



SESSION SKETCHES

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THE ASAN INSTITUTE for POLICY STUDIES

Asan Nuclear Forum 2013

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Dealing with a Nuclear North Korea

Session: Plenary Session 1 / Regency Room

Date/Time: February 19, 2013 / 10:15-11:30

Moderator: Hahm Chaibong, The Asan Institute for Policy Studies

Speakers: Choi Kang, Korea National Diplomatic Academy
Endo Tetsuya, Japan Institute of International Affairs
Robert Gallucci, John D. and Catherine T. MacArthur Foundation
Vasily Mikheev, Institute for World Economy and International Relations
Yang Yi, National Defense University

Rapporteurs: David Santoro, Pacific Forum CSIS
Mira Rapp-Hooper, Columbia University

Session Sketch

The first Plenary Session of the Asan Nuclear Forum, titled “Dealing with a Nuclear North Korea,” opened with all panelists agreeing that North Korea’s recent provocative actions, notably its recent rocket and nuclear tests, continue to threaten regional peace and security as well as the viability of the nonproliferation regime. However, there were significant differences among the five speakers from South Korea, Japan, the United States, Russia, and China over what the ultimate goal of North Korea’s nuclear and missile programs might be. In addition, the five powers continue to disagree over how to address the problem. At issue is whether the international community should recognize that North Korea has become a de facto nuclear-armed state, and thus focus on managing the problem, or if it should continue to demand denuclearization.

Choi Kang, director of Policy Planning at the Korea National Diplomatic Academy, Endo Tetsuya, former Ambassador and Senior Adjunct Fellow at the Japan Institute of International Affairs, and Robert Gallucci, president of the John D. and Catherine T. MacArthur Foundation, all agreed that it was important to remain focused on the ultimate goal of denuclearization. Plainly, recognizing North Korea as a nuclear weapons state would be detrimental to regional security and the global nuclear nonproliferation regime. They noted that such a development could not be legitimized. Nonetheless, all three also stressed the need to “deal” with the immediate reality of the problem through a variety of policy tools,

including robust deterrence posture, diplomacy, and systematic activation of the Proliferation Security Initiative.

The speakers also saw the possibility for engagement with Pyongyang, but were not optimistic about the prospects for success. The key question remains whether or not North Korea would be willing to put its nuclear and missile programs on the negotiating table, which at this time appears highly improbable. Without such a prerequisite, however, opening a meaningful dialogue with the North would be impossible.

In contrast, Vasily Mikheev, vice president of the Institute for World Economy and International Relations, argued that the focus should strictly remain on denuclearization. Recognizing that North Korea has made significant headway on its nuclear and missile programs, he stressed that Pyongyang still has a long way to go to be a full-fledged nuclear-armed state. Ultimately, Dr. Mikheev emphasized that the North Korean problem will only be solved with regime change; though it is unclear how regime change can be brought about.

On the other end of the spectrum, Yang Yi, former director of the Institute for Strategic Studies at the National Defense University, contended that the international community should focus on engagement and dialogue with North Korea; he stressed that sanctions are not the answer. While arguing that the Six-Party Talks remain the best forum to do so, he stressed that the United States is the best positioned to influence the North and offer a packaged deal that could address its security concerns. Ambassador Yang also insisted that despite criticisms to the contrary, China has been active (mainly behind the scenes) to prevent North Korea from conducting its recent nuclear test, and it failed. Significantly, he emphasized the need for genuine great power cooperation to solve the North Korean issue.

Wrapping up the discussions, Hahm Chaibong, president of the Asan Institute for Policy Studies, concluded by stressing that it is essential for South Korea, Japan, Russia, the United States, and China to first begin to agree on the history of the North Korean problem or, how we got to where we are today, to be able to produce consistent policies moving forward. Consensus on the past is needed to build a realistic policy approach for the future.

Nuclear Security Summit: Before & After Seoul

Session: Plenary Session 2 / Regency Room

Date/Time: February 16, 2013 / 17:00-18:15

Moderator: John Bernhard, Former Danish Ambassador to the IAEA and CTBTO

Speakers: Piet de Klerk, Ministry of Foreign Affairs, Kingdom of the Netherlands
Kim Bonghyun, Ministry of Foreign Affairs and Trade
Gary Samore, Belfer Center for Science and International Affairs, Harvard University

Rapporteurs: Jenny Town, US-Korea Institute at SAIS
Natalia Sharova, Hudson Institute

Session Sketch

John Bernard, Former Danish Ambassador to the IAEA and CTBTO, commenced a panel of former and current Nuclear Security Summit sherpas to discuss the achievements and shortcoming of the NSS process. He started the discussion by acknowledging the political value of the NSS process in raising the profile of what needs to be done against nuclear terrorism and generating high level impetus for improving nuclear security around the world. The NSS process has brought about tangible and critical changes in national nuclear security infrastructure and practices. He invited the panelists to both reflect on the first two summits and discuss their expectations for the upcoming Hague NSS in 2014.

Gary Samore, Executive Director of the Belfer Center for Science and International Affairs at Harvard University, offered four pieces of advice to the organizers of the Hague summit. First, to “keep it simple.” He recalled how in the Washington Summit, the Sherpas produced a short communiqué of political principles and then a longer work plan. For the Seoul summit, he recalled the difficulty of trying to build consensus on broader principles in a longer communiqué, especially since much of the matter was too technical for the negotiators to fully understand. He suggested aiming for a short, general communiqué for the Hague. Second, to “keep it focused.” Third, to “keep it practical,” pointing to the national commitments harvested at both summits. And finally, to “keep it going,” explaining that the NSS process was never intended to be permanent, but 2014 might not be the right time to end the series. He recommended a fourth summit in 2016.

Kim Bonghyun, Deputy Minister for Multilateral and Global Affairs at the ROK Ministry of Foreign Affairs and Trade and former ROK Sherpa to the Seoul NSS, reflected on the challenges faced in preparation for the Seoul NSS. He explained that for the Seoul summit they chose to focus on the civilian use of nuclear material to better manage expectations. He recalled pressure from NAM states to include nonproliferation on the agenda, and the controversy for declining those pressures. He recalled criticisms from NAM states that the states with the most nuclear material do not contribute proportionately to the nuclear security regime. He suggested that outreach to NAM states should be a high priority for a third summit.

Piet de Klerk, Ambassador of the Kingdom of the Netherlands and Netherlands Sherpa to the Hague NSS, acknowledged the successes that have been achieved through high level political attention on nuclear security since 2010, but also questioned how much more could realistically be achieved at a third summit. He announced that the Hague Summit will be held March 24-25, 2014, and accompanied by both an industry and academic summit on the side. He identified areas in which he felt progress could still be made, including improving laws, addressing standards for military nuclear material, diminishing the use of weapons-usable materials, increasing state-industry cooperation on nuclear security and so forth. He also argued that the Hague NSS should be the last summit, insisting that the process needs to be inclusive and flow into regular multilateral channels, such as the IAEA, where technical expertise exists.

While no consensus was reached among the panelists on whether or not 2014 should be the final summit, they did point to the importance of the IAEA's upcoming July ministerial level conference on nuclear security as a litmus test for political will to improve nuclear security to continue without high level attention. However, De Klerk did insist, that it was important to make a decision soon as this will greatly affect the way the Hague summit is structured.

Energy Security or Nuclear Security

Session: Plenary Session 3 / Regency Room

Date/Time: February 19, 2013 / 10:30-11:45

Moderator: Scott Sagan Stanford University

Speakers: Gareth Evans The Australian National University
Alfredo Labbé Mission of Chile to the UN, Vienna
Park Goon Cherl KEPCO International Nuclear Graduate School

Rapporteur: Duyeon Kim, Center for Arms Control and Non-proliferation
Jenny Town, U.S.-Korea Institute at SAIS

Session Sketch

Park Goon Cherl, president of the KEPCO International Nuclear Graduate School, opened the third plenary session by directly linking energy security to national security against the backdrop of a rapidly changing security environment in the knowledge and information-based society, as well as China's rapid rise and the world's resource diplomacy. Dr. Park contended that the connection between national security and energy security is "the continuation of nuclear power generation and just the matter the nuclear security." He went on to explain Korea's energy situation. In response to a question about the proliferation implications of South Korea's quest for pyroprocessing, Dr. Park stressed, "all Korean activity is under the watch of the US and IAEA, which is why Korea wants to be a leading country in nuclear safety and security. Even if we do pyroprocessing, we don't do it alone, we do it based on the research done with the US."

Gareth Evans, former Australian Foreign Minister and chancellor of the Australian National University, noted that the tension between energy security and national security will remain for a very long time, and that despite the impact of Fukushima, many states will not be confident they will be able to generate enough electricity based on renewable sources. Professor Evans argued that national security problems arise from three risk areas. The first is proliferation with respect to the ability to weaponize with the acquisition of civil nuclear power program. The second is terrorism with risks associated with the theft, trafficking, and smuggling of nuclear materials and sabotage of facilities. The final, Professor Evans explained, is nuclear security with respect to disarmament, positing that some states may be

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reluctant to reach zero in the final stage of disarmament if they find there are enough states with unrestricted rights. While noting that while there is a desirability to address risk factors and areas, Professor Evans argued there is a “huge case for doing more on the regional and global level as well.” He added that Fukushima demonstrated the need for stronger international governance on nuclear safety.

Alfredo Labbé, Chilean Ambassador to the Republic of Austria, began by posing the question “Why energy security or national security? Why the apparent dichotomy of the two types of security at a time of globalization and interdependence that should be compatible and mutually reinforcing?” Ambassador Labbé argued that when it comes to energy security, national policies should be made compatible with global security requirements and international law. In other words, he explained that national energy security within international energy security “is the model to lead this discussion.” If tackled in this way by a law-abiding state willing to cooperate with international rule and norms, Ambassador Labbé explained, “it will not damage national energy security.” He emphasized that Article IV of the NPT recognizes a state’s inalienable right to nuclear energy for peaceful purposes given only to countries in compliance to Article II and III. He went on to argue that “the nuclear option poses nuclear risks that should be dealt in ways that don’t harm legitimacy and political sustainability of the NPT.” Ambassador Labbé also stressed that, “through diplomatic means and multilateral mechanisms, we should tackle this, we shouldn’t create a new layer of discrimination, or we shouldn’t open a new flank for offensive attack against the NPT by creating a new category of have and have nots.”

The audience and panel briefly discussed the possibility of imposing permanent safeguards that should also be complimented by multinational approaches. One expert proposed the IAEA should be obligated to safeguard such facilities. Moderator, Scott Sagan, Caroline S.G. Munro professor of Political Science at Stanford University, responded by noting some in the US would like to see permanent safeguards but he personally did not support mandatory IAEA inspections because of existing resource constraints.

Challenges and Opportunities after the Fukushima Nuclear Disaster

Session: Plenary Session 3 / Regency Room

Date/Time: February 20, 2013 / 17:00-18:15

Moderator: Martin Fackler, The New York Times

Speakers: Chang Soon-heung, Korea Advanced Institute of Science and Technology
Luis Echávarri, OECD Nuclear Energy Agency
Anton Khlopkov, Center for Energy and Security Studies
Suzuki Tatsujiro, Japan Atomic Energy Commission

Rapporteur: Samuel Brinton, Massachusetts Institute of Technology
Seukhoon Paul Choi, Council on Foreign Relations

Session Sketch

Martin Fackler, Tokyo bureau chief for the New York Times, commenced the final plenary session by highlighting that although civilian nuclear programs may seem tamer and safer than nuclear weapons programs, the Fukushima accident demonstrated that this is not the case. He reviewed what had occurred describing how a large earthquake in March 2011 set off a tsunami that hit the Fukushima Daiichi Power Plant and caused its reactors to meltdown. Consequently over 100,000 people were evacuated and until today 90,000 of those dislocated have been unable to return. Mr. Fackler noted that for such an accident to have occurred in a country as technologically and technically outstanding as Japan demonstrates that such an event could happen anywhere, and this reality has focused attention on nuclear safety.

Chang Soon-heung, professor of nuclear and quantum engineering at the Korea Advanced Institute of Science and Technology, discussed lessons learned from the Fukushima accident in regard to how to enhance nuclear safety and public confidence. He argued that nuclear power plants must be prepared for blackouts, and in particular how to remove decay heat in the case of a shut down. In the future, to cope with such incidents, Professor Chang recommended that plants be prepared with functions that use gravity to generate electric power or a power supply system located in bunkers. Furthermore, reactors and plants should be built that emphasize radiation containment to the extent that people living around the

plants will not have to evacuate even in the case of such an accident. This would not only enhance nuclear safety but help garner public confidence. Also, Dr. Chang argued that more information should be given to the public about what level of exposure has significantly negative effects on health and the different energy options that they have.

Luis Echávarri, director-general of the Nuclear Energy Agency in the Organisation for Economic Co-operation and Development, noted that prior to the Fukushima accident there was discussion about a renaissance of nuclear power, however now this is not the case. He argued that nuclear programs must have public support and emphasized the importance of public confidence in system safety. It is important to reinforce independent regulatory authorities and communication with the general public. Mr. Echávarri also noted that the Fukushima accident should not raise questions about nuclear power in general, but about the specific conditions, technologies, and protocols of that site.

Anton Khlopkov, director of the Center for Energy and Security Studies, concentrated his remarks on one of Russia's most important current projects concerning the expansion of nuclear power: countries in the Middle East. With Iran starting its nuclear power plant in 2011, the United Arab Emirates starting construction, and Turkey preparing a licensing application, the region is of significant interest in the nuclear expansion arena. His conclusion was that Fukushima has brought many positive outcomes to the region due to small countries abandoning projects which seemed infeasible, a review and revision of simply theoretical plans, a decision to pursue next generation power plants, and a realization of the dire need for human resources.

As a member of the Japan Atomic Energy Agency, Suzuki Tatsujiro, vice chairman of the Japan Atomic Energy Commission, began his remarks with an apology for the negative impacts which Fukushima has caused on the nuclear industry as a whole and the people of Japan. He reminded the audience that the accident is not concretely over, with many still struggling to finalize the site management, including dealing with the spent fuel and contaminated water. There is also still a large refugee population which is not allowed to return to their homes in the area. Mr. Tatsujiro mentioned that Fukushima has brought about a paradigm shift in nuclear safety and the scale of nuclear power in Japan. An internationalization of nuclear safety policy due is needed, according to Mr. Tatsujiro, since the nuclear regulatory governance in Japan has fallen behind the international standard due to domestic interests taking precedence.

Reassessing North Korea's Nuclear Threat After the 3rd Nuclear Test

Session: Session 1 / Regency Room

Date/Time: February 19, 2013 / 12:30-13:45

Moderator: Joshua Pollack, Science Applications International Corporation

Speakers: Kim Yongho, Yonsei University
Markus Schiller, Schmucker Technologie
Joel Wit, U.S.-Korea Institute at SAIS

Rapporteur: Kristine Bergström, Carnegie Endowment for International Peace

Session Sketch

Kim Yongho, Professor of Political Science and Director of Yonsei Institute for North Korean Studies, Yonsei University, started by declaring that he takes a pessimistic view of the North Korean nuclear issue and that in his opinion North Korea will never abandon its nuclear weapons. Professor Yongho argued that economic sanctions will not work because nothing is more important to the North Korean regime than its political survival, so the only solution is to convince the leadership that they have something to lose. And the way to do this is by sending the message that North Korean leader Kim Jong-un could face the same fate as Al Qaeda leader Osama bin Laden.

Making the point that the latest North Korean rocket launch in December, 2012 was 'not a big deal,' Marcus Schiller, Senior Analyst at Schmucker Technologie, noted that the launch of the Unha-3 long-range rocket does not have to result in an immediate change of the North Korean threat assessment. Dr. Schiller argued that while it is difficult to guess the intentions of the North Korean leadership, it is possible to look at its nuclear capabilities in order to assess the nature of the threat and think of possible responses. Schiller said that the Unha-3 rocket launch was more of a political signal, both foreign and domestic, and that it aimed to show the people of North Korea that their nation is prosperous. Schiller concluded that the rocket launch is a political tool, but not a direct threat at the moment.

Joshua Pollack, Senior Analyst, Science Applications International Corporation, suggested

that North Korea has undertaken what he calls a “stepping-stone approach;” in attempting to achieve technical development, the North Korean regime is not building a bridge, but is trying to skip from one small stone to the next with very few resources. Mr. Pollack noted that North Korea proceeds by building a single prototype of a missile, tests it, then moves on to the next without fixing the bugs of the first one. Pollack pointed out that this way of proceeding is similar to that of the Chinese.

Taking the standpoint of a policymaker, Joel Wit, Senior Research Scholar at the US-Korea Institute, The Johns Hopkins School of Advanced International Studies, said he believes that there is momentum behind the North Korean nuclear weapons program, that North Korea is serious about developing nuclear weapons, and that that is a problem. Mr. Wit added that the launch of the Unha-3 missile is just the tip of the iceberg and that it gives us an idea of North Korea's intentions for the future. Wit concluded that the United States needs to seriously think about its policy toward North Korea and re-examine the current approach that he dubbed “weak sanctions and weak diplomacy.”

Pollack finished by asking how far policymakers should go in making assumptions about potential risks from North Korea based on what has been observed - to which Schiller echoed his previous remarks that while it is important to plan for worst-case scenarios, it is crucial to remain realistic and base policies on reliable data rather than assumptions.

ROK, China and Japan as Responsible Nuclear Suppliers

Session: Session 1 / Grand Ballroom I
Date/Time: February 19, 2013 / 12:30-13:45

Moderator: Hussein Khalil, Argonne National Laboratory

Speakers: Lee Hee-Yong, Korean Electric Power Corporation
Jane Nakano, Center for Strategic and International Studies
Jasper Pandza, King's College London

Rapporteur: Seukhoon Paul Choi, Council on Foreign Relations

Session Sketch

Hussein Khalil, Director of the Nuclear Engineering Division at the Argonne National Laboratory, commenced the panel discussion by describing the nuclear power industry landscape. He highlighted a weakened confidence in regard to safety as a significant challenge, especially in light of the Fukushima accident. Khalil also identified changes in the landscape, including South Korea becoming a major supplier of nuclear power plants, new countries embarking on the use of nuclear technology, and the United States leveling off in its use and number of projects regarding nuclear power.

Lee Hee-Yong, Senior Vice President of the Overseas Nuclear Project Development Department at KEPCO, introduced the operations of the South Korean government owned Korean Electric Power Company (KEPCO). Explaining that KEPCO is responsible for generating, transmitting, and distributing South Korea's electricity, he also highlighted that it is actively pursuing nuclear power projects overseas. He noted that nuclear energy play an important role in Northeast Asia as it provides China, Japan, and South Korea with energy security. In this regard, the three countries share a common interest of advancing the nuclear industry and face a common challenge to it. Lee explained that the Fukushima accident aggravated concerns about the safety of nuclear energy. North Korean nuclear tests are also increasing international anxiety. Collectively, this has had another significant impact on South Korea in that it has unfavorably affected current U.S.-South Korean negotiations regarding their 123 agreement. Lee argued that China, Japan, and South Korea are three of

the world's most active countries in this industry. He stated that only if these three countries exert collective action in reinforcing the safety of nuclear power plants will global anxiety over nuclear power plants be eradicated.

Jane Nakano, a Fellow in the Energy and National Security Program at CSIS, focused her statements on what is happening in Japan, challenges that this country faces following the Fukushima accident, and general thoughts on what it means to be a responsible exporter. Nakano noted that of the three countries, Japan has the most established and longest history as a supplier of nuclear power plants. Furthermore, she noted that Japan is unique in being a non-nuclear weapons state and party of the Non-Proliferation Treaty with major fuel cycle facilities. However, the Fukushima accident dramatically changed the environment in Japan regarding nuclear energy. Currently, only two nuclear power plants are in operation. This is a direct result of public anxiety about government, industry, and regulator ability to manage accidents. Going forward, Nakano argued that the Japanese government faces the challenge of convincing the public that the nuclear regulatory commission functions will be effective. Also, when and to what extent Japan's remaining reactors will be reactivated is unclear. Despite these challenges, Japan continues to demonstrate a strong commitment to operating as a responsible nuclear supplier. It has ratified the Additional Protocol (AP) and has made AP adoption as a condition required for it to supply to other countries.

Jasper Pandza, a Ph.D. Candidate at the King's College London, focused on China's nuclear program. He explained that China desires to introduce fast nuclear reactors. Pandza noted that China's program is ambitious as it currently operates 16 nuclear power reactors and has 26 under construction. China too has been affected by the Fukushima accident as the country's leadership understands that an accident in China would have significant repercussions for its domestic program. It paused construction and decided that moving forward only generation three designs would be approved. Despite China's long term industry goals, it lacks a roadmap. Pandza argued that China faces technical challenges to meet its goals, particularly its objective of introducing fast reactors. He noted that many countries have tried to do this, but with very little success. Pandza explained that this was because fast breeding reactors are unreliable, unsafe, and expensive. Despite the technical challenges that China faces, the country enjoys unique qualities that may enable it overcome them. Whereas high capital costs may deter investors in other countries, the Chinese central government's control over research and investment enables it to support the country's program. Finally, Pandza stated that it is unfortunate that China has in the case of deals with Pakistan prioritized strategic and commercial interests over safety.

Building Public Confidence in Nuclear Safety

Session: Session 1 / Grand Ballroom 1
Date/Time: February 19, 2013 / 12:30-13:45

Moderator: Dae Chung, US Department of Energy

Speakers: Ahn Joonhong, University of California, Berkeley
Kim Myungja, Korea Federation of Women's Science and Technology Association
Lee Un Chul, Seoul National University
Suzuki Tatsujiro, Japan Atomic Energy Commission

Rapporteur: Robert Kim, Center for Strategic and International Studies

Session Sketch

This panel explored the necessary role of public trust in the future of the nuclear industry. Mr. Dae Chung started the panel discussion by emphasizing the role of safety culture in preparing for and precluding accidents that arise from natural events. Ensuring a rigorous safety culture is one of the necessary conditions for securing public confidence. Another condition is clearly communicating in plain language the issues regarding nuclear power and technology to the public. Finally, the realities of social media and new venues for communication must be taken into account. One must also acknowledge that public perceptions of government capabilities do not always match reality.

Dr. Joonhong Ahn continued this discussion by highlighting an emerging framework for safety analysis, called “resilience engineering.” While traditional forms of accident analysis often point to erratic and flawed human behaviors and show humans to be unreliable in times of accident, “resilience engineering” emphasizes that human behavior is not static and can adapt to circumstance. For complex systems such as nuclear power, high resilience is needed. This resilience must be founded in anticipation rather than in hindsight of accidents. Furthermore, it must be based on a broad range of variables, some of which may not be easily modeled. He would later liken this framework to martial arts; one must be prepared, but not be so overly prepared that one is “stiff” and inflexible in times of dynamic instability.

Ms. Myung Ja Kim discussed many of the political and social barriers to effective

communication. A small number of vocal groups tend to dominate the debate, while the majority remains passive. High profile and sensationalized incidents tend to cloud perceptions and make the public ignore evidence that contradict their beliefs. Public communication needs to be free from external bias and occur in a way that the public can understand. She emphasized that there is no alternative to nuclear power in South Korea.

Dr. Un Chul Lee brought up a broad range of questions that need to be considered by the public. Some of these included whether there are alternatives to nuclear power, the implementation of safety measures, and the long-term overall energy mix. One outstanding issue was the topic of spent fuel and the necessity of public involvement in the process of dealing with nuclear waste, especially in siting temporary and permanent disposal sites. He also stated that while the public wants both quick and accurate communication, achieving both at the same time is difficult.

Finally, Dr. Tatsujiro Suzuki recollected on several personal experiences while working at the Japan Atomic Energy Commission. He stressed that transparency is a continual objective at the JAEC, and spoke about closed meetings that later turned out to be scandals because they were not known to the public. He also stated that *how* communication takes place is just as important as whether it takes place. One fruitful avenue is face-to-face governmental interaction with the public. Also, government regulators should not hesitate to become the “audience” and directly hear the concerns of citizens. Finally, public trust should be considered both international and domestic.

A Nuclear North Korea: Nonproliferation Issues and Beyond

Session: Session 2 / Regency Room

Date/Time: February 19, 2013 / 14:00-15:15

Moderator: Lee Jung-Hoon, Yonsei University

Speakers: Bruce Bennett, RAND Corporation
Michishita Narushige, National Graduate Institute for Policy Studies
Alexander Vorontsov, Russia Academy of Sciences

Rapporteur: Duyeon Kim, Center for Arms Control and Non-proliferation

Session Sketch

Panel moderator Lee Jung-hoon, Professor at Yonsei University, set the stage by portraying the failures of the nonproliferation regime manifested through repeated North Korean provocations. Lee argued that “the international community’s inability to contain North Korea has unfortunately compelled South Korea to discuss military options to offset North Korea’s asymmetric capabilities.” The range of such discussion includes nuclear deterrence and the full participation in the US missile defense network. Lee further explained that such discussions are unavoidable for South Korea with its “national survival at stake.”

Bruce Bennett, Senior Defense Analyst at the RAND Corporation, stressed that the nature of the North Korean nuclear threat depends on how the regime uses its weapons. This contradicts the current conventional wisdom that the mere existence and possession of nuclear weapons in it of themselves is a grave threat. Dr. Bennett argues, “in my mind they use them every day, the just didn’t launch them, they use them regularly. We have to understand those uses. North Korea has a rich menu that these weapons help them achieve their objectives.” While noting the absence of a published doctrine, Dr. Bennett identifies seven kinds of possible uses based on official statements coming out of the reclusive country. They are 1) deterring coercion and military action, 2) providing a “nuclear shadow” that reduces escalation risks from provocations, 3) demonstrating the empowerment of a failing regime, 4) affecting regional perceptions of the Korean military balance, 5) stimulating interest in purchase of North Korean nuclear weapon capabilities, 6) “leveling the playing

field” in a conflict, and 7) providing a means for exacting to overcome US/ROK technology advantages. Dr. Bennett also raised the question of whether the US president would use roughly 100 nuclear weapons in response to North Korea’s use and kill roughly 10 million North Korean civilians, thus challenging some expert beliefs that the US would “turn North Korea into a parking lot” should the regime use a nuclear weapon against it. Bennett believes denuclearization will not work, and that “the focus should be on counter-proliferation. He called for political actions that focus on the regime since military force is not an option and the options for economic sanctions have run out.

Michishita Narushige, Associate Professor at the Japanese National Graduate Institute for Policy Studies, said that Japan estimates North Korea possess about 10 nuclear bombs, and 2009 estimates Pyongyang might have succeeded in miniaturizing nuclear devices to mount on missiles, although without absolute certainty. Michishita added that this third nuclear test seems to have been conducted with a miniaturized nuclear device. He explained three scenarios envisioned by Japan in which North Korea might use missiles against Japan: 1) military diplomatic use of missile force should Pyongyang deem Tokyo is uninterested in talks to normalize bilateral relations, 2) another Korean War in which the US would use Japanese bases to fight against North Korea, and 3) a suicide scenario in which the regime is destabilized and Kim Jong-un would feel his days are numbered, which would compel him to leave behind his legacy along with his father’s and grandfather’s legacies.

Michishita concluded by outlining steps Japan has taken in terms of a military and diplomatic response to North Korea. They include ballistic missile defense that was procured in 2003, acquired in 2007, and deployed last year as well as civil defense, or “national protection” in which the parliament enacted the law in 2004 and various municipal governments have been devising action plans. In light of North Korea’s third nuclear test, he posited the question as to whether sanctions would escalate or whether Seoul and Washington would “change minds” and hold talks with North Korea.

Pointing to the failure to prevent North Korea from developing its military nuclear program, Alexander Vorontsov, Head of the Korean and Monogolian Studies Department at the Russian Academy of Sciences, drew several conclusions. He stated that “strong-arm tactics” and sanctions alone have failed to bring positive results, and Washington’s “strategic patience” policy has also failed to reach its goals. Vorontsov further denounced Washington’s firm position of “isolating and weakening North Korea, even at the cost of resolving the nuclear issue” pointing to the “policy of economic blockade.”

On the other hand, referring to the Six-Party Talks, Vorontsov argued that a policy of engagement and strategic compromise “has proven quite successful,” pointing to talks –

described as a mechanism that placed “the parties on an equal footing and taking into account their legitimate mutual concerns – which he claims “have succeeded in delaying or freezing the situation... and in some cases have even resulted in a cessation of nuclear activities. Vorontsov said he met senior North Korean officials who told him days prior to the third nuclear test and asked them the chances of following through with another test, and what would persuade them against it. In response, the North Korean officials told him they will continue to test because “negative US policy toward us won’t change, we have nothing to lose.”

Nuclear Spent Fuel and Waste Management

Session: Session 2 / Grand Ballroom 1

Date/Time: February 19, 2013 / 14:00-15:15

Moderator: Thomas Isaacs, Lawrence Livermore National Laboratory

Speakers: Jacob Dalnoki, Veress James Martin Center for Nonproliferation Studies
Philippe Gillet, AREVA
Song Myung Jae, Korea Radioactive Management Corporation
Jack Spencer, The Heritage Foundation

Rapporteur: Robert Kim, Center for Strategic and International Studies

Session Sketch

This panel explored the issues and hurdles to resolving the spent nuclear fuel problem of the ROK. Tom Isaacs, director for the Office of Planning and Special Studies at Lawrence Livermore National Laboratory, started the discussion by pointing out that the issue of spent fuel needs to be resolved in order to ensure the future of nuclear energy. There is an ethical obligation to storing and providing a permanent solution to the waste problem. While there is a scientific consensus on how to store spent fuel geologically, the challenge lies in gaining acceptance. Pertinent examples and lessons lie in the successes and failures of numerous countries.

Following this, Jacob Dalnoki-Veress, scientist-in-residence at the James Martin Center for Nonproliferation Studies, stated that while South Korea is well positioned as a nuclear exporter, it nonetheless faces the problem of saturation of pool ponds before the end of the decade and no siting of a geological repository. Even with pyroprocessing, the ROK will still need to have a repository. He agreed that it is a social problem, not a technical problem. Community outreach and inclusion of many stakeholders is crucial, and the public should not find itself worse off than before. The deep borehole repository solution is another option to consider, although it has yet to be proven. Ultimately, the entire issue of spent fuel needs to be reframed in order to be resolved.

Philippe Gillet, Asia senior vice president of the Back End Business Group-AREVA, started out by mentioning that the popularity of nuclear power rises if a country finds a solution for

waste. He proposed that a solution resides in recycling, which he believes can even strengthen nonproliferation. MOX fuel is described as a reliable and safe solution to nuclear waste with a proven track record in regards to safeguards. Recycling through MOX also allows the preservation of 25% of natural uranium by using it again. Later, he stated that while MOX fuel should not prevent work on a permanent solution, it is nonetheless a solution that is safe, stable, and smaller in quantity.

Myung Jae Song, president and CEO of the Korea Radioactive Waste Management Corporation, described the current status of the spent nuclear fuel problem in the ROK. Initially, the nuclear program of the ROK postponed dealing with waste. Eventually, the first objective was to secure a site for low level and intermediate level wastes, which translated into the Gyeongju site. Now, the main issue is interim and final disposal. Currently, the government is conducting the stakeholder engagement process. He stated that the final disposal will be possible around 2050, and that this makes an interim storage absolutely necessary since the current spent nuclear fuel storage will be saturated by the end of the decade.

Jack Spencer, senior research fellow at the Heritage Foundation, drew primarily upon the back-end experiences in the U.S. He argued that the primary problem in dealing with nuclear waste is that there is too much government involvement and that a market-based approach is a better solution. Waste producers need to be responsible for waste management, and the market should determine the pricing for waste options. The status quo is a fee system that is not attached to any actual rendered service by the government. When responding to proliferation concerns during the discussions he stated that he is not arguing for a laissez-faire approach and that the government should still have a role in regulation. He noted that privatization is the best solution, but not absolutely necessary for a solution.

Nuclear Safety and Terrorism

Session: Session 2 / Regency Room

Date/Time: February 19, 2013 / 14:00-15:15

Moderator: William Charlton, Nuclear Security Science & Policy Institute

Speakers: Jonathan Herbach, Utrecht University
Hwang Il Soon, Seoul National University
Naoi Yosuke, Japan Atomic Energy Agency

Rapporteur: Shawn Fitzgerald, Massachusetts Institute of Technology

Session Sketch

William Charlton, director of the Nuclear Security Science and Policy Institute at Texas A&M University, led the panel discussion by introducing the topic of nuclear safety and terrorism by introducing two separate, yet linked, concepts of nuclear safety and nuclear security. He noted that risk permeates all complex systems, and we normally approach risk management by both lowering the likelihood of an incident as well as mitigating the consequences in the event of an incident. He explained that by assuming the probability of an incident is low, we underestimate the risk associated with both safety and security incidents. As an example, we have had multiple core incidents when traditional models predict that the probability of any one event is extremely low. Dr. Charlton proposed five steps to improve risk analysis: 1) integrate safety and security in system design and operation; 2) enhance safety and security culture at all levels; 3) understand flaws in traditional risk analysis; 4) engineer increasingly resilient systems; and 5) improve crisis management globally.

Jonathan Herbach, researcher at the Center for Conflict and Security Law at Utrecht University, highlighted the efforts of the international community to codify nuclear security issues within international law. He noted that risk and threat perception associated with safety is reflected in the international legal regime that took shape after the Chernobyl incident. After 9/11, there has been greater focus on the issue of nuclear security within the international legal sphere. The Convention for the Suppression of Acts of Nuclear Terrorism of 2005 defined nuclear terrorism as a crime for the first time. Possession of radioactive material and/or devices, sabotage of nuclear facilities, and threats against those facilities with

the intent to harm are acts of nuclear terrorism as defined by the Convention. Dr. Herbach concluded his remarks by observing that nuclear safety remains the responsibility of the state, and that states only adhere to those measures of international law to which they have subscribed.

Hwang Il Soon, professor at the School of Energy Systems Engineering at Seoul National University, commented about concrete steps the nuclear community might take in order to improve both the nuclear safety and nuclear security regimes for power plants, spent nuclear fuel (SNF) storage, and research reactors. He also noted cyber terrorism as a growing threat to nuclear infrastructure. Dr. Soon suggested the following mechanisms to enhance safety and security posture: 1) development of sheltered interim storage of SNF; 2) ruggedized, self-sustaining underground control towers for power plants; 3) early-warning defenses at nuclear sites; and 4) institutional measures such as legislation and international cooperation.

Naoi Yosuke, deputy director of the Integrated Support Center for Nuclear Nonproliferation and Nuclear Security of the Japan Atomic Energy Agency, began his remarks by highlighting examples of infiltration at nuclear sites in France, Sweden, and the United States over the past year. He observed that this capability demonstrates a threat to nuclear infrastructure by potential terrorists that wish to gain access to protected sites with the intent to sabotage those facilities. Mr. Naoi noted that the Fukushima incident reveals the vulnerability of nuclear infrastructure to both safety and security incidents. He said that the countermeasures against safety and security incidents are similar, and systems must be engineered with both in mind. Mr. Naoi concluded his remarks by highlighting several lessons learned from nuclear safety aspects of operations that impact nuclear security: 1) emergency preparedness; 2) the need to foster a joint safety and security culture; and 3) the need to gain synergy between safety and security considerations.

US-China: North Korean Nuclear Dance Card

Session: Session 3 / Regency Room

Date/Time: February 19, 2013 / 15:30-16:45

Moderator: Simon Long, The Economist

Speakers: Kim Sung-han, Ministry of Foreign Affairs and Trade
Gary Samore, Harvard University
Shi Yinhong, Renmin University of China

Rapporteur: Paolo Venneri, Korea Advanced Institute of Science and Technology

Session Sketch

The session began with Simon Long, Asia columnist at The Economist, explaining the creative title of the session. He explained that the relationship surrounding North Korea occurred with a regularity and complexity that mirrored a dance: rising aggression, UN response with sanctions, mitigation of those sanctions through Chinese efforts, and a return to the previous the status quo. Mr. Long proceeded to set the tone of the session by presenting the governing question: How will United States (US) and Chinese cooperation relating to the Democratic People's Republic of Korea (DPRK) happen, and how will the Republic of Korea (ROK) behave?

The first issue that was addressed by all the speakers was what factors influenced the nuclear dance. Kim Sung-han, vice minister of Foreign Affairs and Trade of the Republic of Korea, summarized it by explaining the objectives of the opposing positions. China has two purposes in its current dealing with the DPRK: maintain stability in the region, and the denuclearization of the DPRK. The US, on the other hand, has the primary goal of the denuclearization of the DPRK first, placing it above the state's own stability. The other two speakers, Gary Samore, executive director of the Belfer Center for Science and International Affairs at the John F. Kennedy School of Government at Harvard University, and Shi Yinhong, professor of international relations at Renmin University, added on to this by connecting US and Chinese behavior to broader geopolitical issues. The issues related largely to the competing influences in East Asia of the two countries.

A second major discussion point was the nature of the relationship between China and the DPRK. Most of the speakers expressed the belief that China continues to have strong ties with the DPRK, and as such, should play an important role in its denuclearization. Dr. Shi responded to this succinctly when he explained that, despite popular opinion, China was facing increasing difficulty in influencing DPRK actions, and that this deterioration was continuing to worsen. He continued to argue that it was because of this risk that China refrained from taking part in the more drastic proposals made by the US and its allies. It was also brought up that recently, as shown by Chinese responses to recent nuclear and rocket tests in the DPRK, that perhaps there is a growing opinion in China that the DPRK is becoming a strategic liability. It was pointed out that this is view, while still being held by the minority, is slowly gaining influence in both the government and general population.

A final recurring issue was the role the ROK would play in the dance. Such options included reintroducing US nuclear weapons into the ROK, initiating stronger trilateral sanctions against the DPRK, and expanding the dialogue surrounding it to include issues beyond nuclear weapons. It was generally agreed that reintroducing extended deterrence into South Korea was largely an ineffective tactic, and one that had been entertained because of worries regarding possible US defense budget cuts.

The initiation of stronger trilateral sanctions by the ROK, China, and the US drew more attention because of Chinese worries relating to the destabilizing effects on the region. Dr. Samore and Dr. Kim both expressed the opinion that this path was readily available, and that the destabilizing consequences were manageable. The final possibility of expanding the dialogue to issues beyond nuclear weapons was strongly proposed by Dr. Kim. He argued that the issue should also include a dialogue relating to the reunification of the Korean peninsula.

Nuclear Fuel Cycle: Debates on Multilateral Approaches

Session: Session 3 / Grand Ballroom 1

Date/Time: February 19, 2013 / 15:30-16:45

Moderator: Corey Hinderstein, Nuclear Threat Initiative

Speakers: Tom Coppen, Utrecht University
Caroline Jorant, SDRI Consulting
Kang Jungmin, Korea Advanced Institute of Science and Technology
William Tobey, Harvard University

Rapporteur: Tristan Volpe, George Washington University

Session Sketch

Corey Hinderstein, vice president of the international program at the Nuclear Threat Initiative, opened the discussions on multilateral approaches to the nuclear fuel cycle with an important point. In order to develop effective solutions to the spread of proliferation risk technology, a comprehensive approach is needed that brings together both technical and policy expertise. The diverse range of skilled panelists certainly bridged this gap, and provided key insights into the political, legal, and technical issues that stem from the nuclear fuel cycle. Although the panelists disagreed about the relative efficacy of multilateral tools, a unanimous consensus emerged that the spread of sensitive nuclear fuel cycle technology constitutes a major international security problem.

Several panelists pinpointed the technical nature of the problem. Kang Jungmin, visiting professor in the Department of Nuclear and Quantum Engineering at the Korea Advanced Institute of Science and Technology, underscored that nuclear power provides energy security and environmental benefits. The supply of nuclear fuel and management of spent fuel waste are key issues that drive some states to pursue domestic enrichment and reprocessing capabilities. Since the ability to enrich uranium or reprocess plutonium is a major step towards a nuclear weapon, this sensitive technology carries an intrinsic risk of proliferation.

Multilateral approaches thus seek to provide access to these crucial nuclear fuel cycle services while mitigating the threat of proliferation that stems from the indigenous development of this technology. Caroline Jorant, president of SDRI Consulting, provided a detailed history of the multilateral policy concept and its implementation over the last few decades. The idea of having several nations provide nuclear fuel cycle services emerged during the last ‘nuclear renaissance’ as a means to prevent the spread of sensitive technology while also guaranteeing the supply of fuel. She argued that the basic policy solution still makes sense today. William Tobey, senior fellow at the Harvard Kennedy School’s Belfer Center for Science and International Affairs, contended that the multilateral approach is not a nonproliferation panacea. He argued that it is far more important to focus on stopping the spread of enrichment and reprocessing technology rather than simply placing it under international management.

Tom Copen of Utrecht University drew attention to the legal dilemma created by several articles in the Nonproliferation Treaty. Under Articles 1 and 2 of the treaty, states have an absolute obligation to not manufacture nuclear weapons. But these articles do not specify exactly what activities constitute the production of a nuclear weapon. Given the right to peaceful nuclear energy stipulated under Article 4 of the treaty, the scope of such activities have been, and continue to be, hotly debated. Many states interpret the article as a fundamental right to develop enrichment and reprocessing technology. He emphasized that a multilateral approach does not automatically resolve this dilemma. States must still uphold their nonproliferation obligations, and participation in a multinational fuel bank, for example, does not require them to sign away their rights to peaceful nuclear technology.

The panel concluded with a spirited discussion of these political and technical issues, with particular emphasis on the potential spread of sensitive technology to countries in East Asia.

Will Iran Go Nuclear?

- Session:** Session 3 / Grand Ballroom 3
Date/Time: February 19, 2013 / 15:30-16:45
- Moderator:** Jang Ji-Hyang, The Asan Institute for Policy Studies
- Speakers:** Ahmet Kasim Han Kadir Has University
Steven Miller Harvard University
Uzi Rubin Rubicon Ltd.
Nasser Saghafi-Ameri Center for Strategic Research
- Rapporteur:** Gordon Wyn Jones, King's College London

Session Sketch

Jang Ji-Hyang, director of the Middle East and North Africa (MENA) Center at the Asan Institute for Policy Studies, opened the session by highlighting perceived wisdom and debate on the Iranian nuclear issue, threat assessments regarding a nuclear Iran and the resulting regional cascade. Dr. Jang posited two areas for panel consideration: whether Iran will go nuclear and perspectives on international responses and the impact of sanctions to date.

Steven Miller, director of the international security program at the Belfer Center for Science & International Affairs at Harvard University, outlined the current status of a largely failed “Western” policy objective of ensuring “zero enrichment,” with Iran having achieved a nuclear capability, regardless of the spectrum of debate regarding Iranian “weaponization” intentions. Despite persistent refutations regarding weapons intent by the Iranian leadership, emphasizing purely peaceful nuclear development, suspicions remain high, with accumulating layers of coercive sanctions seemingly the preferred instrument for the United States to apply its continued “pressure-pain calculus”. The differing narratives reflect a high level of mutual mistrust and incomprehension between the United States and Iran. Based on current conditions, it is not likely that Iran will push for, or achieve, nuclear-weapon status in the near term, but rather, strive for a threshold capability.

Nasser Saghafi-Ameri, former Iranian diplomat and independent research scholar, prefaced his comments by questioning any Iranian links to the recent North Korean missile and nuclear

tests, asserting that Iran is politically, morally and religiously opposed to nuclear weapons and WMD in general. Charting Iran's nuclear history from the 1960s to date illustrates Iran's record of restraint (despite foreign pressures and having itself been a victim of WMD) and the essentially defensive character of Iran's doctrine of asymmetric confrontation as a deterrent to foreign encroachment.

Ahmet Kasim Han, professor at Kadir Has University in Istanbul, highlighted prestige as a currency of power, with nuclear weapon "hard power as a solid avenue" and Iran "definitely in the game." Iran is an important regional actor, playing a double game of "denial" and "nuisance," but lacking "immunity" from attack, which its nuclear program may facilitate. For Professor Han, Iran has not manifested a clear intention to go for nuclear weapons, and will likely "stop a yard short of the bomb," but contended that a nuclear-capable Iran would essentially have the same consequences for the region in terms of coercive capabilities and influence, which is "not good news for an aspiring power like Turkey." Though Turkey tends to downplay the Iranian threat, due in part to important energy relations, there is anxiety about Iran's direction. However, barring any drastic change in its NATO security environment, he noted that it remained "very unlikely that Turkey would go nuclear in response to a nuclear Iran."

Uzi Rubin, CEO of Rubicon Ltd. and the founder and former director of the Israel Missile Defense Organization in the Israel Ministry of Defense, highlighted Iran's combined nuclear, missile and space programs as clear indications of Iran's progress towards developing a "viable nuclear strike force." Together with revelations of secret facilities and convoluted explanations for its nuclear and missile-related actions, the Iranian regime has prompted suspicions and raised many questions regarding its intentions and whether the rhetoric of restraint and denial represents "policy or ploy." In Brig. Gen. Rubin's view, "Iran is not a satisfied power" and "has many axes to grind." Though a nuclear Iran is not a foregone conclusion, its military-industrial complex and advancing nuclear ambitions are a concern for Israel and should be for the wider international community. He concluded by noting that much depends on whether "Iran can live with the world as it is, not as Iran wants it to be."

Future of the ROK-US Nuclear Cooperation Agreement

Session: Session 4 / Regency Room

Date/Time: February 20, 2013 / 09:00-10:15

Moderator: Park Jiyoung, The Asan Institute for Policy Studies

Speakers: Mark Hibbs, Carnegie Endowment for International Peace
Sheen Seongho, Seoul National University
Scott Snyder, Council on Foreign Relations
Sharon Squassoni, Center for Strategic and International Studies
Yim Man-Sung, Korea Advanced Institute of Science and Technology

Rapporteur: David Santoro, Pacific Forum CSIS

Session Sketch

Mark Hibbs, senior associate in the Nuclear Policy Program at the Carnegie Endowment for International Peace, opened the session by stressing that the most difficult issue regarding the future of the ROK-US Nuclear Cooperation Agreement is linked to the ROK's willingness to get involved in commercial uranium enrichment and to introduce pyroprocessing in its activities. This is of concern to the United States, which has worked since the early 2000s to limit the spread of enrichment and reprocessing (ENR) technologies throughout the world. Mr. Hibbs explained that because time is running out for negotiations to proceed (and given the current regional security context characterized by North Korea's recent provocations), the most likely (and most desirable) outcome would be for the ROK and the United States to extend the existing agreement for a few years and review its terms later on the basis of the conclusions of the joint study on pyroprocessing currently being conducted. Looking to the future, Mr. Hibbs suggested that it will be difficult for the United States to resist the ROK's willingness to develop ENR technologies because there are good justifications and, more importantly, because the ROK has good nonproliferation credentials.

Sheen Seongho, associate professor at the Graduate School of International Studies at Seoul National University, followed by stressing that he was in agreement with his analysis and recommendations. He highlighted that the issue should not be a test of the ROK-US alliance, acknowledging that it had however already become politicized and portrayed as a "trust" problem, despite very good relations between the two countries. Dr. Sheen insisted that it was

important to remember that the ROK-US Nuclear Cooperation Agreement is exclusively for peaceful purposes and that it should not be seen as an attempt by the ROK to develop a nuclear weapon capability. Significantly, he suggested that the United States should show more "respect" for the ROK's program and intentions, just as the ROK needs to show "responsibility". He noted that the ROK's strong support for the Nuclear Nonproliferation Treaty regime and the Nuclear Security Summit process is evidence that it is acting as a responsible actor.

Scott Snyder, senior fellow for Korea Studies and the director of the Program on U.S.-Korea Policy at the Council on Foreign Relations, noted that nuclear cooperation between the ROK and the United States has been extremely successful and, as a consequence, that both parties must find common ground. Noting that politicians have portrayed the matter as a "trust" issue, he recommended that it be left to technical experts, who tend to focus more on cooperation. Mr. Snyder agreed that in current circumstances, the ROK and the United States should extend the current agreement. Sharon Squassoni, director of the proliferation prevention program at the Center for Strategic and International Studies, also agreed that extension is the best way forward, noting that this would however need to be approved by the US Congress, which is not guaranteed. She also insisted that the position of the United States is not to get the ROK to fore swear ENR technologies, despite interest in the US Congress to restrict ENR transfers. Rather, the United States is concerned about applying nonproliferation principles fairly across the states.

Yim Man-Sung, professor in the Department of Nuclear and Quantum Engineering at the Korea Advanced Instituted of Science and Technology, took a different approach. He stressed that the current ROK administration is favorable to the ROK's nuclear program and that a different administration may not have a similar perspective, which raises concerns about postponing renegotiation of the current agreement. Insisting that the ROK has no intention to develop a nuclear weapon capability (and that it would not make sense to do so), Dr. Yim explained that unlike India, which has developed nuclear weapons, and Japan, which has suffered important safety issues, the ROK has very good nonproliferation and safety credentials. He also stressed that renegotiation of the ROK-US Nuclear Cooperation Agreement is important both for technical reasons (to deal with spent fuel) and economic considerations.

Nuclear Dominos in Northeast Asia

Session: Session 4 / Grand Ballroom 1
Date/Time: February 20, 2013 / 09:00-10:15

Moderator: John Park, Massachusetts Institute of Technology

Speakers: Jor-Shan Choi, Berkeley Nuclear Research Center
Kim Young Ho, Korea National Defense University
Li Hong, China Arms Control and Disarmament Association
Miles Pomper, James Martin Center for Nonproliferation Studies

Rapporteur: Tristan Volpe, George Washington University

Session Sketch

In the wake of North Korea's third nuclear test, will other states in East Asia decide to acquire nuclear weapons? If Japan or South Korea proliferate, will there be a nuclear domino effect in the region? The experts arrayed on this topical panel offered a simple and resounding answer. The nuclear dominos in East Asia will not fall. Regional proliferation is very unlikely in the near term. But significant changes to the political and security environment in the next ten to twenty years might catalyze a domino effect. Conflict between China and Japan could be a proliferation 'game changer' than drives Japanese demand for nuclear weapons. Major realignments in alliance commitments from the United States might also interact with the rise to China to drive regional proliferation in East Asia. Yet barring these future worst-case conditions, the non-nuclear status quo will remain stable for Japan, South Korea, and Taiwan.

Moderator John Park, Stanton Nuclear Security Junior Faculty Fellow at the Massachusetts Institute of Technology, challenged the panelists to identify specific tipping points that might cause each country in East Asia to acquire nuclear weapons. Jor-Shan Choi, associate director at the Berkeley Nuclear Research Center at the University of California, Berkeley, and Kim Young Ho, professor in the Department of International Relations at Korea National Defense University, both focused on Japan as the key domino. Japan is the closest to going nuclear in East Asia right now because they have significant nuclear fuel cycle technology and stockpiles of fissile material. South Korea and Taiwan have the technology, but they need more time to produce a nuclear weapon than Japan. Under the extended deterrent protection of the United States nuclear umbrella, continued provocations from North Korea will not

spark a proliferation cascade. If, however, Japan and China found themselves in a military conflict, lack of support from the United States might cause Japan to rethink its nonproliferation bona fides. Since Japan has been trusted with sensitive nuclear fuel cycle technology, its decision to proliferate would render the Nonproliferation Treaty ‘useless’.

Li Hong, vice president and secretary-general of the China Arms Control and Disarmament Association, and Miles Pomper, senior research associate at the James Martin Center for Nonproliferation Studies, examined more closely the dynamics between the United States and its allies in East Asia. Japan has an equal need to balance North Korean and Chinese nuclear capabilities. Miles Pomper emphasized that the threat to Japan from North Korea presents a straightforward problem for the United States to counter. The rise of China is much harder. How much will the US risk for the defense of Japan against a growing China with increasingly modern nuclear weapons capabilities? For South Korea, the challenge is more directly from North Korea. Would a nuclear deterrent help South Korea take Seoul out of hostage? Not likely. The basic deterrence calculus is not going to change. Since nuclear weapons offer little security benefit to these major East Asian players, the optimal situation will be for Japan and South Korea to make sure the United States maintains its security commitments, and to remain nonnuclear states under the American nuclear umbrella.

Building Global Nuclear Security Architecture

Session: Session 4 / Grand Ballroom 3
Date/Time: February 20, 2013 / 09:00-10:15

Moderator: Shin Chang-Hoon, The Asan Institute for Policy Studies

Speakers: John Bernhard, Former Danish Ambassador to the IAEA and CTBTO
Kenneth Brill, Independent Consultant and former U.S. Ambassador to the IAEA
Mona Dreicer Lawrence Livermore National Laboratory
Jun Bong-geun Korea National Diplomatic Academy

Rapporteur: Shawn Fitzgerald, Massachusetts Institute of Technology

Session Sketch

Shin Chang-Hoon, director of the Asan Nuclear Policy and Technology Center at the Asan Institute for Policy Studies, introduced the session by saying that building global nuclear security architecture is one of the most important topics within the conference.

Kenneth Brill, independent consultant and former US Ambassador to the IAEA, opened his discussion by observing that the threat of nuclear terrorism is so grave, it must be prevented. He listed four reasons why a global architecture is necessary: 1) nuclear energy will likely be more widely used in the future around the world; 2) terrorists have stated that they want nuclear material for malicious purposes; 3) a nuclear event would disrupt the world economy, political system, and stability; and 4) states have obligations to their citizens as well as to the international community in order to ensure security of their nuclear material and infrastructure. He noted that while there are many international agreements in place, a true global nuclear security regime does not exist. Ambassador Brill concluded his piece by stating that there exists a mismatch between the nature of the nuclear security threat and the effort put forth toward the problem at the global level.

John Bernhard, former Danish Ambassador to the IAEA and CTBTO, commented on the issues facing successful implementation of a global nuclear security regime. He observed that while global architecture may impact national sovereignty, states should recognize that these minor concessions on the issue of sovereignty would translate into increased nuclear security benefits for all states. He listed various characteristics that a successful nuclear security

framework might exhibit: 1) a common set of nuclear security standards; 2) the ability to measure the performance of states by domestic and international assessors; 3) the responsibility for implementation of any framework rests with the state, but should highlight the obligation of states to the international community as well as their citizens; and 4) continued and increased information exchange between party states.

Jun Bong-Geun, director-general of the Department of National Security and Unification Studies at the Korea National Diplomatic Academy, highlighted the concept of a unified “global governance” approach to building global nuclear security architecture. Dr. Jun argued that just as corporations exist to build profit, they also have social responsibility. In the same way, each state, regardless of size, bears responsibility for the global public goods of peace, stability, and nuclear security. Dr. Jun concluded his remarks by noting that efforts in this area should focus on balancing national sovereignty and the concept of shared international responsibility.

Mona Dreicer, acting program director for Non-Proliferation at Lawrence Livermore National Laboratory, remarked about practical aspects of implementing global nuclear security architecture. She listed three elements needed to maintain such a global regime: 1) global governance; 2) capability at the state and regional level; and 3) security culture. She also highlighted challenges to implementing current international agreements, namely resources, sustainability, and maintaining communication between and within governments. Dr. Dreicer concluded her talk by highlighting the fact that defining success within the framework of existing international nuclear security agreements remains a challenge.

De Facto Nuclear Weapons States and the NPT Regime

Session: Session 5 / Regency Room

Date/Time: February 20, 2013 / 14:00-15:15

Moderator: Aruni Wijewardane, James Martin Center for Nonproliferation Studies

Speakers: Ariel Levite, Carnegie Endowment for International Peace
Mushahid Hussain Sayed, Senate of Pakistan
Manpreet Sethi, Center for Air Power Studies, New Delhi

Rapporteur: Gordon Wyn Jones, King's College London

Session Sketch

Aruni Wijewardane, director of the International Organizations and Nonproliferation Program at the James Martin Center for Nonproliferation Studies, opened the session with an outline of the non-proliferation challenges of the so-called “de facto” Nuclear Weapon States (Israel, Pakistan and India), in terms of their respective positions towards the NPT and wider NP regime: their stances in connection with the nuclear paths of Iran and North Korea, and their external viewpoints regarding the issue of NPT “universality”, legitimacy and possible future inclusion.

Ariel Levite Israeli, nonresident senior associate in the Nuclear Policy Program at the Carnegie Endowment for International Peace, emphasized the characteristics of the three de facto states: that none have ever joined the NPT nor broken any rules, but the more significant differences in their respective security contexts, concerns and relationships. Unlike India and Pakistan, Israel “neither is, nor seeks to be, a Nuclear Weapon State,” but decided and remains of the view that the NPT is incompatible with Israel’s broader concerns. With respect to Iran and North Korea, Mr. Levite does not see either regime as likely to give up their respective nuclear programs. Such will remain an elusive goal and the best that can be expected is to “tolerate a hedge” and try to achieve a “mutually defined, agreed upon firewall,” encompassing a degree of improved transparency, safety and security culture, along with ongoing efforts to “attrite the capability for breakout.” From Israel’s experience, Mr. Levite cautioned North Korea that “if you build your security on nuclear means, you are in

great jeopardy”.

Senator Mushahid Hussain Sayed of the Senate of the Pakistan commenced with the qualitative distinction between the nuclear status of Iran and North Korea, and emphasized that linkage with the de facto three states is not a helpful frame of reference. Providing a critique of post-9/11 nuclear geopolitics and policy inconsistencies (including the US-India nuclear deal), there is a perception that nuclear weapons have gained greater legitimacy as tools for regime protection. Senator Sayed expressed the view that Pakistan’s nuclear path, and that of the other de facto and aspiring nuclear weapons states, should each be viewed through the respective contexts of perceived state security and survival, and that continuing “double-standards and dichotomies over non-proliferation do not, and will not, work” towards realizing lasting non-proliferation progress in troubled regions such as Middle East and Northeast Asia. Effective non-proliferation should move away from emphases on sanctions, isolation and demonization towards more active political and diplomatic engagement. Instead of country specific waivers, a more equitable, criteria-based approach should be applied, which would recognize both India and Pakistan within the NP framework.

Manpreet Sethi, project leader on nuclear security at the Centre for Air Power Studies, emphasized the distinction between the NPT and the more multi-dimensional NP regime; that the deficiencies of the NPT go well beyond the challenge of the de facto states; that NPT membership is not in itself a sufficient guarantee of compliance and that state behavior is a key criteria for making non-proliferation sustainable over time. In this regard, there is a need to disaggregate the de facto Nuclear Weapon States and see them in their respective lights, seeking to encourage participation in wider NP instruments (beyond the inherent inequities of the NPT and its arbitrary, historical NWS definition) and to effectively expand the “global web of commitments”. In this respect, the US-India nuclear agreement, far from undermining the NP regime, represents a positive recognition and advertisement of responsible non-proliferation behavior, with India having consistently lived up to the principles of NWS and NNWS.

How Viable Are Nuclear Weapons Free Zones?

Session: Session 5 / Grand Ballroom 1

Date/Time: February 20, 2013 / 14:00-15:15

Moderator: William Potter, James Martin Center for Nonproliferation Studies

Speakers: Emiliano Buis, Non-proliferation for Global Security Foundation
Chun Chaesung, Seoul National University
Peter Hayes, Nautilus Institute, RMIT University
Ta Minh Tuan, Office of the Government, Vietnam

Rapporteur: Kristine Bergstrom, Carnegie Endowment for International Peace

Session Sketch

William C. Potter, director of the James Martin Center for Nonproliferation Studies, opened the discussion by pointing out that in light of recent progress in creating new Nuclear Weapons Free Zones (NWFZs), it is not surprising that a number of additional zones have been proposed.

Emiliano Buis, professor and researcher at the Non-proliferation for Global Security Foundation, noted that NWFZs compliment the Nuclear Non-Proliferation Treaty, they are regional, and they contain protocols that commit countries to not deploy nuclear weapons in the region. But NWFZs are merely a means toward the elimination of nuclear weapons and not an end, they lack practical enforcement practices, the geographical scope is very limited, and some countries preserve the right to use nuclear weapons in NWFZs in certain circumstances. In order to function, NWFZs have to be naturally created, multilateral, and global, concluded Dr. Buis.

Chun Chaesung, associate professor at Seoul National University, noted that there are certain assets that can create the conditions for a NWFZ: Japan's three Non-Nuclear Principles of not possessing, not producing, and not permitting the introduction of nuclear weapons; the Joint Declaration of South and North Korea on the denuclearization of the Korean Peninsula; the United Nations' recognition of Mongolia's self-declared nuclear-weapon-free status. However, there are serious harmful elements to take into account as well, including North Korea's manufacturing of nuclear weapons; rising voices for nuclear armaments in South

Korea and Japan; the geo-strategic competition between the United States and China; and the aggravating relationship between China and Japan. Under these conditions, concluded Dr. Chun, the prospect for reaching an agreement for complete NWFZ is quite moderate.

Peter Hayes, co-founder and executive director of the Nautilus Institute at RMIT University made the point that considering the need to reduce the risk of Taiwan Strait-induced United States-China nuclear use; the need to moderate the Sino-Japanese conflict axis and the potential for Japanese nuclear weapons; as well as the need to set South Korea up so that it remains non-nuclear in the long-run, there is only one framework that can manage the cross-cutting interests of the Nuclear Non-Proliferation Treaty nuclear-weapon states and non-nuclear-weapons states, and that's a NWFZ. But to get there, there is a need for a comprehensive security settlement that includes the termination of the state of war, creation of a permanent council on security to monitor the agreement, a mutual declaration of no hostile intent, provisions of assistance for nuclear and other types of energy, termination of sanctions, and the creation of a NWFZ. If North Korea agrees to such conditions, it would be possible to make room for the country to enter the NWFZ, concluded Dr. Hayes.

Ta Minh Tuan, assistant to the Deputy Prime Minister in the Office of the Government, Vietnam, made the case for NWFZs, but pointed out that there are four conditions to their success: the treaty must be comprehensive; each party must willingly legislate on issues that strengthens the treaty; a regional organization must take action in case of violations; and nuclear-weapon states must respect the zone.

Dr. Potter wrapped up the discussion by pointing out that most treaties are far from perfect, so it is important to seize on the opportunities for NFWZs as they appear.

How Safe Are Nuclear Power Plants in South Korea?

Session: Session 5 / Grand Ballroom 3

Date/Time: February 20, 2013 / 14:00-15:15

Moderator: Ahn Joonhong, University of California, Berkeley

Speakers: Kim Jiyeon, The Asan Institute for Policy Studies
Lee Jong-In, Korea Institute of Nuclear Safety
Suh Kune Yull, Seoul National University

Rapporteur: Paolo Venneri, Korea Advanced Institute for Advanced Science and Technology

Session Sketch

The session began with the moderator, Ahn Joonhong, professor and vice chair of the Department of Nuclear Engineering at the University of California Berkley, setting the stage by presenting a series of questions and considerations that were then later addressed by the panel members. The issues he presented largely concentrated on the safety issues surrounding the design of nuclear reactors, how they are operated, the regulatory concerns surrounding the nuclear industry, the evolution of threats to nuclear installations, and the effectiveness of any emergency response plan.

Both Lee Jong-in, senior advisor at the Korea Institute of Nuclear Safety, and Suh Kune Yull, professor in the Nuclear Engineering Department of Seoul National University, directly addressed these points from their respective backgrounds. Dr. Lee gave an overview of the regulatory system in Korea and how it had evolved to best handle and address the regulation of the Korean nuclear industry. He paid particular attention to the efforts made in response to the various nuclear accidents throughout the world. He cited internal and external review efforts following the Fukushima accident, and the direct implementation of solutions to issues found during those reviews.

Dr. Suh proceeded to provide a list of important issues in the safety and security of the nuclear industry. Among the issues he mentioned, the shortage of qualified manpower in the nuclear industry, the joining of the nuclear regulatory body with the super-ministry involving nuclear research, and the potential threat from Chinese nuclear power plants figured

prominently in his discussion.

Kim Jiyeon, research fellow and director of the Public Opinions Studies Center at the Asan Institute for Policy Studies, took a very different perspective that provided a backdrop to the entire dialogue. She presented the results of a series of polls she had conducted for the Asan Institute regarding public perception of nuclear power, both as an energy source as well as its safety. Her findings, as she presented them, showed that on average, while the Korean people trusted the nuclear technology itself, they had concerns relating to its safety. This did not, however, prevent them from thinking that nuclear power plants are not important to have in South Korea.

This brought the discussion to the question of what could the Korean government do to increase the public's confidence in the Korean nuclear industry. Dr. Suh responded that the first step would be to prevent the merging of the regulatory and promoting bodies, and that the regulator "had to be a watchdog, not a lapdog." Dr. Lee responded that it was not fair to make such a comparison. While cooperation between regulators and the regulated is necessary to create the regulation, the regulation process itself was done solely by the regulator. Dr. Kim made a different proposal. She suggested that the issue was not how safe or effective the regulatory systems were (Dr. Suh later gave a grade of 98 out 100 to Korean nuclear industry safety), but rather how much the Korean people trusted their government. She argued that it was because of the lack of public dialogue and transparency on the part of the government that Koreans had come to hold such contradictory opinions on nuclear power, and continued to have worries regarding its safety.

Bolstering Counter-proliferation Regime

Session: Session 6 / Regency Room

Date/Time: February 20, 2013 / 15:30-16:45

Moderator: Aruni Wijewardane, James Martin Center for Nonproliferation Studies

Speakers: Bong Youngshik, The Asan Institute for Policy Studies
Choi Kang, Korea National Diplomatic Academy
Pierce Corden, American Association for the Advancement of Science
Matthew Kroenig, Georgetown University
Jim Walsh Massachusetts Institute of Technology

Rapporteur: Mira Rapp-Hooper, Columbia University

Session Sketch

Bong Youngshik, director of the Center for Foreign Policy at the Asan Institute for Policy Studies, opened the panel by laying out some crucial distinctions between counter-proliferation and non-proliferation. Non-proliferation can be thought of as preventing the spread of nuclear materials and is often achieved through multilateral legal frameworks. Counter-proliferation may be defined as a focus on problem states and producers, and is often achieved unilaterally or through smaller groups of states. There has been a shift in recent years to placing priority on the latter.

The panel reached consensus on the fact that certain counter-proliferation tools have been sharpened in recent years, especially the Proliferation Security Initiative. There was, however, considerable dissent on how we should balance nonproliferation vs. counter-proliferation priorities going forward.

Choi Kang, dean of Planning and Assessment at the Korea National Diplomatic Academy, argued that the Proliferation Security Initiative constitutes real progress on counter-proliferation, but that the challenges going forward will be how to interdict from non-state actors and pariah state proliferators. States that are part of the PSI need to work together to develop the domestic capacity to bolster this capability.

Pierce Cordon, visiting scholar at the Center for Science, Technology and Security Policy at

the American Association for the Advancement of Science, argued that we can look at European examples of Confidence and Security Building measures to understand how non-legally binding agreements among groups of states may be successfully brought about.

Matthew Kroenig, assistant professor and international relations field chair in the Department of Government at Georgetown University, argued that the primary constraint on the effectiveness of the counter-proliferation regime is not capabilities, but prevailing norms and interests. Like the adoption of the Responsibility to Protect (R2P) doctrine that allows international intervention to prevent mass atrocity, we should adopt a Responsibility to Prevent Proliferation (R2PP) doctrine that elevates the longer-term interest of preventing the spread of nuclear weapons over the existing norm of state sovereignty and states' shorter-term interests. This may be accomplished through coercion, and the use of military force if necessary.

Jim Walsh, research associate and faculty at the Massachusetts Institute of Technology's Security Studies Program (SSP), argued that non-proliferation mechanisms have been extremely effective throughout history; counter-proliferation measures, on the other hand, have ranged from irrelevant to counter-productive. Non-proliferation is a resounding success story, and we should be thankful for it rather than turning to risky tools that are unlikely to accomplish our goals.

Dr. Walsh and Dr. Kroenig then engaged in an energetic debate on the prospects of success solving the North Korean and Iranian nuclear problems. Dr. Walsh argued that we would probably not see much engagement with North Korea in recent years due to a recurrent cycle of North Korean provocations and the application of new international sanctions. He said that his chief concern was that a low-level provocation in the region could escalate. No diplomatic settlement is likely to be feasible with North Korea at present, but there is still the possibility of achieving a settlement with Iran.

Dr. Kroenig argued that while a negotiated settlement would be preferred in both cases, it was unlikely in either. Military action against Iran's nuclear program could be successful because there are a limited number of targets to strike, the United States has the capability to do so, and the regional backlash from Iran can probably be managed. In the case of North Korea, however, nuclear facilities are likely too dispersed for an attack to be effective, and backlash would probably carry unacceptable costs. In closing, panelists agreed that there need not be a trade-off between non-proliferation and counter-proliferation tools; rather, counter-proliferation is a second line of defense. Both non-proliferation and counter-proliferation measures should be applied creatively throughout the process of a state attempting to acquire nuclear weapons.

Non-State Stakeholders in Preventing WMD Proliferations

Session: Session 6 / Grand Ballroom 1
Date/Time: February 20, 2013 / 15:30-16:45

Moderator: Gabriele Kraatz-Wadsack, United Nations

Speakers: Togzhan Kassenova, Carnegie Endowment for International Peace
Lv Xiaodong, United Nations
Shin Chang-Hoon, The Asan Institute for Policy Studies

Rapporteur: Natalia Sharova, Hudson Institute

Session Sketch

Gabriele Kraatz-Wadsack, chief of the weapons of mass destruction branch in the office for disarmament affairs at the United Nations, opened the session by reminding the audience of the importance of Resolution 1540 that obliges all states to refrain from any assistance to non-state actors in developing or acquiring weapons of mass distraction (WMD), means of their delivery and related materials. She emphasized that according to the resolution, the main responsibility for its implementation lies on the Member States, and that the effectiveness of Resolution 1540 depends on the degree of their commitment.

Togzhan Kassenova, associate in the Nuclear Policy Program at the Carnegie Endowment for International Peace, made several points during her presentation, emphasizing industry's role in WMD nonproliferation. Industry knows specifics of their products and market, and can easily identify a suspicious order. Thus, experts and policymakers should rely on industry's knowledge while drafting laws regarding WMD proliferation control. Dr. Kassenova also noted that industry has no reason to proliferate materials for biological, chemical and nuclear weapons, since it harms a company's reputation. It is in industry's interest to comply with nonproliferation criteria. However, to implement proliferation controls, industry has to spend a vast amount of their own resources, constantly check export control norms of their trading partner countries and so on. To mitigate those challenges and to deepen industry's role in nonproliferation, states should establish open communication channels between governments and industries, and offer guaranteed benefits to companies that contribute to the WMD

nonproliferation process.

Lv Xiaodong, member of the United Nations Security Council Resolution 1540 Committee, noted that Resolution 1540, adopted by the United Nations Security Council, is the main binding instrument that addresses the threat posed by non-state actors aiming to acquire WMD, especially by terrorist groups. Dr. Lv emphasized that the Resolution 1540 helps to bring together various non-state stakeholders, including national, regional and subregional organizations. Such cooperation greatly contributes to the Member States efforts to implement the resolution's key requirements and should be expanded further. Dr. Lv also noted the tremendous role of the civil society, and stressed that the successful implementation of the Resolution 1540 will continue to depend on regional, civil society and industry's efforts.

Shin Chang-Hoon, director of the Nuclear Technology and Policy Center at the the Asan Institute for Policy Studies, made two points. First, he accentuated that civil society's role should be no exception regarding nonproliferation and ought to be expanded. The public awareness about non-state actors aiming to acquire biological, chemical or nuclear weapons is an instrument capable of preventing proliferation of deadly weapons and dual-use materials necessary for its production. Also, he agreed with the other panelists that the United Nations resolution 1540 is a unique supplement to the NPT since it includes prohibition of dual-use materials and means of WMD delivery.

In his second point Dr. Shin mentioned importance of a regional approach in Northeast Asia and in the ASEAN countries. He pointed out that Northeast Asian civil society is lacking relevant knowledge regarding WMD, and that nonproliferation issues should be somehow included in the education system. Dr. Shin also noted that there was not enough attention to chemical and biological weapons, and that possibly international summits like NSS are required in order to attract public attention to the issue.

Regional Cooperation in Nuclear Safety

Session: Session 6 / Grand Ballroom 3

Date/Time: February 20, 2013 / 15:30-16:45

Moderator: Kelsey Davenport, Arms Control Association

Speakers: Gun-Aajav Manlaijav, Nuclear and Radiation Regulatory Authority
Kim Sang Yun, Korea Institute of Nuclear Safety
Sato Heigo, Takushoku University

Rapporteur: Samuel Brinton, Massachusetts Institute of Technology

Session Sketch

Kelsey Davenport, nonproliferation analyst for the Arms Control Association, opened the panel by noting that regional cooperation on nuclear safety is a timely issue due to the Fukushima disaster. She noted that the session would need to consider the need to coordinate emergency response and mitigate possible emergencies with advanced sharing of information.

Gun-Aajav Manlaijav of the Nuclear and Radiation Regulatory Authority began the discussion by stating that since Fukushima, nuclear power plants and all nuclear applications are under heightened scrutiny. In response to the accident the member states of the NPT under the auspice of the IAEA should seek to strengthen the safety culture of the nuclear regime. A significant challenge in this strengthening is the large difference in the region in terms of socioeconomic development. He stated that the variety of expertise has caused a need to harmonize and fill the legal gaps of the frameworks ruling the cooperation of nuclear communities. Although every country is responsible for its own nuclear safety, Mr. Manlaijav reminded the audience that Chernobyl has shown that a nuclear accident has no national border. To address the gaps, the public trust should be built on public education at all levels and in many dimensions. This will lead each country, such as Mongolia, to meet its own nuclear science and engineering policy and human resource capability.

Kim Sang Yun, director of the Research and Policy Division at the Korea Institute of Nuclear Safety, continued by highlighting the need for post-Fukushima regional cooperation to solve the problems faced by the nuclear safety community. His remarks concentrated on the creation and expansion of the Top Regulators' Meeting. The Top Regulators' Meeting on

Nuclear Safety among Japan, the Republic of Korea, and China was established in 2008 to promote exchanging information on nuclear safety as well as enhancing regional cooperation in emergency preparedness and response in Northeast Asia. The meeting is working to take initiative in nuclear safety with multiple meetings held with experiences shared on construction and operation of nuclear power plants along with Fukushima response data. Mr. Kim introduced the goal of an information exchange framework which is still in discussion with a goal of trilateral sharing of emergency and non-emergency data.

Sato Heigo, professor at Takushoku University, was proud to state that the nuclear industry is now deeply involved in the region with expansion seeming imminent despite the Fukushima disaster. It seems evident, he mentioned, that nuclear safety is crucial for this expansion. Beginning with a citation of the Asia Pacific Leadership Network for Nuclear Non-Proliferation and Disarmament report, Mr. Sato urged the need for stronger cooperation among the nations in the region. Although there has been success in sharing data relating to the construction and initial operation for nuclear power plants but information relating to emergency conditions and human errors leading to these emergencies is lacking. An example of the complacency can be seen in the that security measures for nuclear power plants must be repeatedly updated and applied. However, Mr. Sato mentioned, once a nuclear power plant is started the public is self-convinced that its safety is guaranteed. His comments concluded with the point that the nuclear energy community has become reluctant to update its security since this updating seems to be in conflict with idea that the nuclear power plant must be inherently safe in order to be operating.

Rapporteur Biographies

Kristine Bergström

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Ms. Bergström is the senior communications coordinator for the Nuclear Policy Program at the Carnegie Endowment for International Peace. Previously, she worked at *Le Monde's* weekly magazine *Courrier International* where she covered international affairs and Scandinavian culture and was also a freelance writer in London and New York. At the Carnegie Endowment, Ms. Bergström edits *Proliferation News* and manages the Nuclear Policy Program's homepage and social media platforms. She received an M.A. in political science and international politics from the University of Paris 1 Panthéon-Sorbonne.

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Mr. Brinton is a graduate student at the Massachusetts Institute of Technology, where he is pursuing dual masters degrees in Nuclear Science and Engineering and the Technology and Policy Program. Previously, he has held internships at the Argonne National Laboratory, Idaho National Laboratory, and Dow Chemical Company in various projects relating to nuclear engineering and waste management systems analysis. His research interests are concentrated in nuclear fuel cycle system analysis with subtopics of interest including waste management economics and dry cask storage analysis. He received a B.S. in Mechanical and Nuclear Engineering and a B.A. in Vocal Music Performance and a minor in Chinese Language from Kansas State University.

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Mr. Choi is a research associate in the program on U.S.-Korea Policy at the Council on Foreign Relations. He is also a non-resident James A. Kelly fellow at the Pacific Forum CSIS. Previously, he was a consultant to the Center for U.S.-Korea Policy at The Asia Foundation; visiting scholar at Fudan University in China; a lecturer at the Korea Military Academy in South Korea, and an officer in the ROK Army. He has conducted research on base politics and the U.S.-ROK alliance at the East-West Center and for the Reischauer Center at SAIS. He received a B.A. in philosophy, politics & economics from the University of Pennsylvania

and an M.A. in international cooperation from Seoul National University GSIS.

Shawn Fitzgerald

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Maj. Fitzgerald is a Major on active duty in the United States Army and a graduate student at the Massachusetts Institute of Technology, where he is pursuing dual masters degrees in Nuclear Engineering and Political Science (Security Studies). Previously, he has commanded at the company level, and has had two combat deployments to Operation Iraqi Freedom, where he served in Baghdad as an intelligence officer and in Tikrit an advisor/trainer to the Iraqi Army. He has also served in Yongsan, Korea; Wiesbaden, Germany; and Fort Huachuca, Arizona. His research interests include counter- and non-proliferation technology and policy, civil-military relations, and security sector reform. He received a B.S. in chemistry and chemical engineering from the United States Military Academy.

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Mr. Jones is a Ph.D. candidate and research associate at the Centre for Science and Security Studies (CSSS), King's College London. Previously, he was based in Tokyo as a Japan Foundation fellow and visiting scholar at the National Graduate Institute for Policy Studies (GRIPS). Prior to embarking on doctoral studies, he had an extensive career with a major Japanese corporation, with responsibility for business development in Middle East, Africa and Asia regions, including nine years heading regional trade operations in Dubai. He is affiliated to Chatham House, RUSI's Project on Nuclear Issues (UK PONI), and the International Network of Emerging Nuclear Specialists (INENS). Mr. Jones' research focuses on Asian security and nuclear non-proliferation matters. He received a BSc.Econ. from Aberystwyth University and an M.A. in International Studies and Diplomacy from the University of London SOAS.

Duyeon Kim

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Ms. Kim is the senior fellow for Nuclear Non-Proliferation and East Asia at the Center for Arms Control and Non-Proliferation. Previously, she was a career journalist having served as the Foreign Ministry Correspondent and Unification Ministry Correspondent for Korean

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Robert Kim

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Mr. Kim is a research intern at the Proliferation Prevention Program of the Center for Strategic and International Studies. He recently graduated with High Honors from Swarthmore College with a degree in political science and spent time abroad studying at the London School of Economics and Political Science. He previously worked as a high school policy debate coach.

Mira Rapp-Hooper

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Ms. Rapp-Hooper is a Ph.D. candidate at Columbia University. She specializes in security studies and her primary research interests are nuclear weapons policy and strategy, and she is currently writing a dissertation on extended deterrence. She is particularly interested in alliance politics and extended deterrence issues in East Asia. She received a B.A. from Stanford University, an M.A. from New York University, and an M.A. and M.Phil. in political science from Columbia University.

David Santoro

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Dr. Santoro is a senior fellow for Nonproliferation and Disarmament at Pacific Forum CSIS, where he directs the Forum's various nuclear programs. Previously, he worked at the International Institute for Strategic Studies; the Liu Institute for Global Issues at the University of British Columbia; New York University's Center on International Cooperation; and Macquarie University in Sydney, Australia. He began his career working as a foreign policy analyst for various governmental agencies in France. His research focuses on the study of major power relations against the backdrop of nuclear issues. Dr. Santoro is coeditor, with Tanya Ogilvie-White, of *Slaying the Nuclear Dragon: Disarmament Dynamics in the Twenty-First Century* (2012) and author of *Treating Weapons Proliferation: An Oncological*

Approach to Nuclear, Biological, and Chemical Technology (2010). He received degrees in languages, literature, history, and international relations and security studies from various universities, including a Ph.D. from Macquarie University in Sydney.

Natalia Sharova

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Ms. Sharova is a Moscow-based international-security analyst and is currently working on a nuclear security project at the Hudson Institute. Previously, she worked at the British Broadcasting Corporation Moscow Bureau as a newsgathering and research assistant. Ms. Sharova is an op-ed contributor whose articles can be found at the National Interest magazine, Voice of America and the Atlantic Community. Her research interests include nuclear nonproliferation, international security and counterterrorism, US–Russia relations, nuclear energy in the Middle East, and Russia-Central Asia relations.

Jenny Town

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Jenny Town is a research associate at the US-Korea Institute at Johns Hopkins School of Advanced International Studies (SAIS). She is the managing editor and producer of “38 North” and coordinates the DPRK Economic Forum. She is also an expert reviewer for Freedom House’s Freedom in the World Index, having previously worked for their Human Rights in North Korea project. Previously, she was the communications director of Peace X Peace; the director of the College Board’s Washington (DC) Office, also managing special projects for their government relations division; and a project manager at Clarity Coverdale Fury. She is also a senior fellow of the Melton Foundation, and sits on the Board of Directors for Korean Focus. She received a B.A. from Westmar University, and a Master of International Affairs from Columbia University’s School of International and Public Affairs.

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Mr. Venneri is a masters student at the Korean Advanced Institute of Science and Technology where he is working on the development of nuclear space propulsion and various applications of nuclear technology in space. Previously, he has worked summers in the Los Alamos National Laboratory Nuclear Safeguards Division helping to develop new advanced

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Tristan Volpe is a Ph.D. candidate at the George Washington University, and a Lawrence Scholar at Lawrence Livermore National Laboratory (LLNL). His dissertation elucidates the security implications of the nuclear fuel cycle choices states make short of nuclear weapons acquisition. He received a B.A. in Political Science from the University of California, Los Angeles.