

COLLABORATION BETWEEN NORTH AND SOUTH KOREA ON NUCLEAR ENERGY FOR PEACEFUL USES

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Chairman: Allow me to introduce our next speaker, Dr. Yo Song. Dr. Song has had a distinct career. He started out as a chemical engineer, earning his degree at Yonsei University. He earned his Ph.D in nuclear engineering in the United States at the University of Illinois. He brings to this discussion vast experience and knowledge. Dr. Song was also part of the U.S. negotiating team to discuss Agreed Framework issues with North Korea.

Yo Taik Song: Thank you, Mr. Chairman. I am happy to be here. Ms. Higgins mentioned that four things need to be present for good confidence-building measures. They are communication, constraint, transparency, and verification. All of these things must be present in order to have good confidence measures, I believe.

Cultural differences between North and South Korea lead to many misunderstandings. North and South Korea have been divided for over half a century. Even though both Koreas can talk about the same subjects in the same language, their understanding of these subjects could be quite different due to their life patterns and newly developed cultures. Thus, an added problem for the two Koreas is understanding each other—what they said and what they perceive based on their own culture, and also keeping their promises based on their own understanding.

We think we know who our counterparts are. However, they may not be what we think they are! Time will tell. If, in the future, South Korea does any collaborative work with North Korea, both sides must participate and cooperate. There is no such thing as one-sided collaboration. We have to have a clear understanding of what we are trying to accomplish, and for this we must know each other's technical capabilities.

In general, my observation is that nuclear engineers in North Korea rely heavily on an analytical approach to solve technical problems. On the other hand, in South Korea, a computer-oriented, numerical approach is common. North Koreans are trained at various local universities and technical schools, as well as at institutions abroad. Non-technical people, such as laborers, office clerks and people in manual jobs, have compulsory high school or high school-equivalent education and training. Thus they have a basic understanding of mathematics and physics, and are able to follow complicated operational procedures of equipment with a minimum amount of training. Some of their highly skilled people were trained in foreign countries like Cuba, Russia, or China. In general, they have good analytical capabilities.

In North Korea, they have technologies that South Korea does not have. One such area is technologies developed on graphite. North Korea indigenously developed nuclear-grade graphite for the Yongbyon 5 MWe graphite-moderated nuclear reactor. Depending on the methods of treatment, nuclear-grade graphite can be formed into more than a dozen different types. South Korea uses graphite as a neutron reflector and a neutron moderator. In other countries, purified graphite is used for the pebble-bed type gas-cooled reactors in South Africa and for the GT-MHR in

General Atomics in the United States, and also as a silicon-graphite sealant for the TRISO-fuels for both the South African pebble-bed reactor and the United States GT-MHR. We are not sure if the technologies in North Korea are applicable for TRISO-fuels.

North Korea has also developed a complete front-end and back-end fuel-cycle system, including complete reprocessing of the Magnox-type spent fuel by the PUREX system. This technology could be utilized in the future as a means of treating high-level radioactive waste. All of these technologies could be North Korea's contribution to South Korea's nuclear industry.

Alternatively, South Korea has many programs with advanced technologies and also other resources that it can offer to North Korea. I have been at KAERI for about a year and I've learned that, currently, KAERI has a program called the North-South Nuclear Cooperative Program. The program has analyzed what South Korea could offer to the North and what benefits these collaborative programs could bring to both Koreas. Eight areas are considered in this KAERI program: exchange of technical articles; international technical conferences or workshops; an atomic or nuclear dictionary; a North-South nuclear cooperative center; supply of radioactive isotopes; technical utilization of radiation and radioactive isotopes; North-South mutual inspections on radiation in the environment; and sharing equipment developed in South Korea.

We can find a program that all parties agree to and begin to work together. Radiation environmental sampling around the facilities and off-site would be a good starting point. Sharing equipment is another program. North Korean equipment is still functioning, but it is antiquated. South Korea has all modern equipment and technology, so we should share it for mutual benefits.

In addition to the eight selected areas, special attention was given to research and development in nuclear and radiation field and training of R&D staff. In order to formulate the program, first we have to be able to get together to discuss what that program is. Currently, we do not have such a facility. In order to facilitate the collaboration, other government institutions should take part in establishing a channel to discuss and formulate various selected programs and the training of staff.

One area that we need rather urgently is specialized staff that can develop nuclear policies in North Korea. To maintain and to operate a power plant are two different things. We need to put into place the proper nuclear infrastructure in North Korea. In South Korea, we have already experienced these problems before. North Korea needs these experiences, and so South Korea should share its experiences with North Korea.

One other urgent program involves unifying the technical terminology in an atomic or nuclear dictionary. KEDO is already using South Korean terminology for the reactor to be built in North Korea. North Korea might have problems with these terminologies.

In addition to those eight areas, we can add a program for radioactive waste management and disposal. Also, South Korea could offer North Korea help in dismantling the 5 MWe reactor and offer to exchange academic personnel.

The next area is assured transparency. Without assured transparency, cooperation may not be realized. This is an essential process for building mutual trust and confidence. Both parties have to

show how they are going to provide technical means to assure transparency on their activities. Both parties must be comfortable that they are able to verify each other. Both parties should also agree upon the procedures to be used and remain flexible if modification of these procedures becomes necessary. Both countries, though it has been declared previously, should declare their strong and uncompromising will for adhering to the stipulations of the NPT. Political will must be shown to the international community. Unless political will is present, cooperative measures are meaningless.

Through my experiences during the negotiations on the Agreed Framework, I learned that both parties should give every effort to understand the meaning of the agenda. Because of North Korea's isolation, the fundamental approach was to understand North Korea even on the small issues. Confusion about the agenda adds frustration. I think it is important to recognize that cooperation between North and South Korea is not just for this generation, but for future generations.

I heard recently that North Korea has requested higher wages for its laborers at the Kumho site. We must understand what the true meaning of this request is. We must face our counterparts with respect, rather than mistrust. That will help future negotiations.

Participant: Thank you. That was a good lesson that you gave us. I remember our relations with Argentina and Brazil. One of the difficult problems was believing Argentinean intentions.

Since ABACC started working, we have found many other opportunities to cooperate in different fields that are not nuclear. It is very important to know what the other side has to offer. We are so close, geographically speaking. But one of the most important results of the ABACC effort was that it linked our people together and used our own technical capacity. Recognizing the capacity of the other country and respecting one's counterpart is a very important result of this cooperation.

Participant: Your presentation was very interesting. The list of selected programs you mentioned are all potential incentives. Has KAERI approached North Korea? Have you thought of a mechanism to pursue these suggestions?

Yo Taik Song: Nothing has been formally presented to North Korea. There are mechanisms in mind, but the South Korean government must open the door. KAERI alone cannot initiate communication with North Korea. We must rely on the government.

Participant: Could a meeting be called by a group like ISIS in New York City to invite both Koreas to discuss technical cooperation?

Yo Taik Song: This is possible, and could occur if a third party invited both Koreas together to have a technical conference. But what is the probability of such a meeting? I don't think it is very high.

Participant: As you know, North Korea has been asking for electricity from South Korea. This has been a volatile issue in South Korea. Yesterday, I heard the Unification Minister say that South Korea would send electricity to the Kaesong district. As you know, there are many South Koreans who oppose this idea because South Korea has been giving more in this relationship. Is there a way to link the Agreed Framework with energy?

Yo Taik Song: Nuclear safety will be handled by KEDO and should not be an issue for KAERI. KEDO is building nuclear reactors and the electricity itself is not the direct product of nuclear collaboration. Sending electricity to North Korea is different from KEDO's mission, and someone else should address this issue.

Participant: You listed eight areas of possible collaboration. You also mentioned showing political will for peaceful transparency, but how do you obtain transparency?

Yo Taik Song: From a political point of view, transparency is a difficult issue. The technical issues are rather simple. You cannot hide technical facts, but the implications derived from the technologies are not always clear. The inspections will reveal what North Korea was doing and what they are currently doing, but what the purpose is, and what the implied end products are, are very difficult to guess. Politically speaking, this is a very complex issue.

Participant: Do you agree with the idea of bilateral inspections? Is this feasible?

Yo Taik Song: Yes. There is nothing to hide on technical matters. There is no such thing as transparency or hiding. You see and detect what is there to detect and see. However, I don't think verifying North Korea's intentions will be an easy problem.

Participant: I'm a little confused about ensuring transparency as you discuss it in your paper. You suggested eight areas of cooperation and in almost all of them, transparency is not necessary. All eight areas do not need transparency. I do not understand.

Yo Taik Song: The proposition of mutual collaboration is to do the work together for the benefits of both parties. If you need verification of transparency at every step, there is no cooperation or collaboration. I have been at KAERI for only one year, and I don't know the South Korean nuclear program as well as other fellows. The part of the discussion that I have today are KAERI's proposals that are being worked on. When joint collaborative work is formulated, the transparency issue shouldn't come up, but when you get into technical details, it should.

For confidence-building measures, Holly mentioned four areas, and transparency was one of them. Transparency is showing your counterpart that you are doing what you told your counterpart. Thus the transparency involves both parties for verification while the program is proceeding. Before the program is formulated, you tell your counterpart of your will for transparency. Before we set up a program, assured transparency and verification is necessary. The eight program areas, thus, are areas for collaboration, not the final program, and these came from KAERI. I think they are well thought plans.

No one has asked one very vital question. Why do we need collaborative nuclear technical work with North Korea? Is it really worthwhile?

Participant: Yes, it is worthwhile. It can erase suspicions and be mutually beneficial from an economic and technological standpoint. The real problem is whether North Korea wants this.

Yo Taik Song: Technical cooperation alone cannot prevent a country from getting a nuclear weapon, if the collaboration is just to prevent North Korea from developing nuclear weapons.

Participant: I have one comment on Unification Minister Lim's provision of energy to North Korea. Suppose we tell North Korea that, in order for South Korea to offer this package, we need some reciprocal action from North Korea? Bilateral inspections could be asked for.

Participant: When North Korea originally asked for electricity, South Korea answered positively, but said it had to inspect the current state of North Korea's energy sector. The agreement broke down because North Korea did not want to permit South Korean inspections. If North Korea won't let inspectors enter the country to check out their energy sector, what hope can there be for bilateral nuclear inspections?

Participant: If South Korea is providing electricity to North Korea, it should have the right to ask for something. It could be something simple like a visit to Yongbyon. I think it is important to create some type of incentive structure in order to illicit smaller concessions. I would hope that this energy offer would give South Korea something in return.

Participant: This is a very delicate point. In Brazil, we have a problem with electricity. We are obliged to consider a consortium and buy some kilos from Argentina. If Argentina told Brazil, "Ok, we will provide you with some kilos but we want to know what is going on in that building?" If we accepted that, it would be shameless for us. Is there nothing commercial that North Korea could provide to avoid this? The commercial route is an important way to ensure peace in the world. From a personal point of view, to give something to the North Koreans and then ask them to renounce things is a bad idea. This would be difficult for Argentina and Brazil to accept. Even if they accepted, their future relationship would be in jeopardy.

Yo Taik Song: The negotiations have to be handled on a case-by-case basis, because there are so many different issues. We have to have the capability to assess these issues correctly.

Participant: We could make the energy for inspections deal appear less like a trade. One precedent was the Kumchang-ni inspection agreement worked out between the United States and North Korea. Both sides could say they didn't pay anything. The United States got its inspection and North Korea received food aid. Both sides could declare victory. I still believe the goal should be small, like a visit to Yongbyon.

Participant: This idea sounds like a form of blackmail. South Korea may get its visit to Yongbyon, but in general it will not help both parties get closer. North Korea would almost have to assent because it has no money to provide anything commercial. This is not a good basis for making friends.

Participant: If the Sunshine Policy becomes successful, South Korea will be giving much more to North Korea. This is unavoidable, but it will also be a volatile issue. The problem is giving something to North Korea without any returns. This leaves South Korea politically vulnerable. That is the real situation. For the sake of argument, suppose South Korea is about to provide North Korea with 500 megawatts of electricity by installing new transmission lines from Seoul to Pusan, or by refurbishing all of North Korea's electrical equipment, which will cost South Korea several hundred million dollars. This would be free to North Korea. What would be reasonable to expect in return? There is nothing. This plan would give North Korea several hundred million dollars for nothing in return. That is unacceptable to the South Korean public and its politicians. A politician would oppose appropriating such money to North Korea if nothing was received in return.

Participant: Perhaps the industries of North Korea could produce things that South Korea might need. I don't believe a good relationship for the future can be established on this basis of buying electricity or buying information. I think that people are basically the same throughout civilization. I would say to North Korea: "You cannot pay me today, but with this electricity you will be able to produce some goods later, and then you will pay us back." That would be much more acceptable for the South Koreans and also for the North Koreans. Maybe with this attitude it will be easier to achieve the same goal of having more transparency.

Participant: There is always a political solution when you have a problem of this kind. I remember during World War II, the United States created a system for providing arms and weapons and food to the United Kingdom, even when the United Kingdom was unable to pay. South Korea could say: "We are selling this electricity to you now, but you have to pay it back in ten years' time." Asking up front for something in return is not a good way of doing business. This does not show respect for the other party.

Chairman: It is time to call it a day. We have gone through six papers. We will reconvene tomorrow at 9:00 am and go through two more papers and then the wrap-up session.