ROK's Contribution to Global Nuclear Nonproliferation

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INTRODUCTION

The unilateral declaration of the Republic of Korea (ROK) for its denuclearization in November 1991 was followed by the joint declaration of the two Koreas for denuclearization of the Korean peninsula on Dec. 31, 1991, which came into force on Feb. 19, 1992. According to the joint declaration, South and North Korea shall not test, manufacture, produce, receive, possess, store, deploy or use nuclear weapons, and shall use nuclear energy solely for peaceful purposes.

The testing of nuclear bombs by North Korea in 2006 rendered the joint declaration meaningless. However, its basic principle was reaffirmed by the government of South Korea in 2004 under the name of a four-point statement reassuring the international community of its commitment to a nuclear-free policy on the Korean peninsula: 1) Not to pursue a nuclear program for military purposes, 2) To keep its nuclear nonproliferation policy intact and transparent, 3) To abide by related international regulations, and 4) To expand the scope of ``peaceful" nuclear activities, such as the development of atomic power plants.[1]

The ROK ratified the Additional Protocol (AP) on April 9, 2004, which entered into force on April 19, 2004. The ROK government made its initial declaration to the International Atomic Energy Agency (IAEA) according to the entry into force of the AP, which covered all nuclear materials and activities with its facilities, including the nuclear fuel cycle related R&D activities authorized or controlled by the State, which do not involve nuclear material. Actually, the ROK is implementing the Integrated Safeguards (IS) system of the IAEA of July 1, 2008, after acquiring the Broader Conclusion (BC) from the Board of Governors of the Agency in June 2008. This coherent nuclear policy toward transparency and nonproliferation has marked the main feature of the ROK in connection with its nuclear energy uses.

In contrast to the full efforts of South Korea towards nuclear nonproliferation, North Korea has posed substantive dangers of nuclear proliferation to the international community. In addition, the danger of the proliferation of weapons of mass

[1] . In a news conference jointly held on Sep. 2004 by three ministers of the Ministry of Foreign Affairs and Trade, Ministry of Unification and Ministry of Science &Technology.

destruction (WMD) reached its climax with the space launch vehicle test by North Korea in April 2009. While South Korea is playing its role as a leading economic country in the world in contributing to global nuclear nonproliferation, North Korea is seeking to become a main nuclear and WMD-proliferation country at the cost of the absolute poverty of its people and its isolation from international society.[2]

The main aim of this paper is to set up criteria for how to evaluate a country's contribution to global nuclear nonproliferation. These criteria will be established and applied to the South Korean case.

To attain the goal of this paper, I would like to evaluate a country's efforts for nuclear nonproliferation in an institutional as well as realistic way, which constitutes a hard methodology for understanding international relations. Such an institutional and realistic approach for nuclear nonproliferation may allow us to utilize objective data and a general framework to evaluate a country's action or policy. The issue of global nuclear nonproliferation inherently assumes international relations among nations, whether cooperative or conflictive.[3] The institutional approach for international relations is regarded as idealistic, while the realistic approach considers international relations as an extension of the law of the jungle. This latter definition posits hegemonic powers as the main impetus in international relations.

In part I, we will present criteria for evaluating how a country contributes to global nuclear nonproliferation. The criteria will be drawn from common points in the efforts made by international society for global nuclear nonproliferation through institutional and realistic ways. Apart from the institutional approach, we will examine the social and economic aspects contributing to nuclear nonproliferation. In part II, the nuclear nonproliferation activities of South Korea will be described in detail. We can match the common points drawn in the general framework to basic factors of contribution to global nuclear nonproliferation. In doing so, we can apply the criteria set in Chapter I to the case of South Korea.

PART I: EVALUATION CRITERIA ON A COUNTRY'S CONTRIBUTION TO GLOBAL NUCLEAR NONPROLIFERATION

[2] See; Dr. Byung-Koo Kim, *Peaceful and Military Nuclear Contrasts in the Korean Peninsula*, Presented at the 58th Pugwash Conference held in Hague, Netherland in April 2009.

[3] See on the interactions between nuclear nonproliferation and international relations; Austin Ranney, *An Introduction to Political Science*, Six Edition(Translated into Korean Edition), (Seoul: Eulyoo Publishing, 1994), pp. 612-634, and also on the methodological perspectives how to approach international relations, Hyun-Seok Yu, *Understanding International Relations – Issues in Global Village*(Korean Edition), (Seoul: Hanul Academy, 2001), pp. 12-18.

In this section, the diverse efforts of international society towards global nuclear nonproliferation will be touched upon. The international efforts for nuclear nonproliferation have been embodied in treaties, organizations, agreements and associations, etc. After seeing in brief how those efforts have been transformed into institutional entities, we will extract the significant and common points, which can be used as general factors in connection with contributions to global nuclear nonproliferation. Those institutional efforts can originate from international organizations as well as from predominant countries, in terms of hegemonic power. The common points, which contribute to strengthening the goals of global nuclear nonproliferation, will be regarded as criteria for evaluating how a country contributes to global nuclear nonproliferation. The five common points are membership, cooperation, domestic institutionalization, coherence and globalization and democratization.

The Second World War gave birth to the United Nations (UN). The US and the United Kingdom initiated an institutional approach to put an end to war as well as to reorganize international relations, the principles of which were clearly manifested through the Atlantic Charter in Aug. 1941, and developed into the naissance of the UN in 1945.

One-hundred ninety-two states participate as members of the UN as of April 2009. Among the many works of the UN, the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is a landmark international treaty whose objective is to prevent the spread of nuclear weapons and weapons technology, to promote cooperation in the peaceful uses of nuclear energy and to fortify the goal of global nuclear nonproliferation.[4]

To attain the goal of nuclear nonproliferation, the NPT establishes a safeguards system under the oversight of the IAEA. Safeguards are used to verify compliance with the Treaty through inspections conducted by the IAEA. The provision of the NPT stipulates a review of the NPT's operation every 5 years,[5] which was reaffirmed by the member States at the 1995 NPT review and extension conference according to Article X, paragraph 2 of the Treaty.

The NPT has played a decisive role as a cornerstone of global nuclear nonproliferation from its beginning. Although it has not thoroughly kept countries from obtaining nuclear weapons, it has served as a seawall against the waves of nuclear

[4] http://www.un.org; "The Treaty represents the only binding commitment in a multilateral treaty to the goal of disarmament by the nuclear-weapon States. Opened for signature in 1968, the Treaty entered into force in 1970. On 11 May 1995, the Treaty was extended indefinitely. A total of 190 parties have joined the Treaty, including the five nuclear-weapon States. More countries have ratified the NPT than any other arms limitation and disarmament agreement, a testament to the Treaty's significance" (Information Searched on 090505).

[5] Article VIII, paragraph 3 of the NPT.

proliferation.

The Comprehensive Nuclear Test Ban Treaty (CTBT) is also an important institutional mechanism against nuclear proliferation under the umbrella of the UN. The General Assembly of the UN adopted the CTBT on September 10, 1996. Opened for signature in September 1996, the Treaty is still waiting to enter into force. The ROK ratified the Treaty in September 1999. Among 180 member states, 148 have ratified the Treaty.[6] However, until the 44 depositary countries, including North Korea, Iran and the US, ratify the Treaty, the preparatory commission for the Treaty organization (CTBTO) will continue its preparatory works, particularly the building of a database and its network by way of the international monitoring system (IMS). A series of working group meetings related to the preparation of the manual for on-site inspections (OSI) are actually underway among member states. The ROK government is actively participating in the preparatory works of the CTBTO in sharing necessary information in the field of IMS.

The IAEA was created as an extension of UN activities and also as a US initiative for global nuclear nonproliferation. Former US President Dwight D. Eisenhower, delivered his "Atom's for Peace" address to the UN General Assembly on Dec. 8, 1953. The three nuclear countries--the US, United Kingdom and Soviet Union-- found a common interest in nuclear nonproliferation strategy in the 1950s. Starting from the realist perspective in international relations, the three nuclear countries took the initiative in institutionalizing global nuclear nonproliferation mechanisms.

The IAEA statute outlined the three pillars of the Agency's work – nuclear verification and security, safety, and technology transfer for the peaceful uses of nuclear power.[7] The key element of IAEA activities must be verification. The basic verification measure used by the Agency is nuclear material accountancy. Containment and surveillance (C/S) techniques, being complementary to nuclear material accountancy techniques, are applied in order to maintain continuity of the knowledge gained through IAEA verification.[8]

Apart from the technological and technical aspect, the IAEA safeguards system has changed in an evolutionary manner from the end of the 1950s through the 1990s, corresponding to the development of nuclear technology and industry as well as to political changes in international society. In the 1950s, the safeguards system was applied to individual items of the nuclear

[6] http://www.ctbto.org (Information Searched on 090505).

[7] See: David Fisher, Adapted excerpt from <*History of the IAEA: The First Forty Years*>, in http://www.iaea.org/About/history.html(Information Searched on 090505).

[8] IAEA, *Safeguards Techniques and Equipment*, International Nuclear Verification Series, No. 1(Revised), 2003 edition, Vienna, 2003.

power industry and to small-scale R&D reactors. Initially titled INFCIRC/26, it was later renamed INFCIRC/66/Rev.2. The INFCIRC/153 safeguards system was activated to allow the entering into force of the NPT in 1970, The Agency gradually extended the scope of safeguards application to all facilities related to nuclear fuel cycle technology. The evolution of the Agency has been closely related to challenges posed by several proliferation countries. The limit of the IAEA INFCIRC/153 safeguards system was essentially the lack of "completeness", which resulted in the creation of INFCIRC/540, the Additional Protocol, in 1997.[9]

The thorough application of the Additional Protocol (INFCIRC/540) to the comprehensive safeguards system (INFCIRC/153) by a member State of the IAEA is the most important basic bottom line of the nuclear transparency and nonproliferation goal.

The export controls in association with global nuclear nonproliferation have been institutionalized through US initiatives. During the Second World War, an embargo on uranium exports was implemented by the US government, and was later stipulated in 1946 in the Law of Atomic Energy. The global efforts for export control were made through the Zangger Committee (ZC) in 1974 and the announcement of guidelines for the Nuclear Suppliers Group (NSG) in 1978. In the context of economic and commercial interdependence deepening in international relations, export and import control regimes become more important to global nuclear nonproliferation than ever.

Regarding the physical protection of nuclear material and facilities, the international community signed the Convention on the Physical Protection of Nuclear Material (CPPNM) on March 3, 1980. The convention is a unique regime, being internationally legally binding and undertaking the responsibility of the physical protection of nuclear material. Actually, the convention is under amendment, which makes it "legally binding for States Parties to protect nuclear facilities and material in peaceful domestic use, storage as well as transport."[10] The Global Initiative to Combat Nuclear Terrorism (GICNT), initiated by the US and Russia, enjoys a high premium in global nuclear nonproliferation efforts.

We have reviewed the diverse efforts of international society for global nuclear nonproliferation in terms of being institutional and realistic. We can extract significant and common points from such global efforts, which can be used as general factors in evaluating how to contribute to global nuclear nonproliferation.

The first point is whether a country participates as a member in each global nuclear nonproliferation regime or not. This aspect could be termed **membership**. It shows the fundamental attitudes or policies of a country towards the institutional regime. If more

[9] IAEA, *The Evolution of IAEA Safeguards*, International Nuclear Verification Series, No. 2, 1999. 5 Edition(Korean language version KAERI/TS-80/99), pp. 7-25.

[10] http://iaea.org/Publications/Documents/Conventions/cppnm.html (Information Searched on 090506).

members participate in global nuclear nonproliferation efforts, more efficient and effective results in connection with global nuclear nonproliferation can be attained.

The second point considers how a country cooperates with the initiating group or executing body of the regime. This could be summarized as **cooperation**. The level of cooperation shows how a country commits itself to the goals of the regime. There are many types of cooperation in global nuclear nonproliferation regimes. One can see a diverse spectrum of cooperation in global nuclear nonproliferation, from minimum fulfillment of obligations to highly integrated and comprehensive cooperation.

The third point involves how a country applies the global nuclear nonproliferation regime on the domestic level. This can be summarized as **domestic institutionalization**. If global values can take root in the domestic dimension, the goal of the regime can be attained more efficiently and effectively. It is a very important factor in evaluating the contribution of a country.

The fourth factor is whether a country maintains coherence in its implementation of global nuclear nonproliferation regimes. We can summarize this aspect as **coherence**.

The fifth point is how a country develops in terms of globalization and democratization. The aspect can be summarized as **globalization and democratization**. If a country is more interdependent with international society and global norms in economic and social aspects, the country may develop a more transparent and nonproliferation-oriented approach toward nuclear energy uses.

These five aspects constitute the main criteria for how to evaluate a country's contribution to global nuclear nonproliferation. In the next section, the diverse activities of the ROK corresponding to global nuclear nonproliferation will be described, in which the five points will be applied to the Korean case.

PART II: ROK'S ACTIVITIES RELATED TO GLOBAL NUCLEAR NONPROLIFERATION

The ROK government has participated actively with the NPT since joining the regime in 1975. The Korean position towards nuclear nonproliferation has been clearly expressed through the meetings and conferences of the Treaty. In 2008, Ambassador Oh Joon stressed 4 points with the aim of strengthening the NPT regime in international society: 1) The need to universalize the comprehensive safeguards agreement and the Additional Protocol as the standard of IAEA safeguards and a condition of nuclear supply, 2) Attachment of importance to peaceful uses of nuclear power, 3) Conviction in the goal of nuclear disarmament in realizing a nuclear-arms free world, including early entry into force of the Comprehensive Nuclear-Test-Ban-Treaty (CTBT) and early commencement of negotiations for a Fissile

Material Cut-off Treaty (FMCT), 4) Universal adherence to the NPT as essential for the viability of the NPT.[11]

The prime minister of the ROK stressed the necessity of strengthening the disarmament and nonproliferation regimes, including the NPT. In connection with this posture, he regarded the North Korean nuclear issue as a threat to Northeast Asian security and also as a factor seriously undermining the foundation of the NPT regime. He urged North Korea to attend the Six Party Talks sincerely and to abide by its promise of disablement of its nuclear program.[12] The South Korean government has participated actively in the six party talks in terms of providing financial support, and has strongly engaged in for confidence-building measures to resolve the North Korean nuclear issue. Even though South Korea is the direct target of North Korean WMD threats, it has maintained its coherent posture of aiding North Korea's economic development on the condition that North Korea abandon its nuclear bomb program.[13]

The Korean government has promoted NPT related issues in conjunction with the UN under the title of the "Joint conference of the UN and the ROK on Disarmament and Non-proliferation Issues." The joint conference has also been called the "Jeju process."[14] The most recent conference was held Nov. 24 through 26, 2008, the 7th conference. The conference is devoted to challenges facing the NPT, and has promoted the importance of global efforts for nuclear nonproliferation both domestically and internationally.

Concerning the CTBT, the Korean government ratified the treaty in September 1999, and has actively participated in the CTBTO and its monitoring regimes. The Korean Seismic Research Station (KSRS), located at Wonju in South Korea, was certified on Oct. 31, 2006, as the Primary Seismic Station of the International Monitoring System (IMS) of the CTBTO. The KSRS is the second largest seismic station in the world, covering an area of approximately 1,550 Km^2. The KSRS was originally installed by the US in 1966 at its military base in South Korea.

The ROK and the US are engaged in negotiations regarding the transfer of KSRS to the Korean government, which is currently jointly maintained by the US Air Force Technical Applications Center (AFTAC) and the Korea Institute of Geoscience and Mineral Resources (KIGAM). KSRS has provided invaluable information to both the ROK and US government as well as to the international community. The information is based on timely, reliable and accurate data, which is critical for decision makers.[15]

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[11] Ambassador Oh Joon (Deputy Minister in Multilateral, Global and Legal Affairs in the Ministry of Foreign Affairs & Trade of the ROK), Statement of the ROK, The Second Preparatory Committee for the 2010 Review Conference of the Parties to the NPT, (April 28, 2008), Geneva (General Debate).

[12] Statement by H.E. Mr. Han Seung-soo, Prime Minister of the ROK, General Debate of the 63rd Session of the UN General Assembly(Sep. 25, 2008), New York.

[13] http://www.unikorea.go.kr(Information Searched on 090509).

[14] Jeju is the Island of the ROK, located at the southern part of Korean peninsula.

[15] Major Sean Jeddrie, *KSRS: AFTAC, KIGAM and the Way Ahead*, 6th International Seminar on Seismic Tomography of Far-East Asia and Related Works, Oct. 8, 2007, Daejeon, Korea.

The Korean government has strongly participated in two main organs of the CTBTO. One is the plenary of states signatories, which consists of Working Group A (on budgetary and administrative matters) and B (on verification issues, including On-Site Inspection (OSI) Operation Manual text discussion), and the Advisory Group. The other is the Provisional Technical Secretariat (PTS).

In Nov. 2008, the 14th On-Site Inspection (OSI) Introductory Course (IC-14) was held at Daejeon, South Korea. In the context of three neighboring countries (China, Russia and the US) having nuclear weapons and a fourth having tested an atomic bomb, South Korea strongly showed its willingness and efforts to have the CTBT enter into force as soon as possible.

The ROK currently operates 20 nuclear power reactors, which supply about 40% of South Korea's total electricity production. Six nuclear reactors are under construction, while two reactors are under preparation for construction. The new ROK government announced in 2008 that South Korea would build 10 more nuclear reactors by 2030, which could bring the total number up to 38 by 2030.

The ROK government ratified the Additional Protocol (AP) on April 9, 2004, which entered into force on April 19, 2004. After the entry into force of the AP, the ROK implemented the Integrated Safeguards (IS) system of the IAEA after acquiring the Broader Conclusion (BC) from the Board of Governors of the Agency in June 2008. As we have seen above, the ROK has cooperated closely with the IAEA as well as with international society to strengthen safeguards technologies and other nuclear control activities. The ROK has applied them to the Korea State System of Accounting for and Control of Nuclear Material (SSAC) and its nuclear control system.

Prior to entering into the Additional Protocol, the ROK made a MOU with the Agency to apply Enhanced Cooperation on safeguards implementation at Light Water Reactors (LWRs) in the ROK in 2001. The prerequisite for the IAEA in concluding the Enhanced Cooperation in conjunction with a member State is to assure efficiency and effectiveness in implementing its safeguards measures. The Enhanced Cooperation applied to the ROK was based on the highly developed level of remote monitoring systems (RMS), including the Virtual Private Network (VPN) system in Korea. These highly developed technologies and supporting systems allow the Agency to assure the continuity of knowledge (COK) about concerned facilities. In 2002, the IAEA saved approximately 40 Person-Days-Inspections (PDIs) of interim inspections and pre-Physical Inventory Verification (PIV) inspections in connection with the ROK under LWR Enhanced Cooperation.[16]

[16] Ministry of Science and Technology(MOST) & KAERI, *12th IAEA-ROK Joint Review Meeting on*

The IAEA safeguards system has played the primary role of watchdog in association with the NPT. To maximize effectiveness and efficiency of the Agency's verification system, the Agency has tried to induce cooperation from every Member State. Article 3 and 9 in the INFCIRC/153 of the Agency clarifies the necessity of this kind of cooperation.[17] This framework of cooperation constitutes the main principle of the Member State Support Programmes (MSSP). The activities of MSSP demonstrate a State's commitment to the peaceful use of nuclear material. They facilitate the provision of assurance by the Agency to the international community that a State is meeting its nonproliferation commitments, enhancing the effectiveness of the SSAC.

The ROK is one of the most active members of the MSSP in terms of the number of tasks by State, excluding those of nuclear countries.[18] The main tasks performed by the ROK are as follows: Implementation of RM at LWR in the ROK, Implementation of VPN for RM, Gamma Ray and Neutron Remote Interrogation of Irradiated Fuel Stored in Canisters, Development of Data Review Software based on Neutral Networks, development of an Optical Fiber Radiation Probe System for Spent Fuel Verification (OFPS), etc. The main tasks in progress are research on the Impact of Retrieval of Spent Fuel on Radiation Traces Taken on Dry Sent Fuel, Guidance for Designers and Operators on Design Features and Measures to Facilitate the Implementation of Safeguards at Future Nuclear Fuel Cycle Facilities, Support for Development of a Safeguards Approach for Pyro-processing and Support to Regional Technical Meeting on AP Implementation in Asia and the Pacific Region, etc.

The IAEA approved the instrument of OFPS, used for its application for PIV at On-Load Reactors (CANDU), as a Category A type of instrument of the Agency, which could be applied to another country's CANDU type reactors. The ROK donated 1 set of OFPS to the Agency as an extension of MSSP activities in 2008.

The Ministry of Education, Science and Technology (MEST) of the ROK has maintained an annual meeting with the US Department of Energy (DOE) since 1995 under the umbrella of the Permanent Coordinating Group (PCG) for the implementation of the Arrangement, which was concluded between the MEST and DOE in 1994. The arrangement calls for cooperation in research and development concerning nuclear

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Safeguards Implementation, Report on the 12th JRM held in Vienna, Dec. 15 through 18, 2003. (Daejeon: KAERI, 2003), p. 32.

[17] The article 9 of the INFCIRC/153 is saying that "The Agreement should provide that the State shall take the necessary steps to ensure that Agency inspectors can effectively discharge their functions under the Agreement. <….>.

[18] The latest meeting of the Coordinators' Meeting of the MSSP, held on April 8-11, 2008 in Vienna by the Support Programme Coordination(SPC) of the IAEA showed its task statistics according to task performed.

material control, accountancy, verification, physical protection, and advanced containment and surveillance technologies for international safeguards application. Both parties, collecting the R&D programs requested by their own R&D institutes respectively, have discussed in the annual PCG meeting how to set them under the form of an action sheet. These efforts have contributed considerably towards upgrading safeguards activities in both countries, particularly in the case of the Korean SSAC. Reflecting the development of the SSAC in the ROK, South Korea has been spreading its know-how and experiences to Asia-Pacific regional countries in conjunction with the USA and the IAEA as a part of outreach programs.[19]

The ROK is actively participating in the new safeguards-related initiative, proposed by the USA, titled Next Generation Safeguards Initiative (NGSI). The initiative features were showcased via a workshop, held in Washington, DC, in September 2008 by the National Nuclear Security Administration (NNSA) of the DOE.

The Chairman's Summary Statement of the international meeting on the NGSI in 2008 indicated safeguards compliance in relation to North Korea, Iran and Syria as the most urgent concern of the international nonproliferation regime. As a more general concern, it discussed the IAEA's ability to detect undeclared nuclear activities and sound the alarm early enough to respond promptly. In this context, the statement considered that the safeguards system could be strengthened through reinforcing three aspects: technology, infrastructure and human capital (resources) development.[20]

Recognizing the importance of objectives and of a global approach for nuclear nonproliferation, the ROK proposed an action sheet in regards to the NGSI to the US on Oct. 24, 2008, at the 11th PCG meeting held in Seoul. The proposal of the action sheet on human resources development in connection with the NGSI is under mutual discussion for its signature as an official action sheet in the next PCG meeting.

In the regional dimension, South Korea has led a voluntary measure among regional countries to establish an association of nuclear safeguards. The idea for establishing an Asia-Pacific Safeguards Association (APSA) is to assist safeguard bodies in the Asia-Pacific region to develop their capabilities, by promoting cooperation and exchange of information on safeguards in a concerted effort to improve the quality, effectiveness and efficiency of safeguards implementation in the region. The first meeting of senior

[19] The representative outreach program is to promote the Additional Protocol Implementation to the Asia-Pacific Region with the USA and the Agency. One of its recent meetings is the third regional technical meeting on AP implementation in Asia and the Pacific Region, held in Daejeon, Korea on May 11-15, 2009. The 3rd meeting was organized by the IAEA and the MEST and hosted by the Korea Institute of Nuclear Nonproliferation and Control(KINAC).

[20] Adam Scheinman, Chairman's Summary Statement, International Meeting on the NGSI(Sept. 11-12, 2008, Washington, DC).

officials to discuss the establishment of such an association was held in Sydney in June 2007, hosted by the Australian Safeguards and Non-proliferation Office (ASNO) and the Nuclear Energy Control Board (BAPETEN) of Indonesia. The first meeting aimed to share general opinions on principles and ways of cooperation among regional countries.

South Korea strongly supported the idea of APSA, and proposed holding the 2nd meeting in Seoul.[21] The 2nd meeting of senior nuclear safeguards officials to discuss the establishment of APSA was held April 15-16, 2009, in Seoul, hosted by KINAC and ASNO. The MEST participated actively in discussing the establishment of APSA with the IAEA, US, Canada, Australia, China, Japan, Malaysia, Vietnam, Indonesia, Thailand and Singapore.

The participants came to an accord to establish an Asia-Pacific Safeguards Network (APSN) starting Oct. 1, 2009. Although this regional safeguards network in the Asia-Pacific is starting in a more flexible manner, it may be a historic step forward in strengthening global nuclear nonproliferation in conjunction with the voluntary cooperation of regional countries.

As the degree of regional and international interdependence becomes more important and intensified than at any other time in human history, international trade activities have become a decisive target for the efforts of nuclear nonproliferation. The ROK has participated actively in the main export/import control regimes: the Nuclear Supply Group (NSG) and the Zangger Committee (ZC) since 1995; the Wassenaar Arrangement on Exports for Conventional Arms and Dual-Use Goods and Technologies (Wassenaar) since July 1996; the Australian Group (AG) since October 1996 and the Missile Technology Control Regime (MTCR) since March 2001.

Recognizing and reflecting the threat of nuclear terrorism, the ROK participated actively to amend the Guidelines not only for Nuclear Transfers, but also for Transfers of Nuclear-Related Dual-Use Equipment and Material and Related Technology of the NSG with other member countries.[22] The ROK has set and operated an internet portal on-line system since 2007, named the Nuclear Export Promotion Service (NEPS). The NEPS system replaced the paper-based (off-line system) procedure of licensing activities with a fully electronic system, which allowed Korean users as well as the related authorities to assure transparency and save time .

The ROK hosted a Global Initiative to Combat Nuclear Terrorism (GICNT) meeting and workshop in April 2009 in Seoul. The Ministry of Foreign Affairs and Trade had a

[21] See, ASNO, Annual Report 2007-2008, p. 3.
[22] IAEA, Information Circular – INFCIRC/254/Rev.5/Part 1 and Part 2, May 2003.

meeting of GICNT. A workshop was held under the title of the "Current Progress in Detecting and Responding to the Illicit Transport and Trafficking of Nuclear and Radioactive Materials for partner countries," organized by KINAC. The objective of the workshop was not only to exchange knowledge in detection and response technology of the illicit transport and trafficking of nuclear and radioactive material with GICNT partners, but also to share experiences in fighting nuclear terrorism.

One of the main goals of the GICNT is to bring together experience and expertise from the nonproliferation, counter proliferation, and counterterrorism disciplines.[23] Since joining the GICNT in May 2007, the ROK has demonstrated good law enforcement and intelligence capabilities to combat terrorism. In addition, the ROK has participated in international peace and security keeping efforts in close cooperation with the US.[24]

CONCLUSION

The end of the Cold War between the two politico-economic blocs of Capitalism and Communism at the end of the 1980s saw two historic measures in the field of global nuclear nonproliferation taken by South Africa on the one hand and by the two Koreas on the other hand. Dismantling apartheid and isolationism from international society, South Africa joined the NPT and signed an NPT safeguards agreement with the IAEA in 1991. The two Koreas proclaimed the joint declaration on denuclearization of the Korean Peninsula in 1991.

While South Africa and South Korea have continued and even strengthened their nonproliferation policies and international cooperation, North Korea has been using nuclear nonproliferation issues as an instrument of realist diplomacy in international relations. As a result of these different positions vis-à-vis global nuclear nonproliferation efforts, South Africa has been able to become a "normal" and economically dynamic country in the world. However, North Korea remains an isolated and miserable state in terms of polity and economy in the World.

South Korea has been a member of the Organization for Economic Cooperation and Development (OECD) since 1996 and also of the Group of Twenty (G-20) Finance Ministers and Central Bank Governor. The G-20's main mission is to systematically bring together important industrialized and developing economies to discuss key issues

[23] http://www.state.gov/t/isn/c18406.htm (Information Searched on 090515).
[24] US Department of State Publication, Office of the Coordinator for Counterterrorism, *Country Reports on Terrorism 2008*, April 2009, pp. 44~45.

in the global economy.[25]

The common factors seen in the countries pursuing and contributing to global nuclear nonproliferation can be summarized as follows: membership in the global nonproliferation regime, cooperation and level of commitment, domestic institutionalization of global nuclear nonproliferation regimes, coherence shown in national policies, and finally, the level of globalization and democratization.

Based on the above five criteria for how a country contributes to global nuclear nonproliferation, South Korea has clearly shown its commitment to every major global regime of nuclear nonproliferation. As affirmation of its policy for the denuclearization of the Korean Peninsula despite being surrounded by three major nuclear countries, one presumed nuclear country and one country with an advanced nuclear industry that possesses all dimensions of nuclear fuel cycle related technology, South Korea is implementing the Integrated Safeguards system of the IAEA. The implementation of the IA requires the related member country to maintain complete nuclear transparency through the necessary domestic institutionalization.

South Korea has been participating sincerely and responsibly in global nuclear nonproliferation regimes, particularly in the field of export/import control, nuclear safety, security and safeguards. As we described above in detail, every aspect of the activities of the ROK in connection with nuclear nonproliferation have exactly matched the five criteria selected for global nuclear nonproliferation.

The most significant contribution of the ROK to global nuclear nonproliferation is demonstrating that a country poor in terms of natural resources (about 97% of energy is imported from abroad), technical & technological infrastructure and financial capability can reach the level of a prosperous and secure country, through its policy towards the peaceful uses of nuclear energy and active participation in global nuclear nonproliferation.

In a time of nuclear renaissance and increasing interest for nuclear uses on the part of underdeveloped countries, the South Korean case may be a good model for global nonproliferation and international security. The application of the five institutional and socio-political criteria could lead the new users nuclear power towards more peacefully oriented and universal targets for nuclear nonproliferation.

[25] http://www.g20.org/about_what_is_g20.aspx(Information Searched on 090516).

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[6] IAEA, *The Evolution of IAEA Safeguards*, International Nuclear Verification Series, No. 2, 1999. 5 Edition (Korean language version KAERI/TS-80/99).

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