

# **Nuclear Security Cooperation in Northeast Asia: Implications from EURATOM**

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## **Nuclear Security Cooperation in Northeast Asia: Implications from EURATOM**

Northeast Asia is currently facing several nuclear issues, such as the nuclear crisis on the Korean Peninsula and a potential arms race between the countries in the region. These issues have led to the discussion of an institutionalized regional framework that could help in finding a solution to common problems in the region. Regional nuclear cooperation might be difficult to be realized with the high tension and distrust among the countries, but as was proven in Europe, such cooperation could contribute to confidence- and trust-building. This paper explores the history of EURATOM and identifies learning points that could be used for similar cooperation in Northeast Asia. Research and development, activities related to nuclear safety and regional safeguard measures are areas that could be applied based on the EURATOM experience. The U.S. would play a large role, as was proven in Europe and is predicted to be in Northeast Asia, making it a challenge for the realization of the cooperation. However, regional nuclear cooperation in Northeast Asia is not impossible through small steps that would build up trust and confidence.

**Keywords:** EURATOM, nuclear energy, regional cooperation, proliferation, confidence-building measures

# Nuclear Security Cooperation in Northeast Asia: Implications from EURATOM

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## I. Introduction

Many observers remain concerned about the unsolved North Korean nuclear issue, which could inevitably create dangerous uncertainty for the Korean Peninsula and the entire region. The Six Party Talks have proven unsuccessful, with no results in the denuclearization of North Korea, and it seems there are currently obstacles to resuming the talks. Furthermore, the North Korean nuclear program has been developed further since the Six Party Talks were stalled in 2009. Thus, it seems that North Korea's nuclear program is an issue that is out of international control.

In addition to the issue of North Korea's nuclear program, the future concerns and worries of Northeast Asia extend to the issues of nuclear proliferation, nuclear safety and nuclear arms races. Indeed, there have been a growing number of opinions that the only option for South Korea and Japan to deal with the threat of a nuclear North Korea is to develop their own nuclear weapons. Therefore, unless the North Korean nuclear crisis is solved soon, one must consider the worst-case scenario for Northeast Asia: a nuclear arms race between the countries.

Furthermore, the expansion of nuclear energy use in the region raises the central issue regarding the safety of nuclear material. Measures to solve nuclear issues in Northeast Asia should be focused beyond the details of the current crisis on the Korean Peninsula and try to shed some light on the question of whether a regional approach could be applied in Northeast Asia to resolve the common problems each country is facing. Nevertheless, an institutionalized regional framework to solve nuclear issues in Northeast Asia is still lacking.

Although both Europe and Northeast Asia display a history of war and nuclear competition among regional powers, the recent experiences of the two regions stand in sharp contrast to each other. This may stimulate academic discussion and investigation into how European cooperation on nuclear issues—particularly with regard to the European Atomic Energy Community (EURATOM)—occurred and whether there are lessons for Northeast Asia and, more generally, for security after World War II.

The purpose of the paper is to examine how the experience of EURATOM might benefit either the peaceful uses of nuclear energy or regional security in Northeast Asia, as well as what aspects of EURATOM could be applied to the a Northeast Asian context. This paper firstly argues that nuclear energy sector cooperation may provide the soundest and most politically acceptable solution to the problem now occurring in Northeast Asia. This regional cooperation would be more sensitive to the special concerns or conditions of the region when compared to central or universal treaties. In light of this, the paper examines Northeast Asian regional nuclear energy cooperation by historically reviewing Europe's experience of nuclear energy cooperation, particularly with regard to EURATOM. The paper also examines nuclear energy sector cooperation projects plausibly implementable as solutions to the North Korean nuclear issue and Northeast Asia's security crises. Finally, the paper argues that the European experience can and should serve as an inspiring example, albeit

with important limitations, that other regions, such as Northeast Asia, could at least draw lessons from, if not emulate.

In order to do so, the study evaluates the EURATOM experience in terms of confidence-building, nuclear safety, safeguard systems and U.S. influence, each of which are needed for future nuclear energy cooperation in Northeast Asia. Based on these topics, the study will attempt to design a future road map for Northeast Asian nuclear energy cooperation.

## II. Nuclear Security and Distrust in Northeast Asia

### 1. Nuclear Crisis in Korea

In 2010, North Korea revealed two thousand centrifuges that, together with an additional eight hundred centrifuges, could produce forty kilograms of highly enriched uranium (HEU) annually.<sup>1</sup> This in turn could be used to produce twenty to one hundred nuclear bombs by 2020.<sup>2</sup> The issue of denuclearization, however, would appear to be deadlocked, with there being little prospect of the Six Party Talks being resumed in the near future amidst a marked lack of trust and political will.

To quell the North Korean nuclear threat, the international community has used a stick and carrot approach to push the regime to denuclearize. There have, however, been no positive changes in North Korea's position as a result of international aid or sanctions. In the past, its actions and changes in position could be interpreted as maneuvering in the run up to further rounds of negotiations in order to test the other

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<sup>1</sup> Olli Heinonen, "North Korea's Nuclear Enrichment: Capabilities and Consequences," 38 *North*, June 22, 2011, <http://38north.org/2011/06/heinonen062211/>.

<sup>2</sup> Shannon Tiezzi, "Report: North Korea's Nuclear Weapons Stockpile Could Grow Tenfold by 2020," *The Diplomat*, February 25, 2015, <http://thediplomat.com/2015/02/report-north-korea-nuclear-weapons-stockpile-could-grow-tenfold-by-2020/>.

parties' intentions. The key was that there is no end if North Korea itself does not have an intention to dismantle its nuclear weapons program. Despite this reality, the international community still relies on the use of external influences to change North Korea's behavior. For instance, the U.S. has imposed additional economic sanctions since 2016, while many still believe that North Korea would be willing to dismantle its nuclear weapons in exchange for economic compensation.<sup>3</sup>

If nuclear weapons are not a bargaining chip for North Korea to extract economic concessions, its strategic plan for the possession of nuclear weapons will be unchangeable unless all military threats postured by the U.S. are removed on the Korean peninsula.<sup>4</sup> For North Korea's part, the imbalance of military power between the two Koreas since the 1980s has pushed Pyongyang's pursuit of nuclear weapons. In the recent years, Pyongyang has seen the acquiring of nuclear weapons as the only way to secure it from what it views as a "hostile policy" pursued by the U.S., as evidenced by the US-ROK joint military exercises and the U.S. "nuclear umbrella" that the North Korea perceived as targeting them. Accordingly, North Korea's ultimate goal is to become a nuclear state—it is trying to achieve for itself greater security by means of nuclear deterrence.

The continuation of North Korea's economic woes diminished the resources needed for keeping up with the South in terms of conventional weapons, even putting it at a disadvantage. To make matters worse, after the collapse of the Soviet Union, the U.S. clarified that it desired regime

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<sup>3</sup> For further discussion on the effectiveness of aid and sanctions towards North Korea, see Sangsoo Lee, "Breaking the Deadlock: Security Building on the Korean Peninsula," *Institute for Security and Development Policy*, April 1, 2015, <http://isdpeu/content/uploads/publications/2015-lee-breaking-the-deadlock-security-building-on-the-korean-peninsula.pdf>; Dursun Peksen, "Why Economic Sanctions Have Failed Against North Korea," *The Diplomat*, July 8, 2016, <http://thediplomat.com/2016/07/why-economic-sanctions-have-failed-against-north-korea/>.

<sup>4</sup> "US troop pullout key to ensuring peace and security," *Pyongyang Times*, November 15, 2016, <http://www.naenara.com.kp/en/order/pytimes/?page=World&no=23179>.

change in North Korea.<sup>5</sup>

It has been difficult to establish a sense of mutual trust within the multilateral framework as different member countries often have different views and goals when trying to gain benefits from the negotiation process, which cannot be perceived as based on “trust” between member countries. The only way to overcome this stumbling block of mistrust is through steps to build confidence in a bilateral setting that leads to multilateral talks for North Korea’s denuclearization.

China has focused on maintaining its leadership and maximizing its leverage as host and de-facto mediator of the Six Party Talks. In fact, for its own security reasons, China is more concerned about instability in North Korea than its nuclear weapons. Indeed, the Six Party Talks have not proven successful, with no results on denuclearization in North Korea, and it seems there are still obstacles to resuming the talks. The U.S. and South Korea believe that even if North Korea returns to the Six Party Talks, it does not mean that North Korea will dismantle its nuclear weapons. Both countries remain firm that North Korea has to prove its sincere intention to denuclearize before re-starting negotiations. While the goal of denuclearization on the Korean Peninsula is a long-term process, in addition to the issue of North Korea’s nuclear program, the future concerns and worries of Northeast Asia will be extended to the issues of nuclear proliferation and safety.

## 2. Nuclear Proliferation in Northeast Asia

One of the largest threats related to the nuclear issue in Northeast Asia is the proliferation of nuclear weapons material or technology to a terrorist group or a terrorist-sponsoring country by North Korea.<sup>6</sup> However, not

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<sup>5</sup> Ingolf Kiesow and Sangsoo Lee, *No Confidence in Korea: A Regional Problem in a Global Context* (Singapore: Institute for Security & Development Policy, 2010).

<sup>6</sup> Robert L. Gallucci, “MacArthur President Robert Gallucci Addresses ASAN Nuclear Forum,”

only should the risk posed by North Korea be addressed, but also the proliferation potential of Japan and South Korea. North Korea is only one state that affects the strategic environment in Northeast Asia, nuclear or otherwise, and it is a relatively small one at that, a characteristic that applies to its nuclear weapons program as well. A sound strategic environment should be created that shapes North Korea's choices in constructive ways, but also serves the interests of all states in the region, many of which may be affected more by considerations pertaining to each other than by those related to North Korea, irrespective of the North's nuclear capacities.

Indeed, even as North Korea's nuclear threats increase, a growing number of South Koreans support the creation of a nuclear weapon development program, which is seen as the only option to deal with North Korea. Therefore, unless North Korea's nuclear crisis is resolved any time soon, it could lead to a nuclear arms race between Japan and China—as well as between North and South Korea, the worst-case scenario for Northeast Asia.

South Korean firms have emerged as major participants in the global nuclear energy industry. They now operate twenty-five nuclear plants that generate about one-third of the country's electricity, and they began exporting nuclear plants in 2010.<sup>7</sup> South Korea has shown responsibility in its nuclear power development, being in full compliance with the NPT, but North Korea's violations of its nuclear commitments have started to shift the South's position.

In 1992, Pyongyang and Seoul agreed not to pursue enrichment and preprocessing through the Joint Denuclearization Agreement. This pledge, however, was broken by North Korea as it continues to pursue a

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*MacArthur Foundation*, February 19, 2013, <https://www.macfound.org/press/speeches/macarthur-president-robert-gallucci-addresses-asian-nuclear-forum/>.

<sup>7</sup> "Nuclear Power in South Korea," *World Nuclear Association*, last updated October 2016, <http://www.world-nuclear.org/information-library/country-profiles/countries-o-s/south-korea.aspx>.

uranium-enrichment program for military purposes. Seoul argues that the obligations Pyongyang has violated should thus not apply to them either, and that North Korea's actions should not restrict the South's development as a nuclear power producer. South Korea has followed up this rhetoric by increasing its fuel enrichment and preprocessing capabilities, and this has become a concern for the U.S., which fears that this might send the wrong signals to North Korea.

Further complication arises from the sensitivity of the South Korean public with regard to the fact that the U.S. has granted Japan advanced consent for U.S.-origin fuel enrichment and reprocessing that it is denying to South Korea. South Korea currently wants such advanced consent to enrich and reprocess U.S.-origin nuclear fuel, and it has become Seoul's objective to be held to the same nuclear cooperation standards as other states with advanced civilian nuclear energy sectors. This dispute led to a deadlock in talks on a new bilateral nuclear cooperation agreement, as the U.S. administration refused to provide advanced consent unless South Korea satisfactorily shows that its preprocessing will be proliferation resistant and commercially viable. In order to improve South Korea's nuclear processing and spent fuel management, a U.S.-ROK joint study was launched in 2011. This has led to a new US-ROK Nuclear Cooperation Agreement signed on June 15, 2015, also known as the "123 Agreement."<sup>8</sup> The new agreement did not provide consent for pyroprocessing and enrichment to South Korea, but it created a possibility for future U.S. decision to grant such consent.

The U.S.-Japan nuclear cooperation agreement is due to be renewed in 2018, and the negotiations for this renewal could be the standard for cooperation between the U.S. and countries with advanced nuclear industries. The negotiations should also consider that the provisions of

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<sup>8</sup> "U.S.-Republic of Korea (R.O.K.) Agreement for Peaceful Nuclear Cooperation," U.S. Department of State, June 16, 2015, <http://www.state.gov/t/isn/rls/fs/2015/243872.htm>.

the agreement will also apply to South Korea if it succeeds in addressing the proliferation and safeguards issues through the U.S.-ROK joint study. In this manner, the U.S. would gain additional leverage to strengthen non-proliferation safeguards with Japan while demonstrating its sensitivity towards South Korea's concerns about receiving equal treatment.

### 3. Nuclear Safety in Northeast Asia

North Korea poses the world's greatest risks among ns with nuclear material. The 2016 Nuclear Material Security Index, published by the Nuclear Threat Initiative (NTI), ranks twenty-four countries according to their level of nuclear material safety. North Korea is ranked twenty-fourth, and represents the country with the most unsafe nuclear material security.<sup>9</sup> The result implies that North Korea poses a significant security threat as a result of such low levels of nuclear material safety and security. In this sense, the future concerns and worries of the international community will be extended to the issues of safety and security of North Korea's nuclear material. Some questions naturally follow: What is a long-term approach for dealing with North Korea's nuclear material, and how can the international community help secure North Korea's nuclear material in an effort to prevent unexpected nuclear-related incidents?

Nevertheless, not only is there the risk of North Korea's nuclear safety but Northeast Asia is also exposed to unexpected nuclear incidents as the region is heavily dependent on nuclear power. China already has thirty-three nuclear power reactors and twenty-two are under construction in the eastern coastal areas.<sup>10</sup> The plan is to increase nuclear

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<sup>9</sup> "2016 NTI Nuclear Security Index Report," *NTI*, January 14, 2016, <http://www.nti.org/analysis/reports/2016-nti-nuclear-security-index-report/>.

<sup>10</sup> "China: Country Statistics," *IAEA*, 2015, <https://www.iaea.org/PRIS/CountryStatistics/>

capacity to at least fifty-eight GWe by 2020-21, and 150 GWe by 2030.<sup>11</sup> Nuclear dependence in Japan will also increase in coming decades to meet targets for carbon emissions reductions. Japan has forty-three main reactors with another two reactors planned to be built in the future.<sup>12</sup> With thirty-six nuclear reactors online in 2030, nuclear capacity would increase to 28.2 percent of the total, up from 22.4 percent in 2014.

Given this concentration of reactors in areas where earthquakes and other natural disasters have happened fairly frequently, ensuring nuclear safety should be a prerequisite for the development of nuclear energy and the principle of “safety first” should be upheld in each country of Northeast Asia. Furthermore, it is insufficient to approach the issue of nuclear safety management at a national level as radioactive materials spread across national frontiers.

Still, a cooperative regional framework to solve the nuclear safety issue in Northeast Asia is lacking. For example, Japan was reluctant to cooperate with its neighbors concerning the monitoring of the nuclear crisis during the Fukushima disaster. The Japanese government’s reluctance to share information on the radiation leak from the nuclear power plant and its unilateral decision to discharge contaminated water into the ocean led to great concerns and criticisms among the public in South Korea and China. As the countries are geographically close to Japan, they risked becoming victims if the radiation leaks spread. Japan’s refusal to receive South Korean nuclear experts also created a feeling of distrust towards Japan’s management of the crisis as a whole.

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CountryDetails.aspx?current=CN.

<sup>11</sup> “Nuclear Power in China,” *World Nuclear Association*, last updated November 5, 2016, <http://www.world-nuclear.org/information-library/country-profiles/countries-a-f/china-nuclear-power.aspx>.

<sup>12</sup> “Japan: Country Statistics,” *IAEA*, 2015, <https://www.iaea.org/PRIS/CountryStatistics/CountryDetails.aspx?current=JP>.

### III. EURATOM: Lessons from the European Experience

#### 1. Historical Overview

The first step in European integration was the establishment of the European Coal and Steel Community (ECSC) in 1952.<sup>13</sup> The Community essentially placed the member countries' coal and steel industries, which at that time were the main component for any war industry, under one supranational organization. The original six signatory countries were Belgium, the Federal Republic of Germany, France, Italy, Luxembourg, and the Netherlands. These countries later tried to deepen the integration process through the establishment of the European Defense Community (EDC; 1950-54), but this initiative soon proved to be too ambitious and fell to the resistance of the French National Assembly.<sup>14</sup>

The idea of EURATOM, together with the European Economic Community (EEC), was developed from 1955 on. Notable characters behind the project were Jean Monet, Chancellor Konrad Adenauer, Paul-Henri Spaak and Guy Mollet. As the historical overview showed, these figures pressed for the establishment of EURATOM in a time when restoring confidence in the success of European integration was crucial. As European integration and community building halted after the EDC, EURATOM was valued even just for its role in resuming and bringing success in trust and confidence building. The development of EURATOM, together with the ECSC, ECC, and the failed attempt of EDC, can be seen as both a step in the interstate learning process, evidenced by the sixty-year history of the European Union, and as a final

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<sup>13</sup> "Treaty establishing the European Coal and Steel Community, ECSC Treaty," *EUR-LEX*, last updated October 15, 2010, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV%3Axy0022>.

<sup>14</sup> Arnold Kanter, "The European Defense Community in the French National Assembly: A Roll Call Analysis," *Comparative Politics* 2 (1970): 203-228.

product of shared international learning. During the EURATOM process, Western European countries derived the same lesson from the historical circumstances: In order for Europe to remain a serious factor in international politics, they had to pool together resources, share competences and accept interdependence. In the 1950s, there were nuclear programs underway in many European countries but individually they all paled in comparison to their U.S. or Soviet counterparts. Prior to the establishment of EURATOM, the European national nuclear programs were based on bilateral agreements with the U.S.

Another incentive for establishing civil nuclear industry in Europe came in the form of the 1956 Suez crisis.<sup>15</sup> Following Egyptian President Nasser's nationalization of the Suez Canal, Europe was forced to face its energy dependence on traditional fossil fuels arriving from the Middle East. In the wake of a growing middle class and its increasing demand for energy, unity seemed the most approachable way to ensure stability and growth. In that year, the six ECSC member states were thrust into collective action when their general energy supply was abruptly impeded during the Suez crisis, during which the preconditions for the transportation of fuels to Europe from the Arabian Peninsula were altered. The management of the canal itself was kept in operation as ensured by the Egyptian president, but the nationalization of the territory demonstrated a shifting power balance, where the European countries realized their dependence on the relatively unstable regimes of the Middle East. Together, the six imported nearly a quarter of their total energy supply and it was estimated that the imports would double in ten years and treble in twenty.<sup>16</sup> Meanwhile, European coal exports fell utterly short of meeting the increasing global demand.

There are arguments whether EURATOM was a glorious enterprise

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<sup>15</sup> For summary of the Suez crisis, see "An affair to remember," *The Economist*, July 27, 2006, <http://www.economist.com/node/7218678>.

<sup>16</sup> Louis Armand, Franz Etzel and Francesco Giordani, *A Target for Euratom*, (s.l., 1957).

for pooling together resources and technology in order to create a supranational organization that could effectively support European energy independence or if it was an elaborate foreign policy tool the U.S. State Department used to exercise control over ECSC member countries obtaining nuclear materials and technology.<sup>17</sup> However, both positions often omit to consider one thing EURATOM undoubtedly succeeded in: building trust and confidence between former European enemies, France and Germany. In the EURATOM process and throughout the history of European integration, the original six states used costly signals, including giving up some of their sovereignty, to show their intention of engaging in a trusting relationship with each other. Past experience of continuous interdependence, exchange of reliable information, and living up to agreements contributed to the gradual growth of trust between member states. These lessons are important because they show that states repetitively engaging in cooperation and sharing common experience and ideas about these experiences eventually “learn together,” that is, they derive some sort of meaning from their shared experience. If these meanings are similar to each other across states then they can lead to more favorable cooperation in the future.

## 2. The EURATOM Treaty and Framework

The EURATOM Treaty, which was signed on March twenty-fifth, 1957, forms the basis of the EURATOM legislation.<sup>18</sup> It is expressed in Article 1 of the treaty that the role of the Community is “to contribute to the raising of the standard of living in the Member States and to the

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<sup>17</sup> Gregoire Mallard, “Can the Euratom Treaty Inspire the Middle East: The Political Promises of Regional Nuclear Communities,” *Non Proliferation Review* 15, no. 3 (November 2008): 459-77; John Krige, “The Peaceful Atom as Political Weapon: Euratom and American Foreign Policy in the Late 1950s,” *Historical Studies in the Natural Sciences* 38, no. 1 (2008): 5-44.

<sup>18</sup> “Consolidated Version of the Treaty Establishing the European Atomic Energy Community (2012/C 327/01),” *European Union*, October 26, 2012.

development of relations with the other countries by creating the conditions necessary for the speedy establishment and growth of nuclear industries.” Its mandate includes a common market to insure free movement of nuclear commerce, nuclear safety standards, safeguards beyond those of the IAEA, ownership of fissile materials, nonproliferation policy, research, and negotiations with other countries on the import and export of nuclear materials.

As nuclear energy was still in its early stage of development in that time, it was important to ensure that every member has similar level of knowledge and holds the same standard of safety protocols. There was a strong emphasis on developing nuclear skills and competence, which undermines the research and development framework. The research and training activities by the Community was aimed to improve nuclear safety, waste management, security and radiation protection. The fields covered are listed in Annex I of the treaty and include areas such as the processing of radioactive material, study of the harmful effects of radiation on living organisms, and the economic aspects of energy production. Common control over dual-use research and development was also encouraged, as it could further increase the level of trust between member states. Research cooperation between members was strengthened through the establishment of a Joint Research Center (JRC) in nuclear fields, and the findings of the research would be made available to the member states, making it possible to access a wide range of information.

Many of the successful features of EURATOM are ones that the U.S. offered as “preferential treatment.” Though the regional safeguard systems employed in EURATOM followed a pattern originally developed by the U.S. and introduced through bilateral agreements between the U.S. and individual countries, they were designed and implemented to EURATOM specifically in order to build trust with the U.S. and avoid intrusive U.S. inspection rights. Instead of American or other international inspectors, EURATOM would recruit its own

inspectors from member countries. The regional safeguard system, the inspection procedures and the property ownership arrangements all reflected this dominance.

Although EURATOM recruits its own inspectors from member countries, EURATOM inspectors also cooperate with their counterparts from the IAEA in order to avoid unnecessary duplications of activities. The tight safeguard provisions of EURATOM, which at the same time excluded non-EURATOM inspectors and offered limited inspection rights to the IAEA, served as trust-building measures between EURATOM countries as well as the United States.

In essence, EURATOM made its regional safeguards system as close as to the original U.S. proposals envisioning strong international authority over nuclear materials and activities. In return, the regional safeguard system provides a useful mechanism for Europe in order to limit U.S. intrusions into Europe's nuclear affairs. U.S. rights of intervention ended at the Community's external frontier, so long as the security commitments were honored.

Property ownership was considered the second outstandingly successful achievement of the EURATOM framework. Article 86 says that special fissile materials (SFM) shall be the property of the Community, and this extends to all SFM produced or imported by a member state.

The historical circumstances surrounding the creation of EURATOM influenced the institutional framework a great deal. At that time, the United States' dominance in both possession of uranium and plutonium, which are considered scarce resources, and its technical advantage were unsurpassed. Therefore, the United States had considerable bargaining power that left its mark on EURATOM.

After realizing that the European countries could not be deterred from pushing on with their own nuclear programs, the U.S. State Department decided to adopt a policy that would steer European nations to cooperate in a supranational organization, effectively controlling each

other under the EURATOM framework. The U.S. would offer benefits to conduct material and technological transfers through the EURATOM, instead of through bilateral arrangements with separate countries. This preferential treatment would be given to countries in exchange for giving up part of their sovereignty by joining EURATOM.<sup>19</sup> The EURATOM treaty also bestowed Right of option (Article 52) for acquisition and ownership on other nuclear materials on the community. It was especially important in the early years when U.S. nuclear market dominance was still prevalent as it protected individual countries from U.S. exporters' abuse of market power.

### 3. What did not work?

Despite the strong emphasis on safety, the main task of EURATOM is still the promotion of nuclear energy, in particular through policy and funding. Nevertheless, some aspects of the institutional framework cannot be considered that successful. On the large scale, EURATOM was not very successful in establishing a vibrant civil nuclear industry in Europe. The decreasing prices for conventional fuels after the Suez crisis lessened the incentive for nuclear power in Europe.

The treaty framework for research and development, especially for dual-use activities (uranium enrichment and plutonium reprocessing), was not very successful either. Two separate enrichment capacities were developed instead of cooperation: URENCO (Federal Republic of Germany) and EURODIF (France).

Furthermore, it is stated in Article 81 of the treaty that EURATOM inspectors "shall at all time have access to all places and data and all persons who, by reason of their occupation, deal with materials or equipment or installations subject to the safeguards." Nevertheless, a

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<sup>19</sup> John Krige, "The Peaceful Atom as Political Weapon."

“Defense clause” was maintained in Article 84 of the Treaty, which excluded materials for military use from the safeguards. In other words, EURATOM safeguards do not prohibit the military use of nuclear materials.

Problems over the uncertainty of funding and the mixing of Nuclear Weapon States and Non-Nuclear Weapon States further undermined the trust-building capacities of the community. These problems should be addressed in other regional nuclear energy cooperation. Despite its fallacies, the concept of EURATOM did, however, not lack intention; it simply experienced an all too wide gap between its expectations and what the member states ultimately had capacity to accomplish. Despite its discernable limitations, the EURATOM’s success should perhaps be measured according to what has been accomplished and not what it initially set out to accomplish.

## **IV. Lessons for Northeast Asia**

### **1. Trust-building Measures for State Actors**

The most significant lesson to be drawn from the EURATOM experience is that the process was done through confidence- and trust-building measures. Therefore, the EURATOM framework can be used as a model for the region. In Northeast Asia, one of the main push factors for a joint venture on nuclear energy is the ongoing discussion on nuclear safety in the region and the issue of denuclearization in North Korea, which continues to pose a threat to the region’s stability. The EURATOM Treaty, however, neither set out to, nor achieved, disarmament of any of its member states. It did however contribute to the building of mutual confidence through the agreement of not continuing or commencing any new nuclear programs for anything but peaceful purposes. In addition to its results in achieving non-proliferation, the EURATOM Community also furthered the European political and economic integration, albeit

through an issue which is today highly sensitive and contested.

The concept of trust building is essential for appreciating the value of the EURATOM project in creating a supranational institution in Europe. EURATOM is the product of a series of confidence-building measures between the six Founding States as well as towards external actors like the U.S., Soviet Union and the IAEA. However, EURATOM is also a confidence-building measure in itself, if viewed in the larger context of the European integration process which signals the trustworthy, security seeking nature of European countries.

Due to the lack of trust among the Northeast Asian countries, there are still obstacles to resume any official dialogue to discuss the dismantlement of North Korea's nuclear program any time soon, including the Six Party Talks. The expansion of the region's nuclear industries raises central issues regarding regional nuclear safety, environmental protection, and peaceful use of nuclear energy. Trust among Northeast Asian neighbors can be created by initiating negotiations dealing with these areas that are less sensitive and of common interest. Cooperation should be a gradual approach from modest collaboration, to promoting the safe use of nuclear energy, to more ambitious regional nuclear security issues, such as the safeguards system. A future institutional breakthrough could significantly enhance regional security as well as facilitate the safe use of nuclear energy in Northeast Asia.

## 2. Regional Nuclear Safety Cooperation

As was proven by the EURATOM experience, continuous interdependence, exchange of reliable information, and living up to agreements contributed to the gradual growth of trust between member states. These lessons are important because it shows that repetitive engagement in cooperation and sharing common experiences and ideas would lead to mutual learning that can lead to further cooperation in the future.

There is a wide spectrum of options for regional nuclear safety cooperation in Northeast Asia, including areas of safety regulations, emergency preparedness, emergency response measures and other safety related issues. The cooperation could start first on a low level through a research and development framework that emphasizes the knowledge, skills and competence needed to ensure nuclear safety. In particular, information sharing and exchange, establishing an early notification framework in case of emergency and exchanging experts are vital for building and maintaining confidence in the safe operations of nuclear facilities and dealing with nuclear accidents. These recommendations would forestall a potential disruption over nuclear cooperation and buy time for a less politically volatile approach by establishing a common standard for regional cooperation. A Joint Research Center, similar to the one established by EURATOM, could be a platform for research cooperation and exchange of information through meetings, sharing of documents, finding solutions to common issues and exchanging experience.

### 3. Regional Safeguard System

The EURATOM safeguard system is a unique example of a comprehensive system for supervision and control of all civil nuclear material implemented in nuclear and nonnuclear weapon states. All components of the nuclear fuel cycle are present in the EU territory starting from mining and conversion, through enrichment and fuel fabrication to the use of nuclear fuel in power reactors. Furthermore, it is stated in the treaty that EURATOM inspectors shall at all time have access to all places and data and all persons who deal with materials or equipment or installation. Nevertheless, a “Defense clause” in the EURATOM Treaty does foresee the rights of France and the UK, which are nuclear states, to possess and manage a non-safeguarded fuel cycle for national defense purposes. It causes inequalities among member states that undermine the

community-building aspect of EURATOM. However, this example can also be adopted for Northeast Asia, in which inspectors only limit access to some of the facilities in the U.S., China and Russia, the three nuclear weapon states in the region.

There are outstanding concerns about the possibility that North Korea will not completely abolish all of the nuclear materials and weapons that have been produced, largely due to the fact that it is difficult specifically to find North Korea's already produced HEU nuclear materials. Under the framework of the Six Party Talks, the IAEA was in charge of the safeguard and verification systems requiring North Korea to provide a complete declaration of all nuclear programs and disablement of all existing nuclear facilities. However, IAEA inspectors at the Yongbyon nuclear facilities removed safeguards equipment and left the country on April sixteenth, 2009, following North Korea's decision to cease all cooperation with the IAEA. In reality, it is hard to deny that some weaknesses still remain in its ability to implement the dismantlement of all North Korean nuclear programs. For example, during the past process of negotiation North Korea only addressed the nuclear facilities at Yongbyon. Therefore, serious disputes erupted over the lists given to the IAEA detailing its nuclear program because it was suspected that the country hid some produced HEU.

In this regard, the future system for denuclearization should take a number of steps to strengthen its safeguards system. More specifically, an effective verification regime must also focus on possible undeclared material and activities in North Korea. While some of these measures could be applied on a routine basis within the framework of existing comprehensive safeguards agreements, others required their own regional safeguard system in Northeast Asia.

The treaty may want to invite parties to adopt stricter inspection arrangements as technology evolves. For example, parties to the cooperation could create a regional nuclear forensics network and database to control non-state actor nuclear proliferation. In addition, the

inspection of U.S. facilities in South Korea and Japan could be demanded. Plutonium-based fuel cycles as in Japan and under discussion in South Korea may require more transparency in real-time than current safeguards systems allow to preserve a meaningful diversion-detection to response-time ratio. The parties would need to create a regional inspectorate, as has occurred in the EURATOM.

#### 4. Key Challenges

One of the challenges for having nuclear regional cooperation in Northeast Asia is North Korea. In addressing this issue, it is imperative that a channel for engagement with Pyongyang is continuously open in order to facilitate the international watchdog function for the management of the North's nuclear material. From a long-term perspective, there is a strong case to be made for encouraging and assisting North Korea in building up its capacities for nuclear material safety and non-nuclear energy production.

The issue of energy support for North Korea is also a key factor in dismantling its nuclear program. Establishing a nuclear reactor would be one possible option for the international community. One way to establish the confidence to build a nuclear reactor is to have multinational cooperation. Common control over the reactor could help build trust among the members. However, the situation regarding nuclear energy has changed greatly following the nuclear disaster in Japan. Therefore, nuclear energy cooperation with North Korea could also include the areas of nuclear waste management and safety. On the other hand, transferring technology on renewable energy would be an option as a part of energy aid to North Korea in exchange for dismantling its nuclear program. This could help resolve North Korea's energy crisis and address safety issues, especially at a time when global concern about nuclear radiation in Japan still remains. From a long-term perspective, the establishment of the oil and gas pipeline from Russia to the Korean

Peninsula is also a possible option, although there is a political risk at the moment.

The U.S. factor could be a long-term or permanent one affecting regional cooperation in Northeast Asia. There are various views on the participation of the U.S. in regard to nuclear cooperation in the region. The U.S. may hinder regional cooperation as an outgrowth of its own Northeast Asian strategy, or the U.S. may actually try to establish a multilateral system in the region. It can be said that the main factor for the establishment of nuclear energy cooperation in Northeast Asia will be the U.S. approach to the region as a whole. In other words, any future Northeast Asian regionalism may prove extremely difficult to generate unless the U.S. takes a central role in untangling the imperfect sovereignty relationships among the countries in the region. If the U.S. and the direction of Northeast Asian regionalism run into conflicts of interest with each other, nuclear energy cooperation in Northeast Asia is unlikely to occur.

The success of EURATOM also largely depended on the U.S. After realizing that the European countries could not be deterred from pushing on with their own nuclear programs, the U.S. State Department decided to adopt a policy that would steer European nations to cooperate in a supranational organization, effectively controlling each other under the EURATOM framework. The State Department's willingness to transfer technology and materials to European allies should be attributed as much to its realization that the political and economic reconstruction of European countries was invaluable to containing the USSR, as to their common identity shaped by the learning process shared by the democracies on both sides of the Atlantic. In addition, U.S. commercial interest was an also important factor. By reaching the agreement with EURATOM, the U.S. was able to secure the majority of the Western European market for both reactors as well as enrichment services through which the U.S. can exercise political control over recipient countries. Therefore, ultimately, the U.S. made some concessions to get the

EURATOM scheme going for both security and commercial interests. When it comes to setting the road map for Northeast Asian nuclear energy cooperation, it is important to remember U.S. interests and motivations in the early days of EURATOM.

## **V. Conclusion**

The EURATOM experience provides lessons that could be applied to regional nuclear cooperation in Northeast Asia. Even though the current situation makes it difficult for nuclear cooperation to develop, it does not mean that it is impossible. As proven in Europe where there was a high level of tension and distrust after World War II, regional nuclear cooperation could still be established and even contributed to confidence- and trust-building in the region.

The important step in achieving regional nuclear cooperation in Northeast Asia is that a channel for discussion should always be made available. The main target in future talks should be considered a common goal for regional security in Northeast Asia based on mutual trust, benefits and responsibility. Therefore, they should focus broadly on North Korea's nuclear weapons program and be aimed more at achieving peace and security in Northeast Asia. As a new approach, future negotiations could include a wider range of regional nuclear security matters and a low level of regional cooperation on nuclear security as areas of common interest for all countries in Northeast Asia since the North Korean nuclear program is not the only issue of nuclear security in the region. Little by little, through small steps in confidence and trust building, regional nuclear cooperation would be possible and contribute to the improvement of the situation in Northeast Asia.

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