the potential to yield financial benefits through negotiated insurance and tax breaks, higher stock prices from investor confidence, and efficiency gains. Peer developed accreditation systems (nationally, regionally, or through other groupings) would introduce greater transparency into the system and facilitate best practice implementation. It could take several years to develop and implement this accreditation system, but if it were mandated by national regulators, it could be instituted more quickly.

Many security improvements require upfront investments but provide long-term savings through reduced maintenance costs and false alarms. Ultimately, it will always be more cost-effective to fund a good security system rather than a poor one which may only delay the higher costs of a breach that results in a nuclear accident or act of terrorism. All nuclear facilities have a stake in avoiding both nuclear safety and security incidents that could undermine public, government, and investor confidence in the industry overall. This is a recognized principle in nuclear safety that should also apply to nuclear security.

*Recommendation 5: Survey existing incentives regimes used in other industrial fields and professional sectors to determine what elements and approaches may be successfully adapted to a voluntary incentives regime for improving nuclear security performance.*



*Recommendation 6: Explore creating qualification and accreditation programs for nuclear security professionals and facilities that are based on IAEA recommendations and administered by authorized educators to introduce stronger performance standards and recognize professional achievement.*

*Recommendation 7: Evaluate the benefits of including nuclear security certifications as part of national nuclear security regulations.*

## **Protecting Information in a More Transparent Environment**

In an environment where additional nuclear security information may be shared to improve the global system, appropriate methods for protecting the confidentiality of sensitive information will need to be developed and implemented. These methods could be tailored to facilitate information transfer within a trusted network of nations or for broader dissemination among a number of countries.

It is clearly easier to organize confidentiality systems along national lines than internationally because the legal basis for classification of information resides in national law. However, multilateral organizations, such as the North Atlantic Treaty Organization (NATO) and the IAEA, as well as the United States and Russia under the CTR program and intelligence activities, have demonstrated that sharing sensitive nuclear information across national boundaries is manageable, if proper precautions are taken. These examples could be studied as models for how sensitive information can be shared but protected regarding systemic vulnerabilities, incidents, and mitigation measures.

National laws and regulations limit the amount and type of information that nuclear operators may divulge and companies have been reluctant to move beyond these requirements for fear that additional disclosures could lead to increased scrutiny, new regulations, or jeopardize their ability to operate in a host country.

Operators and regulators share the concern that disclosed security information may not be adequately protected and result in a commercial setback or national security breach. While companies may recognize a value in sharing security experiences among their national networks or supply chains, no meaningful exchanges with foreign counterparts are occurring. This was also largely true for nuclear regulators, who had limited interactions internationally. However, in December 2012 a first of its kind international regulators conference was held in the United States. This provided an opportunity to discuss regulatory approaches, actions, and information sharing across borders.

Nuclear operators, however, have not advanced the discussion this far. The ability to share across borders operational experiences in nuclear security has not been explored in any detail, but it should be examined further along with the creation of systems that would allow the information to be controlled.

*Recommendation 8: Study existing methods for the protection of confidential and sensitive information such as those that exist in NATO, the IAEA, CTR, and intelligence sharing.*

*Recommendation 9: Convene national regulators annually to allow for interaction and best practice exchange to improve the performance of their national regulatory systems and to assess methods by which regulatory information exchanges can be instituted across borders.*

*Recommendation 10: Encourage nuclear operators to assess the value and modalities by which they could begin to share information on nuclear security while allowing for the protection of sensitive information.*

## **Closing the Communication Gap: Experts, Industry, and Government**

Effectively communicating on nuclear issues has been an enduring challenge. The public needs to be assured that nuclear power plants and other facilities are operated safely and securely. But, the operation of these plants is highly technical and the language used is filled with jargon and acronyms. Safety and security issues do arise at operating facilities and need to be addressed. Facility operators and their personnel cannot be so afraid of adverse publicity that they do not address a problem. This fear is one of the reasons that the operator of the Fukushima nuclear power plant did not undertake additional nuclear safety improvements. Their concern was that anti-nuclear groups would seize on perceived shortcomings and promote that as a reason for eliminating the reactors.

Governments need to be assured that nuclear security information they share will not be used against them, either to deny them technology or as a blow to their national reputation.

Operators need to be assured that they will not be penalized for admitting weaknesses or discussing past errors. Companies need to be assured that shared information will not lead to undue regulatory burdens or disadvantage them against competitors. Among reactor operators, security activities are already being undertaken that would increase the public's confidence if they were better understood. However, they are not communicated well and that is a significant problem.

A major challenge is using language to explain nuclear issues that a general audience can understand. The public and policymakers cannot simply be told that a facility is protected in accordance with a design basis threat. This term is too esoteric for non-experts. Different approaches are needed to convey information to citizens and policymakers at the local, state, and national levels that account for their different levels of knowledge and concern and differing roles and responsibilities.

Another significant problem is the real and perceived divisions that exist between experts, nuclear energy companies, and governments. The public is more likely to view actions taken by companies to improve nuclear safety and security as legitimate if governments accept companies' assurances and outside experts publicly agree with the companies' course of action. This type of agreement among all the major stakeholders can build confidence and provide assurances to the public and policymakers.

Assisting and educating the media in covering nuclear security issues is an important key to building confidence among these constituencies. The media is the main conduit of information for the public on these issues, but limited governmental communication, conflicting expert views, and the search for sensationalism can often influence reporting.

Organizers of the 2014 NSS need to engage with journalists on the objectives of the summit and the importance of the nuclear security issue as early as possible. A year out from the summit, they should consider holding an interdisciplinary meeting (government, industry, experts, international governmental organizations, and regulators) to talk about the key issues. These discussions should not be overly focused on technical information. Information should be provided in plain language to convey the importance of the issues and to place them in a public and policy context.

NSS nations and operators also can utilize emergency response exercises that regularly occur at nuclear facilities as ready-made venues for showing journalists what actions are being taken to ensure the safety and security of nuclear power plants and materials. The goal should be to show that cooperation among key parties is taking place, people are doing their jobs, and the issue is not static.

Waiting until the summit arrives and forcing journalists to respond, without advance preparation, to a two-day, high profile, technical event makes it difficult to effectively communicate the importance of key issues.

*Recommendation 11: Convene regular interdisciplinary meetings of government officials, industry representatives, nuclear regulators, and nuclear security experts to foster*

*stronger cooperation among responsible actors and promote better communication among them. The first should be held six months to a year before the 2014 NSS.*

*Recommendation 12: Improve media understanding of nuclear security issues through frequent engagement, non-technical briefing materials, and their inclusion in nuclear security exercises that demonstrate concepts and principles in action.*

*Recommendation 13: Encourage the key stakeholders - nuclear industry, nongovernmental experts, and governments - to issue a joint statement in support of key steps to improve global nuclear security.*

**Nuclear Security Governance Experts Group  
Workshop on Building Transparency in Nuclear Security**

September 12, 2012

*Agenda*

Day 1

|                      |   |   |
|----------------------|---|---|
| <b>9:00 ~ 9:15</b>   | <b>Opening Remarks</b>  |   |
|                      | <b>Kenneth Luongo</b> , The Partnership for Global Security   |   |
|                      | <b>Shin Chang-Hoon</b> , The Asan Institute for Policy Studies  |   |
|                      | <b>Jennifer Smyser</b> , The Stanley Foundation   |   |
| <b>9:15 ~ 10:45</b>  | <b>Session I</b>  | <b>Improving Information Sharing in the Current Regime</b>            |
|                      | <b>Discussion Leader</b>  | <b>John Bernhard</b> , Former Danish Ambassador to the IAEA           |
|                      | How can the existing elements of the nuclear security regime - CPPNM, ISCANT, GICNT, IAEA, UNSCRs, and the G-8 GP - be better utilized or potentially modified to ensure a better flow of information to enhance global confidence in nuclear security?   |   |
| <b>10:45 ~ 11:00</b> | <b>Coffee Break</b>   |   |
| <b>11:15 ~ 12:45</b> | <b>Session II</b>   | <b>Migrating Safety and Safeguards Mechanisms to Nuclear Security</b> |
|                      | <b>Discussion Leader</b>  | <b>Anita Nilsson</b><br>AN & Associates, LLC                          |
|                      | <p>The nuclear safety regime has several valuable elements, including regular domestic reviews, reporting and information sharing, and peer reviews that, if applied in the nuclear security regime, could improve transparency. What strategies can be employed to apply these concepts in the nuclear security area?</p> <p>International safeguards are required for non-nuclear weapon state NPT nations and the information collection process from decades of safeguards inspections could hold some lessons learned that could be applied in nuclear security.</p> |   |

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|----------------------|---|---|
| <b>12:30 ~ 14:00</b> | <b>Lunch</b>  |   |
| <b>14:00 ~ 15:15</b> | <b>Session III</b>  | <b>Incentives for Transparency</b>                              |
|                      | <b>Discussion Leader</b>  | <b>Irma Arguello, NPSGlobal Foundation</b>                      |
|                      | <p>Incentivizing participation in a nuclear security system that is more transparent could avoid some of the challenges posed by mandatory reporting and information sharing requirements and it could reward nations that voluntarily participate. Ideas for discussion include rewarding nations and regions that improve domestic protection politically and financially, providing certifications and awards for the implementation of best practices (as exist in other industries), and developing bilateral and multilateral confidentiality agreements to protect information sharing.</p>  |   |
| <b>15:15 ~ 15:30</b> | <b>Coffee Break</b>   |   |
| <b>15:30 ~ 16:45</b> | <b>Session IV</b>   | <b>Protecting Information in a More Transparent Environment</b> |
|                      | <b>Discussion Leader</b>  | <b>Kenji Murakami, Tokyo City University</b>                    |
|                      | <p>The major benefit of expanding transparency in the nuclear security regime is to build international confidence that there are no “weak links” in the global system. But developing this expanded web of transparency will require balancing the well-established principles of sovereignty and confidentiality with the emerging requirement for global responsibility in ensuring high levels of nuclear security.</p> <p>While governments and the nuclear industry traditionally have been the most prominent nuclear security stakeholders, the public and expert community have emerged as important partners on this issue, especially through the NSS process. How to continue to tie together all the major stakeholders in the future is an important issue. Options include regularized broad stakeholder conferences, informal consultations, employment of the new centers of excellence, expanded interactions with industry associations (WANO, WNA, INPO, WINS) and the development of other international mechanisms.</p> |   |
| <b>17:45 ~ 18:00</b> | <b>Closing Remarks</b>  |   |

## Participant List

(in alphabetical order)

1. Rodrigo Álvarez  
Director, Nuclear Nonproliferation, Disarmament and Security Program, Global Consortium on Security Transformation, Chile
2. Irma Arguello  
Founder and Chair, Nonproliferation for Global Security (NPSGlobal) Foundation, Argentina
3. John Bernhard  
Former Ambassador to the IAEA, Denmark
4. Michelle Cann  
Senior Budget and Policy Analyst, Partnership for Global Security, United States
5. Deepti Choubey  
Senior Director, Nuclear and Biosecurity Programs, Nuclear Threat Initiative, United States
6. Choi Yunhwa  
Program Officer, Nuclear Policy and Technology Center, The Asan Institute for Policy Studies, South Korea
7. Han Yong-Sup  
Vice President and Professor, Korea National Defense University, Republic of Korea
8. Roger Howsley  
Executive Director, World Institute for Nuclear Security, Austria
9. Caroline Jorant  
President, SDRI Consulting, France
10. Jun Bong-Geun  
Professor, Korea National Diplomatic Academy, Institute of Foreign Affairs and National Security, South Korea
11. Anno Keizer  
Manager, Security, URENCO, Netherlands
12. Kenneth Luongo  
President, Partnership for Global Security, United States
13. Kenji Murakami  
Visiting Professor of Nuclear Safety Engineering, Tokyo City University, Japan

14. Anita Nilsson  
AN & Associates, LLC, Sweden
15. Everett Redmond  
Senior Director, Nonproliferation and Fuel Cycle Policy, Nuclear Energy Institute,  
United States
16. Shin Chang-Hoon  
Director, Nuclear Policy and Technology Center and International Law and Conflict  
Resolution Program, The Asan Institute for Policy Studies, South Korea
17. Jennifer Smyser  
Program Officer, The Stanley Foundation, United States

### **Workshop Papers and Authors**

- Regional Approaches to Nuclear Security and Transparency:  
The Example of Argentina and Brazil
  - Author – Rodrigo Alvarez
- Incentives in the New Global Order for Nuclear Security
  - Author – Irma Arguello
- Strengthening the Global Nuclear Security System and  
the Role of International Assurances
  - Author – Deepti Choubey
- Value and Challenges of Regularized Consultations and  
Information Sharing Between Facility Security Managers
  - Author – Roger Howsley
- New Opportunities for Nuclear Security Best Practice Sharing:  
The Role of the Centers of Excellence
  - Author – Yoo Ho-sik
- Migrating Nuclear Safety Information Sharing and  
Review Mechanisms into the Security Regime
  - Author – Anita Nilsson



## Nuclear Security Governance Experts Group (NSGEG) Members

Rodrigo Álvarez - Global Consortium on Security Transformation (Chile)  
Irma Arguello - The NPSGlobal Foundation (Argentina)  
John Bernhard - Former Ambassador to IAEA (Denmark)  
Kenneth Brill - Former Ambassador to IAEA (U.S.)  
Bart Dal - Ministry for Infrastructure and the Environment (Netherlands)  
Trevor Findlay - Canadian Centre for Treaty Compliance, Carleton University (Canada)  
Han Yong-Sup - Korea National Defense University (South Korea)  
Roger Howsley - World Institute for Nuclear Security (Austria)  
Caroline Jorant - SDRI Consulting (France)  
Jun Bong-geun - Korea National Diplomatic Academy (South Korea)  
Togzhan Kassenova - Carnegie Endowment for International Peace (U.S.)  
Lee Dong Hwi - Institute of Foreign Affairs and National Security (South Korea)  
Kenneth Luongo - Partnership for Global Security (U.S.)  
Kenji Murakami - Tokyo City University (Japan)  
Yosuke Naoi - Japanese Atomic Energy Agency, Integrated Support Center (Japan)  
Anita Nilsson - AN & Associates, LLC (Sweden)  
Everett Redmond - Nuclear Energy Institute (U.S.)  
Andrew Semmel - A.K.S. Consulting (U.S.)  
Shin Chang-Hoon - The Asan Institute for Policy Studies (South Korea)  
Jennifer Smyser - The Stanley Foundation (U.S.)  
Sharon Squassoni - Center for Strategic and International Studies (U.S.)  
Page Stoutland - Nuclear Threat Initiative (U.S.)  
Yoo Hosik - Korea Institute of Nuclear Nonproliferation and Control (South Korea)

## **Nuclear Security Governance Experts Group (NSGEG)**

The NSGEG is a globally diverse group of experts assessing the current state of nuclear security governance and developing a realistic and comprehensive set of policy recommendations intended to facilitate the evolution and improvement of the nuclear security regime.

**NSGEG** 

