[SE2-LT-1] Intersection between Nuclear Safety and Nuclear Security

Mwita Chacha
Center for International Trade and Security

Full Summary

The focus of this panel was the intersection between nuclear safety and nuclear security. Igor Khripunov of the Center for International Trade and Security at the University of Georgia moderated the panel. The panelists included Ferenc Dalnoki-Veress of the Monterrey Institute, Trevor Findlay of the Center for International Governance Innovation at Carleton University, and Hahn Choong-Hee of South Korea's Ministry of Foreign Affairs and Trade. Roger Howsley, the director of World Institute of Nuclear Security, was also in attendance and informed the audience the work his institute is doing in advancing an intersection between nuclear safety and nuclear security. Following the moderator's introductory remarks, each panelist had several minutes to address the theme of the panel. This was then followed by the panelists discussing among themselves issues their raised and finally the other attendants at the Plenum were given the opportunity to ask the panelists questions pertaining to the intersection between nuclear safety and security.

In his opening remarks, the moderator Igor Khripunov pointed out that the intersection between nuclear safety and security is rapidly evolving. The purpose of the panel was to therefore assess where debate is on this topic and seek to find ways of bridging nuclear safety and nuclear security especially under the realm of operating nuclear facilities and infrastructure. Noting that this was not a new issue, Dr. Khripunov stated that issues of nuclear safety have been brought to the limelight particularly after nuclear disasters including Three Mile Island, Chernobyl, and recently Fukushima. These crises have enabled us to learn lessons on improving nuclear safety. However, there are yet to be any comparable disasters that bring to attention nuclear security matters. After Fukushima however, Dr. Khripunov noted that security and safety have been discussed concurrently at various international forums, although with time security has been watered down. Indeed, experts at the G8 and the European Union moved more to safety matters as security was viewed to be under the prerogative of states; although testing safety without security is meaningless.

The panel's objective therefore according to Dr. Khripunov was to try and figure out how to optimize the relationship or interface of nuclear safety and security vertically from the highest levels of international legal frameworks to national regulations and legislations to facilities' level in the development of human resources since each level has its own understanding of nuclear safety and security and enabling them to work together can facilitated a more enhanced intersection between the two concepts. This is the main challenge of the 2012 Seoul Nuclear Security Summit.

Following Dr. Khripunov's opening remarks, Ferenc Dalnoki-Veress focused on how nuclear safety and security are linked and what has been the emergency response thus far especially in the wake of the disaster in Fukushima. Fukushima demonstrated how vulnerable nuclear spent fuel ponds and reactors are to loss of cooling, which could be triggered by both intentional and unintentional events. Dr. Dalnoki-Veress noted that for this reason, there is need for an enhanced "Defense-in-Depth" approach that focuses on both nuclear safety and security with the aim of protecting critical reactor elements and securing nuclear material from sabotage. The changes Dr. Dalnoki-Veress suggested included secondary containment for spent fuel ponds, further redundancy in cooling mechanisms to decrease the risk of loss of cooling, and security of these measures to prevent tampering.

Dr. Dalnoki-Veress then addressed the issue of emergency response to nuclear disasters by noting that there is an added level of complexity for intentional events as compared to unintentional events. In an intentional event, the principle motive for first responders such as medical emergency personnel are to save lives without imposing risks to themselves. Law enforcement agents who are also first responders seeks to preserve or secure the crime scene, in this case the scene of the nuclear disaster, for investigation by forensic scientists to eventually attribute the crime to an individual or group. These two first responders however can be at odds due to their different tasks and misunderstanding surrounding radiation. This can exacerbate the accident further. Dr. Dalnoki-Veress noted that the Netherlands Forensic Institute presented an interesting paper at the Sous Sherpa Meeting in March 2011 that suggested measures to bridge the gap between first responders and nuclear forensic scientists and traditional forensic scientists to address the issue of first responders being at odds with one another. The Institute suggested training and education programs for both first responders and traditional forensic scientists so that they can be aware of the challenges nuclear forensic scientists face in getting samples in a timely way. This can enable these first responders and scientists address the key issues that follow nuclear disasters.

The Fukushima disaster continues to dominate international forums. Dr. Dalnoki-Veress noted that he had recently attended the Comprehensive Test Ban Treaty Organization Science and Technology conference where a third of the discussions were dedicated to the Fukushima

crisis. In one of the panels that Dr. Dalnoki-Veress participated in, experts from the UN Scientific Committee on the Effects of Atomic Radiation noted that government transparency in the wake of such disasters is key. The public needs to be made aware despite the uncertainty that might surround such disasters, according these experts from UNSCEAR. Provision of information to the public contributes to building public trust that is invaluable when seeking to respond to such nuclear disasters. It is unfortunate, Dr. Dalnoki-Veress noted, that Japan did not heed the lessons from past events; although it is encouraging that the Japanese government has now recognized the slow dissemination of information to the public following Fukushima. Such communication is necessary to mitigate public fear and facilitate better emergency response plans. Health agencies both national and international need to be provided with such information to better respond to these crises. Because radiation is different as the public cannot touch it or smell it, it is important to design emergency plans based on what humans are likely to do and not what they should be doing with such designs being realistic and tested. However, we should be aware that nuclear safety accidents are not similar and thus emergency response plans should be designed for multiple and unknown causes. Thus Dr. Dalnoki-Veress advocated for an "all-hazards approach" to address nuclear disasters.

Trevor Findlay then discussed the interface between safety and security in responding to nuclear disasters especially after Fukushima. Dr. Findlay also sought to address the global governance aspect in the interface between safety and security by discussing international regimes addressing these two issues and the role of the International Atomic Energy Agency in bringing these regimes together and some of the challenges of facilitating an intersection between nuclear safety and security. Dr. Findlay concluded by noting some ideas on making such an intersection possible.

Dr. Findlay began by noting that international regimes of nuclear safety and security are different and negotiated separately. Indeed, regimes that address nuclear safety issues are not only older but also more elaborate and much more established. This has been accomplished through the International Atomic Energy Agency that has managed to get states to agree on several legal instruments addressing nuclear safety matters. These include the Nuclear Safety Convention, the Joint Convention on the Safety of Spent Fuel and on the Management of Radioactive Waste, the Convention on Early Notification of Nuclear Accidents, the Convention on Assistance in case of a Nuclear Accident or Radiological Emergency. There are also several nuclear liability conventions that are relatively recent and still awaiting state approval. Nuclear safety regimes are also much more funded and have more staff dedicated to it.

Security regimes however are newer and less elaborate and include the Convention on the physical protection of nuclear material, the international convention on the suppression of nuclear terrorism, and UN Security Council Resolution 1540. One observable difference between nuclear safety and nuclear security that Dr. Findlay noted was their source of origin: on the one hand nuclear safety regimes originate from the IAEA while nuclear security regimes come from various international organizations.

These two regimes have evolved and developed differently as a result of different needs and as a response to different crises in a particular area. Dr. Findlay noted that there have been windows of opportunity that the international community has used to evolve, amend, and progress these two regimes. But these opportunities happen at different times and under different circumstances making it difficult to bring about an intersection between nuclear safety and nuclear security. These two regimes also come from different international agencies that contribute to the challenge of finding an intersection between the two.

One thing that these two regimes have in common is the role of the IAEA. According to Dr. Findlay, the IAEA's mandate only mentions safeguards and safety provisions but over the years it has evolved to include security in its mandate. However, IAEA's programs on safety for states are more elaborate than programs on security. Indeed, states have yet to decide if what IAEA proposes on security matters is acceptable to them. The IAEA's security program is based on a 3-year rolling plan, but this is limited when compared to what the IAEA does in the nuclear safety realm.

Dr. Findlay then summarized some of the challenges in looking at an intersection between nuclear safety and nuclear security. These include the attitude of states towards these two areas. States treat some elements of safety and security confidential and have sovereignty concerns especially on security issues. Secondly, there is a north-south divide separating developed and developing states. Developing states tend to perceive nuclear security matters to be a western imposition on them. Third, the IAEA suffers from bureaucratic stovepiping of safety and security issues. Information on both areas from the IAEA is not readily available due to this stovepiping. Fourth, international stakeholders of these two areas are also different. Industries and regulators dominate nuclear safety while law enforcement agencies such as Interpol and state authorities dominate nuclear security. Thus bringing these two together is made difficult.

Dr. Findlay concluded with some ideas on how to proceed to facilitate an intersection between safety and security. First, raising awareness through talk like the current Asan Plenum were crucial to bring about a better understanding of the need for such an intersection. Second, high level meetings such as the 2012 Nuclear Security Summit that South Korea will

be hosting are also necessary and crucial in raising interest on bridging the gap between nuclear safety and security. Third, the IAEA should seek to imbed the issue of nuclear security and safety in its programs and should seek to divulge more information to states. Fourth, the nuclear security regime needs to emulate aspects of the nuclear safety regime and make the two look more like each other in order to facilitate an interface. Dr. Findlay concluded by saying that much needs to be done at the international level to facilitate this interface.

In a brief discussion between Dr. Findlay and the moderator, the issue of whether safety standards that the G8 had previously discussed was raised with Dr. Findlay noting that making these standards mandatory would be helpful but difficult to attain. Additionally, the two briefly discussed combining safety and security issues to newcomers of nuclear energy and noted that this could be beneficial in facilitating an interface between nuclear safety and nuclear security in the future.

The next panelist, Hahn Choog-hee, discussed the agenda of the forthcoming Nuclear Security Summit that South Korea will be hosting in 2012. Mr. Hahn's comments addressed the interface between nuclear safety and security in the context of the 2012 summit. In the 2010 summit in Washington, there was little discussion on radiological security, although there was some mention of it in the context of non-state actors. Since Fukushima however, perception on nuclear security has substantially changed. According to Mr. Hahn, the Fukushima disaster demonstrated that sabotage through acquiring fissile materials and causing nuclear power plants to malfunction seemed feasible to terrorist groups. Indeed, such groups are able to gain information from various public sources on nuclear technology in order to widen their terror activities in the future.

Mr. Hahn also addressed some differences between the concepts of nuclear safety and nuclear security and areas that have inhibited the interface between these two concepts. One theme that the 2012 Summit seeks to address that Mr. Hahn observed was nuclear/radiological terrorism by non-state actors in order to bring about a more integrated and coordinated approach to these two concepts.

The role of the IAEA was also tackled during Mr. Hahn's comments. Mr. Hahn noted that while there had been previous discussions on the interface between safety and security, the Fukushima disaster demonstrated the need for further IAEA review on nuclear safety and security in order to establish a more important interface. This can be attained both before and after the Seoul Summit.

Another important point Mr. Hahn raised that the 2012 Summit would cover was addressing the nuclear renaissance and the need to show the public that nuclear safety and security systems could be established as more states seek nuclear technology. The summit would lay the groundwork that will help facilitate such an interface while also discussing nuclear security issues including nuclear terrorism.

Following Mr. Hahn's remarks, the panelists discussed various issues that they had raised that included the need for guidelines on what can be considered confidential in the eyes of states if an interface between safety and security is to be attained. It was noted that handling information on nuclear programs has been challenging. While acknowledging the need to give some information to the public, the panelists noted the need to withhold certain information for the sake of security.

Various members of the audience also contributed to the debate by noting the difficulty in attaining an interface between nuclear safety and nuclear security. Dr. Roger Howsley of the World Institute of Nuclear Security noted the work of his institute and how it has been seeking to facilitate such an interface through industrial outreach. Dr. Howsley noted that South Korea as hosts of the 2012 Nuclear Security Summit are well-positioned to further discussions on the challenges and need for an intersection of security and safety. He reiterated the need for developing practical guidelines in addressing nuclear safety and security and observed the critical role that the Fukushima crisis can play in serving as a jumping board on the challenges of intersecting nuclear safety and security. Dr. Howsley noted that outreach and indeed an interface between safety and security could not be attained through the current bureaucratic setting of the IAEA, but approaching actual industrial practitioners within the nuclear technology sector.

In his closing remarks, Dr. Khripunov evaluated the interface between safety and security when dealing with multiple effect unintentional and intentional acts. Dr. Khripunov focused on three scenarios of multiple effect disasters whose consequences are beyond the existing nuclear safety and security practices and that would need a new conceptual and organizational approach involving an integrated management of nuclear safety and security. These scenarios included accidents triggered by natural disasters such as Fukushima, intentional man-made accidents by individuals with malevolent intent, and a combination of the previous two scenarios. In Dr. Khripunov's words, there is need for further understanding the interaction between safety and security and their implications for such scenarios. There is need for a consolidated risk assessment methodology in order to address these multiple effect scenarios. There is also need for training on flexible and fast ways of addressing emergencies resulting from these scenarios for both safety and security staff. For an interface between

safety and security to be successful there is need to ensure that safety and security culture coexist and reinforce each other.

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