

Study on Enhancing nuclear security cooperation in Northeast Asia

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1. Introduction

Each country carries the responsibility for nuclear security [1]. However, practically the results of nuclear security event affect many countries as the Fukushima nuclear disaster shows. Therefore, regional cooperation is needed in regards to response of nuclear security event.

During three nuclear security summits, various ways of establishing global nuclear security governance were discussed by many think-tanks. Regional and global cooperation in nuclear security was urged. Nevertheless, it is hard to seek a successful example of regional cooperation in nuclear security, with the exception of EURATOM [2].

Northeast Asia which includes China, Russia, Japan, ROK and, DPRK has many nuclear issues. For example, the concerns of the international community were raised when the DPRK has conducted three nuclear tests. Countries in this region also possess many nuclear power plants and materials. However, there has been no attempt at creating a community or organization for multinational security in this region [3].

In this paper, we discuss various ways of enhancing nuclear security cooperation in Northeast Asia. We begin with an examination of current global, regional and national nuclear security cooperation efforts. We then discuss directions and strategies for nuclear security cooperation in Northeast Asia, and offer some detailed cooperation agendas to be considers.

2. Efforts for Nuclear Security Cooperation

2.1 Global efforts for nuclear security cooperation

In spite of decades of discussions, an international nuclear security regime is only at a beginning stage when compared with nonproliferation governance. This delay resulted from the belief that nuclear security was the sole responsibility of an individual country.

Discussion on nuclear security cooperation was raised in the 1970s. With the expansion of the nuclear industry, the international transportation of nuclear materials increased. With the collapse of Soviet Union, preventing the illicit trafficking of its nuclear materials became paramount in 1990s. After a 2010 nuclear security summit, a concept of global nuclear security governance was raised and discussed. These events led to the creation of several global nuclear security regimes as follows [2].

Table I: Global nuclear security regime and main points

Name and year	Main points
INFCIRC/225 (1975~)	Nuclear security recommendations of IAEA (non-binding)
GICNT (2005)	Multinational partnership program for strengthening nuclear security response (non-binding)
CPPNM (1987)	Implementing security measures for the transportation of nuclear materials (legal-binding, amended in 2005)
ICSANT (2005)	Mandatory penalty for nuclear terrorism (legal-binding)
UNSCR 1540 (2004)	Implementing measures for export control, economic sanctions, etc (legal-binding)
G8 GP (2002)	Elimination and protection of nuclear materials from the former Soviet Union (non-binding)

Currently, nuclear security summits provide a chance to cooperate on and discuss nuclear security issues. Through these summits, national and multinational commitments (“house gifts” and “gift baskets”), such as HEU minimization, separated plutonium repatriation, and regulatory framework updates can be put forth [4].

2.2 Regional efforts for nuclear security cooperation

There are many nuclear issues in the Northeast Asia region. For example, DPRK has tried to acquire plutonium and Highly Enriched Uranium (HEU). Other issues include the enforcement of bands against nuclear testing. Japan was directly affected by the development of nuclear technology. This was seen in the nuclear bombing of Hiroshima and Nagasaki, as well as the accident at Fukushima. China has arranged more than a hundred nuclear bombs and has plans to operate about a hundred nuclear power plants by 2030 [5].

There are several attempts for cooperative actions that can take place in building up a nuclear weapons free zone in Northeast Asia [6]. In comparison, no action for cooperation on nuclear security has taken place yet. However, cooperation could take place under existing communities such as the APSN and the FNCA.

The APSN (Asia-Pacific Safeguards Network) was launched in 2009 with the aim of sharing nuclear safeguards information, knowledge, and practical experiences. There are five working groups employed to coordinate APSN programs and other activities, including nuclear security. The nuclear security working group started in 2013; and its objective is to address synergies between safeguards and nuclear security.

The FNCA (Forum for Nuclear Cooperation in Asia) was launched in 1990 with the aim of promoting the peaceful use of nuclear energy and joint research. In 2010 the organization oversaw 10 research projects, including those in the area of nuclear security and safeguards.

2.3 ROK's efforts for nuclear security cooperation

After the ROK started its nuclear energy program, it never tried to acquire or produce HEU and plutonium for a weapons program. And the ROK's terrorism threat level is quite low. Nevertheless the Korean government has tried to enhance its nuclear security abilities for various reasons, including the ROK's geopolitical situation and diplomatic relations with developed and developing countries.

The ROK mainly uses the nuclear energy as an energy source for producing electricity. On the other hand, nuclear strategies of the DPRK are quite political. The North Korean government uses nuclear weapons testing as a negotiating tool with other world powers [7]. Therefore the South Korean government's policy is focused on nuclear security in response the North's nuclear strategy.

The ROK is a middle power. Middle power nations, such as Korea, could act as a buffer between nations that are in conflict. They could act as arbitrators or provide communications between two belligerents. Therefore, as a middle power South Korean government will focus its efforts in the area of diplomacy and nuclear security [8, 9]. The ROK had already demonstrated its abilities at the Seoul nuclear security summit in its role as host country. It organized discussions on issues such as radioactive source security and the safety and security interfaces at nuclear facilities. Such interest in these matters helps South Korea to strengthen its own performance in nuclear security.

Currently there are about 30 power plants that are either operational or under construction in the ROK. Therefore South Korea needs to maintain its nuclear security capability through cooperation with advanced countries and international organizations.

For these reasons, the ROK actively participates in global nuclear security activities by:

- Hosting events: Seoul nuclear security summit and its related events, meetings of GICNT, APSN, FNCA, etc.

- Ratifying international conventions: Amendment to the CPPNM, ICSANT
- Establishing organizations for nuclear security: Korea Nuclear Policy Society, Asan Institute for Policy Studies (NGO), CNSP (Center for Nuclear Strategy and Policy in KINAC, TSO), INSA (International Nuclear Nonproliferation and Security Academy in KINAC, TSO)
- Holding position in international organizations: GICNT IAG coordinator (2013~2015), IAEA SAGSI member (2012~), IAEA AdSec member (2013~)

3. Nuclear Security Cooperation in Northeast Asia

As mentioned before, Northeast Asia has many nuclear issues, facilities and materials, but still there has yet to be any practical discussion on nuclear security cooperation. In order to establish nuclear security cooperation in Northeast Asia, concern must be raised in the countries of this region. To do that, an agenda should be presented that includes discussion on and cooperation in the following areas:

- Joint R&D: Methodologies, Test-bed
- Education & Training
- Joint response: Transportation of Nuclear and radiological materials
- Information sharing: Forensics Library

When we seek topics for cooperation on nuclear security, R&D and education and training is proper one for beginning stage of cooperation. Many methodologies have already been published by the IAEA, such as the nuclear security series. Sharing good practices with other countries would be an ideal beginning for cooperation. Such good practices could include the implementation of a nuclear security culture, education programs in nuclear security. Some countries such as the ROK, Japan and Russia have test facilities for nuclear security activities. Such facilities could be used for joint R&D projects with other countries. One example for such a joint venture could be the development of radiation detectors, border monitoring equipment, and intrusion detectors.

Nuclear and radioactive materials are carried by land, over water and in the air in many countries of Northeast Asia. According to IAEA recommendations, a shipper should ensure that the transport arrangements are made in accordance with the nuclear security regulations of the receiving country, as well as those of other countries which are part of the transit route before commencing shipment [1]. This doesn't guarantee the most effective and strong response measures, because nuclear security capacity is dissimilar in each country. Therefore, there is a need to create a system for a joint response in Northeast Asia countries to deal with a possible nuclear security event during transportation.

Nuclear forensics is the analysis of illicit nuclear or radioactive materials that could provide evidence for

determining the point of its origin and transit. Nuclear forensics also includes library searches used to identify materials. Many international nuclear forensics laboratories are already cooperating with various organizations in developing common technical strategies and libraries [10]. However, the analysis techniques and data mining methods of Northeast Asia countries are still at the early stage of development [11].

Especially, a sharing of nuclear forensic library has to be discussed with the countries because comparing the technical analysis results with existing library is essential for forensics. Therefore, we need to discuss establishing a common library that stores information on nuclear and radioactive materials in this region.

4. Conclusions

Northeast Asia countries have tried to cooperate in many areas such as energy, environment, economy, and policy. However, nuclear security issues have not been discussed seriously. We need to start cooperating on nuclear security issues, because a nuclear security event may affect several countries. One country may not be able to respond to such an event independently.

In order to gain cooperate in nuclear security, we have to be able to suggest pertinent agendas to Northeast Asia countries. R&D, education and training of nuclear security may be a good suggestion for starting cooperation. And more practical and detailed agendas such as joint response and information sharing may be suggested for cooperation strengthening.

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