

Non-proliferation

Strengthening the Non-Proliferation Regime in the Era of *Nuclear Renaissance*: A Common Agenda for Japan, the United States and India

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Introduction

In the era of '*Nuclear Renaissance*,' there are increasing needs for nuclear energy around the world, both from the viewpoint of energy security and the environment. To meet the sharp rise of energy needs and the need to reduce greenhouse gas (GHG) emissions, nuclear energy is expected to play an important role.

At the same time, the global trend of expanding civilian nuclear activities poses difficult security and proliferation challenges for the international community, as it might accompany an increasing possibility of unlawful, improper, or unauthorized use of nuclear energy or materials by states or non-state actors. The cases of Iraq before the first Gulf War, North Korea and Iran showed the possibility that "rogue states" could pursue military nuclear programs behind their civilian nuclear activities.

Expansion of civilian nuclear programs also provides individuals and groups with vicious intentions with more access to fissile and radioactive materials, with which they can make nuclear bombs or dirty bombs for terrorist attacks. In fact, some terrorist groups such as al-Qaeda may even have had access to the nuclear black market. Even though the international community has been making remarkable efforts to prevent proliferation to states with regional security and proliferation concerns, actual records of proliferation and terrorist activities (including *Aum Shinrikyo*'s attacks on the Tokyo subway system) made us seriously concerned about whether

the existing international non-proliferation regimes can effectively cope with such proliferation challenges.

In the meantime, the expansion of the use of nuclear energy provides a window of opportunity for Japan, the United States, and India to strengthen their strategic partnership. Establishing an international cooperative mechanism to facilitate the peaceful use of nuclear energy in a manner consistent with non-proliferation requirements will necessitate the United States and Japan to work together in various aspects of the new global nuclear “order” including nonproliferation efforts, nuclear industrial activities, and regulatory mechanisms.

In addition, as a growing economic and political power, India will be an essential partner for Japan and the United States in promoting the peaceful use of nuclear energy and strengthening global nuclear nonproliferation. Meanwhile, how to include India into the global nuclear “order” may be a difficult puzzle to solve. India is not a signatory member to the Nuclear Non-Proliferation Treaty (NPT), and that fact makes some people worry about the viability of nonproliferation norms that have been provided by the existing NPT regime. In particular, the so-called “grand bargain” (for non-nuclear weapon states) between the obligation of nonproliferation and promoting the benefits of nuclear cooperation and disarmament is cause for concern. In fact, the implicit political consent on this “grand bargain” itself does not constitute a mechanism to prevent nuclear proliferation. However, it provides an important foundation for the international community to comply with and cooperate on nuclear nonproliferation rules and measures including not only the NPT, but also export controls, the Proliferation Security Initiative (PSI), and others.

It is therefore significant for the United States, India, and Japan to make sure that the very special relationship with India on nuclear issues not undermine the commitments of other

countries to global nonproliferation efforts, but instead contributes to the strengthening of such efforts while facilitating the utilization of nuclear energy for purposes of energy security and environmental conservation.

In the following sections, this paper outlines the opportunities and challenges for the United States, India, and Japan to cooperate both in promoting civilian use of nuclear energy in the Nuclear Renaissance era and in strengthening global nonproliferation efforts that may require new thinking when incorporating India.

Needs for Promoting Nuclear Energy: Three E's as Reasons for Promoting Nuclear Energy

Nuclear energy has been reevaluated from the viewpoints of three E's, namely Energy, Environment, and Economy. The expectations for nuclear energy have been rising at every corner of the world for stabilizing energy supply by including it in the diversification plan or the so-called "best-mix" of energy sources, and for reducing GHG emissions while maintaining a high level of economic activity. This trend, depicted as the "Nuclear Renaissance," certainly requires us to deepen cooperation in the nuclear industry, research, and development as well as working to reduce various risks.

Energy

As a result of the increasing prices of energy resources such as oil, natural gas, and coal, and increasing concerns over global warming, the role of nuclear energy has been spotlighted. The effectiveness of utilizing nuclear energy in energy security has been proven by the Japanese experience. When the oil crises (or "oil shocks") struck Japan in the 1970s, the rise of oil prices brought about panic to the Japanese economy and the price of electricity sharply increased. At

that time, power generation in Japan depended significantly on oil, which accounted for 71 percent of the total, with only 2.6 percent of the energy produced by nuclear power at the time. In 2005, nuclear power accounted for 31 percent whereas oil-based energy accounted for only 9.5 percent, coal for 25.7 percent, and LNG for 23.8 percent. As a result, despite a sharp rise in oil prices between 2000 and 2006 (from around \$25 per barrel to \$65), electric utility prices slightly declined. In essence, nuclear power stabilized Japan's electricity supply.

Now, energy consumption has been significantly expanding on a global scale. China and India, two development centers of the world economy, in combination of other growing economies, lead the trend. For example, between 2000 and 2004, Chinese electricity production increased by approximately 90 billion kWh, which was equivalent to Japan's total electricity demand in 2005. As a result, competition for securing oil supplies has become rather heated, and the supply and demand of oil is expected to become unbalanced.

To meet such an increasing demand for energy, China is planning to expand nuclear power generation from 6.8 million kWh in 2006 to 20 million kWh by 2020. India also plans to double its share of nuclear power capacity from 3 to 6 percent, and expand to 20 million kWh by 2020.

Environment

Nuclear energy is also expected to play a role in coping with global warming and climate change. Annual greenhouse gas emissions for the entire world was approximately 25 billion tons of CO₂ equivalents per year in 2003. The United States accounted for approximately 24 percent, Japan for 5 percent, and India for 4 percent of the total (The EU had 16 percent, China 14 percent, and Russia 6 percent.). Even though India's share is smaller than the others, combined, the three

countries are responsible for almost one-third of total world CO₂ emissions. In terms of CO₂ emission per GDP, which is a rough indication of energy efficiency for economic activities, Japan's figure is lowest at 58 metric tons of CO₂ equivalent for one million dollars of GDP whereas the United States is at 174, and India at 565. (Other major countries figures include: Canada at 197, the UK at 120, Russia at 1126, and China at 777.)¹

There are various technological approaches to reduce GHG emissions. For example, the development of renewable energy such as wind power and solar power could be a possibility.² However, in terms of stability and economy, these power resources are not very competitive. According to the estimates by the Ministry of International Trade and Industry (METI) of Japan, a 1 million kW class nuclear reactor needs to be replaced with 67 km² of solar panels or 246 km² of wind power mills. Costs for construction are 30 billion yen for a nuclear reactor, 6 trillion yen for solar power, and 1 trillion yen for wind power. Furthermore, comparison of GHG emissions by various energy resources shows a clear advantage of nuclear energy to others. While coal produces 975g of CO₂ to generate 1 kWh, and oil 742g, nuclear energy produces 22 to 25 g. The figure of nuclear energy is even competitive compared to solar and wind power. Since it does not produce CO₂ in the power generation process, nuclear power is one of the key technologies that promises to reduce GHG emissions.

Economy

According to the view that nuclear energy will be essential for sustainable growth of the global economy, expansion of nuclear markets and structural changes of the nuclear industry on a

¹ CO₂ emissions per capita show different picture.

Japan 2.6, US 5.5, Canada 4.6, UK 2.7, Russia 2.9, China 0.7, India 0.3. (metric tons of C eq/capita)

² It is also important to consider technology for carbon capture and storage (CCS).

global scale are underway. In the past ten years, new nuclear plants were built only on a limited scale – Japan built eight, Russia one, India six, and China six. In the coming years, markets for nuclear industries will surely expand. Worldwide, new nuclear power plant projects are being planned – Japan is planning 13, the United States 33, Russia approximately 40, India 20, and China 30. Furthermore, many developing countries are making their own plans, such as Vietnam, Indonesia, Kazakhstan, Turkey, and Egypt. By 2030, a total of 200 new GW of nuclear energy can be expected throughout the world.

The nuclear industry has also been in a process of major realignment. International corporate alliances have emerged – Westinghouse and Toshiba, General Electric and Hitachi, Areva and Mitsubishi Heavy Industry, for instance. Corporate alliances between Japan and the United States are, in fact, natural consequences of the reality that both industries need each other in order to be competitive in the global nuclear market. They have already established complementary relationships in supplying technology and engineering. In thriving within a more globalized and competitive transformation of the nuclear industry and market, U.S.-Japan industrial alliances should be an effective strategy.

In the area of research and development, the Global Nuclear Energy Partnership (GNEP) initiative put forth by the United States would pave the way to further developing international collaboration and cooperation in facilitating nuclear power on a global scale while addressing the issue of nuclear proliferation.

Stimulated by the expansion of civilian nuclear activities and the role of nuclear energy in environmental conservation, the United States and Japan decided to strengthen their nuclear cooperation. In April 2007, two countries signed the U.S.-Japan Joint Nuclear Energy Action Plan. The Action Plan outlines areas in which the United States and Japan will further promote

their cooperation and contribution to facilitating civilian use of nuclear energy. The main items are: 1) cooperative research and development of nuclear energy under GNEP; 2) collaboration on policies and programs that support the construction of new nuclear power plants; 3) establishing nuclear fuel supply assurance mechanism; and 4) joint collaboration to support the safe and secure expansion of nuclear energy in interested countries while promoting nonproliferation.

Likewise, the United States has also strived toward cooperation with India in civilian nuclear programs. Although the deal between the United States and India would require many changes to accommodate with and fit into nonproliferation norms, it is rational in terms of energy and environmental needs.

Non-Proliferation Challenges and Reinforcing and Revitalizing Non-proliferation Norms

In the post-Cold War period, the international community faces challenges of proliferation in various ways. The most imminent challenge is how to stop ongoing nuclear weapons development by “rogue states such as North Korea and Iran. Both countries have violated or cheated the NPT and International Atomic Energy Agency (IAEA) Safeguards Agreement, which are the pillars of the existing international nonproliferation regime. These ongoing, imminent proliferation problems are currently dealt with by *ad-hoc* groups of relevant countries such as the Six Party Talks and “EU3 plus Three,” instead of the IAEA. For proliferation cases such as North Korea and Iran, the existing NPT-IAEA regime may not be able to provide the effective measures or tools to resolve them. Therefore, enforcement mechanisms and measures other than the IAEA safeguards system should be introduced (UNSCR1540 and PSI are measures to strengthen enforcement of nonproliferation beyond NPT).

As the use of nuclear energy expands, various risks also arise. Largely, these risks that are propelled by the expansion nuclear energy on a global scale can be categorized into the three S's: Safety, Security, and Safeguards (or nonproliferation).

Safety risks involve accidents at nuclear power plants and other facilities, and the contamination of soil or water by leakage of nuclear materials from storage sites. Such risks have something to do with securing nuclear materials, facilities, and equipment from falling into the control of the wrong hands. For example, terrorist attacks on facilities, theft of materials, and illicit transfers (from nuclear sites) of nuclear materials and technologies are security risks (Obviously, they also constitute proliferation risks). Safeguard risk, or proliferation risk, includes the diversion of civilian nuclear materials and technologies for military purposes, or the exploitation of civilian nuclear programs to cover clandestine nuclear activities. Governments could channel the acquisition of technology and expertise (including expert training) to civilian programs and construct facilities that can later be used for weapons production. It would require internationally collaborative efforts to minimize such risks. The following discussion focuses on the proliferation risks and security risks.

Proliferation Risks

Among proliferation risks, the threat of the acquisition of weapons by non-state actors is a difficult one to “counter” since terrorists do not respect conventional rules of security. Conventional deterrence theory is not applicable to terrorists. While states can be deterred from nuclear attack by threats of retaliation, terrorists cannot because they do not have land, a subject population, or other possessions, which are exposed to retaliatory attack. In the meantime, due to underground proliferation networks operated by individuals and loose controls over nuclear

materials in various places, access to nuclear weapons materials, expertise and technology is now considered less difficult (even though specialists still think that acquiring fissile material for weapon fabrication remains the biggest obstacle). The conventional legal arrangements in nuclear non-proliferation are not designed to cope with such new types of threats, or nuclear terrorism in particular. The NPT deals only with states, and so activities by non-state actors or individuals are subject only to individual national legislation.

Acquisition of potential nuclear capability by states through pursuit of civilian nuclear programs may be another potential concern for future proliferation. Although all states are entitled to enjoy the “inalienable right” of the peaceful use of nuclear energy, if civilian nuclear activities are not properly safeguarded, they would become dangerous proliferation risks. As cases of North Korea, Iraq before the Gulf War in 1991, and Iran (to some extent) show, civilian nuclear programs have provided a legitimate reason, a channel to collect nuclear technology and accumulate material, and a cover-up for hidden intentions. They could channel the acquisition of technology and expertise (including expert training) and provide cover for facilities that could later be turned to weapons material production facilities, even if military intentions had existed from the beginning. These cases are often referred to as examples of how the NPT-IAEA regime is substandard to prevent proliferation through civilian nuclear activities.

Expectations for India's increasing roles

Getting India involved in global nonproliferation efforts would be important and useful for strengthening global nonproliferation. As a rising economic and industrial power, as well as a key player in South Asia, and even the entire Asian strategic game, India should play an important role in international peace and security.

India might want to consider further contribution to nonproliferation beyond minding its own nonproliferation record. That is, India should take a reasonable share of responsibility in envisioning and strengthening an international non-proliferation regime. Being aware of India's impeccable record of non-proliferation, it is about time for India to make clear its vision of how to contribute to strengthen the international non-proliferation regime, in addition to its own record and good standing on nonproliferation in the past.

In general, attaching or adhering to any kind of international arrangement makes a state lose flexibility in their execution of national strategy. Nevertheless, commitment to international cooperation also brings about rewards as well. Sometimes, losing flexibility and receiving rewards from international cooperation is a good trade-off. However, as a state gains more influence in the international community, its self-seeking activities ironically turn out to be harmful to its interests. Self-seeking behavior by states in an international system raises the cost of sustaining the system, and if the system were to collapse because of it, the level of risk would increase. In that case, the cost of countering or responding to incidents caused by the lack of international norms would become much higher than sharing the cost of maintaining the effectiveness of the regime.

After the indefinite extension of the NPT in 1995, non-nuclear weapon states (NNWS) have had the perception that the NPT's "grand bargain" (among nonproliferation obligations, disarmament, and the privilege of peaceful use of nuclear energy) is getting less balanced and losing steam to correct such imbalances. In a sense, the balance of the NPT grand bargain for nonproliferation, disarmament, and peaceful use is seemingly collapsing. It has been especially true since nuclear weapon states (NWS), from the perspective of NNWS, are under-satisfying or even ignoring their commitments for disarmament under the NPT, which was supposedly

reinvigorated by a decision at the 1995 NPT review conference and the final document of the 2000 Review Conference.³ Therefore, NNWS lose their incentive to comply with NPT obligations, and they might strongly oppose more restrictions in accessing the benefits of nuclear technology (or technology *per se*). Even efforts towards the universalization of the Additional Protocol of IAEA Safeguards agreements face a difficult time.

Under such circumstances, there is a growing argument that the NPT is no longer an effective legal framework to prevent proliferation. However, it is arguable whether one can conclude that the NPT regime was useless, and will be hopeless in the future. The NPT has certainly provided a legal background to prohibit states from going nuclear. In the 1960s, there was a prediction that more than 20 countries might go nuclear. Japan, West Germany, South Korea, and others were listed among suspects of nuclearization, since they were capable of developing nuclear weapons. Various factors such as security arrangements with their allies, technological constraints, and legal constraints provided by the NPT and IAEA safeguards made them refrain from pursuing the nuclear option. Currently 188 states (if the DPRK is included) have signed the treaty, and officially committed themselves to the norm of non-proliferation. The NPT has functioned as a relatively effective framework that has bound the signatory states and provided a legal and normative foundation for international nonproliferation measures, including measures outside the NPT-IAEA system. For example, without a legal provision under the NPT, it would have been impossible to introduce the Nuclear Suppliers Group, a kind of a nuclear exporter's cartel.

³ 1995 NPT Conference Final Document. (Document, NPT/CONF.1995/32 (Part I), Annex, Decision 2, Principles and Objectives for Nuclear Non-Proliferation and Disarmament, New York, USA, 12 May 1995); and, 2000 NPT Conference Final Document. (Document, NPT/CONF.2000/28, Final Document, New York, USA, May 2000).

Considering foreseeable political muddling, the cost for changing the NPT would probably be too high, since there would be no guarantee that the international community would agree on creating a new international arrangement to replace the NPT. Even if there could be an international consensus, there would be no way to guarantee that a new framework would be successful. If such efforts to replace the NPT with another arrangement turned out to be a failure, the situation would be more disastrous than now. Upon consideration of the risk of losing a pillar (or 'legal basis') of a nearly universal nonproliferation norm, the NPT is still too good to discard. Therefore, it is questionable whether it would be a realistic policy choice to abandon or amend the NPT. Rather, the international community should take measures to close the loopholes and to supplement the existing regime by reinforcing the nonproliferation norms provided by the regime. Even if India is not going to sign NPT, India (as well as other non-NPT nuclear weapon states) could contribute to strengthening the international nonproliferation regime. They may as well accept nonproliferation obligations accepted and committed by the five NPT nuclear weapon states.⁴ Five NPT NWS have been committed to an obligation to sincerely negotiate on nuclear disarmament under NPT article VI. Four NWS have declared moratoriums of production of fissile material while the other, China, has reportedly ceased to produce without declaring a moratorium. Five NWS have signed the Comprehensive Test Ban Treaty (CTBT), although two are have not yet ratified it. This would contribute to easing the anxiety among NNWS that a "grand bargain" on cooperation in peaceful use of nuclear energy, disarmament and nonproliferation are being ignored. Such efforts by India would also ease the criticism both at home and abroad of nuclear hypocrisy and "double standards," directed at states that could begin to cooperate with India; any state wants to proceed with nuclear cooperation with India in the

⁴ I am well aware that there must be a strong domestic political resistance in India to lose the flexibility in its nuclear posture and policy in the absence of any international agreement.

atmosphere of celebration, not in a storm of condemnation. In particular, maintaining a sense of adherence by NNWS to nonproliferation norms would be a key to keeping the cost of containing proliferation down in the future.

In conjunction with responsible behavior in the field of non-proliferation, India's commitment to international efforts to dismantle Iran's nuclear ambition would also be valued since it would contribute to stability in the Middle East.

As India grows in terms of the size of population, and given the magnitude of economic and technological development, it has become an important player in the international strategic and security environment. India is no longer a simple actor, or 'free rider' of the international system that was established and maintained by others. The international community will expect that India will responsibly take a more proactive role in envisioning and maintaining an international order, which would serve global public interests. The U.S.-India deal will provide the best opportunity with India to demonstrate its capability of doing so.

Strengthening Domestic Measures to Prevent Proliferation Activities: A Challenge to All

While designing and building robust international institutions for nonproliferation are tasks that the international community must tackle, states also need to strengthen domestic mechanisms for nonproliferation such as export control and joining PSI, which are measures that states can immediately take. In the area of export control, catch-all control rather than list control has become essential as dual-use items increase. In order to make the export control system effective, a state must have 1) appropriate national laws and regulations, which are interlocked with international laws and agreements; 2) industry awareness and compliance based on best practices

and internal compliance programs; and 3) enforcement capacity to prevent illicit trade while facilitating legitimate transactions.

Recent cases of Yamaha and Mitsutoyo showed that even Japanese companies were not well-aware of the fact that violating export control regulations harms not only national and international security, but also brings about serious consequences to their business.⁵ We need to strengthen our enforcement capacity by establishing a more effective end-user verification system, investigation by government agencies, and stricter enforcement. At the same time, we also need to strengthen outreach to industries to encourage them to unequivocally comply with export control regulations.⁶

As previous cases of illicit trafficking of technology, material and equipment showed, the importance of export control is now relevant not only to traders and manufacturers in industrialized states, but also those in developing states.

Furthermore, countries such as Japan and India should not only focus their efforts on domestic matters, but also work to increase the capacity of the international community, particularly in Asia. Although Asia-Pacific states have been trying hard to introduce more effective export control and other non-proliferation measures, further cooperation with states in the region is essential in areas of industry awareness, capacity building of regulatory agencies (e.g., commodity identification, licensing procedures, etc.), and information sharing.

Japan's Position on Non-Proliferation

⁵ Yamaha Motor exported illicitly unmanned aerial vehicles, and is suspected to have exported remote-controlled helicopters to China. Mitsutoyo exported three dimensional coordinated measuring instruments and software to Thailand (which could have been used as a point of transshipment) and China, and also to Scomi in Malaysia and IAEA found one at a nuclear facility in Libya.

⁶ We also need to address some other key issues such as intangible technology transfer, brokering, transit and transshipment.

U.S. Extended Deterrence and Changing Nuclear 'Taboo'

For the Japanese public, nuclear weapons held by the United States have been perceived as a “necessary evil” for the security of Japan as well as for the world. Stemming from the harsh, miserable experiences in Hiroshima and Nagasaki in 1945 as well as the exposure of a fishery boat to American nuclear test fallout in the South Pacific in 1954⁷, a deep-rooted sense of taboo against nuclear weapons in the Japanese people exists. Therefore, the underlying mentality among the Japanese vis-à-vis nuclear weapons is something like; “it is not the best choice for Japan to accept (implying that it was not their own choice, but imposed by politicians, Americans, or post-war security environment) the United States’ extended deterrence, but, for the time being, we will do so until the total elimination of nuclear weapons can be realized.” Such a mindset has led to the ambiguous position of Japan toward the security alliance with the United States, nuclear disarmament, and nonproliferation.

For Japan, the proliferation of nuclear weapons is fundamentally unacceptable. Therefore, Japan takes proactive steps toward facilitating various international efforts to strengthen nonproliferation. It is totally consistent with Japan’s mentality against nuclear weapons, and Japan coordinates closely with the United States in various efforts such as promoting the PSI, facilitating the implementation of United Nations Security Council Resolution 1540, and export control outreach.

However, as far as disarmament is concerned, Japan is in a difficult position. Japan needs to reconcile two “seemingly” different positions vis-à-vis nuclear weapons: reliance on the U.S. extended deterrence and strong promotion of nuclear disarmament. In an official interpretation of

⁷ The fallout incident, or the ‘*Dai-go Fukuryu-maru jiken (Lucky Dragon No. 5 incident)*,’ triggered a nation-wide citizens movement against nuclear weapons. That movement, rather than experiences of Hiroshima and Nagasaki, was the impetus of Japan’s anti-nuclear movements, although the *Hiroshima* and *Nagasaki* were also very important in shaping Japan’s nuclear taboos.

the Ministry of Foreign Affairs of Japan, the origin of Japan's basic position on nuclear disarmament and nonproliferation is often explained as stemming from two fundamental requests: 1) "a request for an effort toward the total elimination of nuclear weapons to improve Japan's security environment as the only country to have suffered nuclear devastation, as well as from a long term perspective;" and 2) "a request not to harm Japan's security while Japan relies on the United States' deterrence, including the nuclear one."⁸ It means that Japan will pursue the total elimination of nuclear weapons while relying on the United States' extended deterrence for the time being. Realistically, it would not be easy to create a strategic environment in which Japan could secure its peace and safety and survive without the United States' extended deterrence.

Impact of North Korea's Nuclear Test

Despite the magnitude of media coverage and public attention, the North Korean nuclear test did not result in fundamentally changing Japan's posture toward nuclear weapons. Even after the North Korean nuclear test in October of 2006, the overwhelming majority of the Japanese people supported Japan's non-nuclear policy. (See the table below)

Table: Japanese views on non-nuclear policy after North Korea's nuclear test⁹

Q: Do you think that Japan should maintain the three non-nuclear principles of "not possessing, not producing and not introducing nuclear weapons," or should Japan reconsider it due to the changes in the international environment?

A: Japan should maintain 66.6 percent

⁸ Japan Ministry of Foreign Affairs. *Japan's Disarmament and Non-Proliferation Policy*. (Tokyo: MOFA, 2006).

⁹ *Yomiuri Shimbun*, (21 November 2006).

Japan should probably maintain	13.3 percent
Japan should probably reconsider	8.1 percent
Japan should reconsider	2.6 percent

Despite calls by some conservative political leaders for starting the debate on Japan's nuclear option (we should note that it is not a call for nuclear option, but a call for the "debate" on the nuclear option) after North Korea's nuclear test, the nuclear option did not become a serious option for security policy in both public and policy-decision levels. Another survey showed that an increasing percentage of the Japanese population accepted a debate over a nuclear option, but a nuclear option itself did not gain popularity.¹⁰ What this data shows is a possibility that Japan's denial of the nuclear option may not be a result of simple nuclear taboo derived from past experiences. Rather, the Japanese people have started to consider more rationally about what would be the best choice for Japan's national interests, although such discourse has yet to mature. At the same time, the Japanese people in general have understood the necessity that Japan should depend on the nuclear deterrence that the United States extends for its security.

In the meantime, the credibility and reputation of the NPT regime among the Japanese public has deteriorated in the midst of North Korea's nuclear test. The Japanese government, however, believes that the NPT must be strengthened rather than replaced or discarded. It understands that to strengthen nonproliferation, nonproliferation mechanisms supporting and complementing the NPT must be discussed and implemented. It also reaffirms the importance of

¹⁰ *Mainichi Shimbun*, (27 November 2006). According to the *Mainichi Shimbun* survey, 61% of the respondents answered that Japan should not possess nuclear weapons but may discuss on a nuclear option. But 80% of the respondent opposed a nuclear option. Only 8% answered that a debate must be conducted for going nuclear.

the early enforcement of the CTBT and full operation of its International Monitoring System (IMS)¹¹.

US-India Nuclear Deal from the Japanese Perspective: Bringing India in as a Real Partner of Global Nonproliferation Efforts

Since the U.S. Congress has passed legislation approving the agreement, the international community may move toward recognizing this controversial, unprecedented deal. The accrediting of India's current nuclear status by the United States would be followed by other major countries such as Russia and France, and eventually the majority of the international community because the Indian civilian nuclear market is extremely attractive.

As of June 2007, the Japanese government has not determined its position vis-à-vis nuclear cooperation with India. It has been examining the pros and cons of the deal for global disarmament and nonproliferation as well as for Japan's national interests. For the Japanese government, which has cherished the NPT it ratified in 1976, it would be very tough to approve giving a "reward" to a non-NPT nuclear weapon state. It may also be considering the fact that cooperation with India would send the wrong signal to North Korea that its nuclear status would eventually be acknowledged by the international community. However, in reality, it would be less likely that Japan would take the risk of being isolated among major nuclear energy countries in the NSG to oppose the deal with India. Furthermore, since the Japanese and U.S. nuclear industries are complementary and indispensable to each other in constructing nuclear power plants, Japan would face serious pressure from the United States if it decided to oppose.

Therefore, the real issue here would be to what extent India can actually contribute with

actions as well as words to strengthening the global nonproliferation regime, making commitments on nuclear disarmament and nonproliferation as international obligations.

For example, even if the United States is not willing to ratify the CTBT, it has signed it, and declared a moratorium on testing. India, though it has declared a moratorium, has not even signed the treaty yet. All NPT NWS except China have declared a moratorium of the production of fissile materials for nuclear weapons. India has not. However, India stated that it would cooperate in the negotiation process for a Fissile Material Cut-off Treaty (FMCT).

The fact that India and China have not declared a moratorium on fissile material production would lead us to a rather daunting situation for the future security environment in Asia, considering what would happen if the bilateral strategic relationship between India and China deteriorated. This scenario may not be likely to happen in the near future, but it seems that two nuclear weapon powers sitting in Asia without any restrictions on nuclear material control is not a comfortable environment for other countries in the region.

In addition, taking into account current Japan's strong inclination toward promoting nuclear disarmament, the CTBT and fissile material moratorium issues could be conditionality that the Japanese public might impose on their government in cooperating with India. But Japan may not have strong leverage in negotiating with India, and Japan's attempt is likely to be unsuccessful. Some also argue that using conditionality as a diplomatic card may not be helpful in establishing firmer relations with India. In the meantime, if Japan does not keep on adhering to its strong disarmament commitment and simply let the Japan-India cooperation go through, there could be speculation that Japan might be wanting to pave the way for itself in preparing for its own nuclear weapons program, by setting a precedent case of civilian nuclear cooperation with a *de facto* nuclear weapons state (although there are few Japanese who think in this way).

Japan's attitude toward multilateral control initiatives

Japan is the largest nuclear energy producer for a non-nuclear weapon country and, overall, behind two nuclear weapons countries, the United States and France. In Japan, 55 nuclear reactors are in operation for generating electricity with a total output of approximately 50 GWe, supplying 31 percent of total electricity supply in Japan. In addition, three new plants, including *Monju*, a fast breeder reactor (FBR), are currently under construction.

Japan is not only the largest nuclear energy country without a nuclear weapons program, but also a country that possesses a (almost) full scale nuclear fuel cycle program. Due to the limited availability of natural resources and harsh experiences due to oil supply shortages in the 1970s, Japan has been keen to develop ways to secure its own energy resources. With a lack of indigenous natural resource reserves, spent fuel reprocessing is a very attractive option for Japan.

Japan has started its own research and development activities of uranium enrichment technology in the 1960s, and the commercial operation of an enrichment facility with a capacity of 1,050 tons Separative Work Units (SWU) per year started in 1992. At Rokkasho, the final commissioning tests of the reprocessing facility with a capacity of 800 tons per year are undergoing. The facility was expected to start its commercial operation in 2007.

With this background, the Japanese government, as well as the nuclear energy community, was initially concerned about a proposal by Dr. Mohamed ElBaradei, Secretary-General of IAEA, on multilateral nuclear fuel cycle control. This first appeared in the pages of *The Economist* in October 2003, and the concern is that it might undermine Japan's ongoing, serious quest for establishing its own fuel cycle reprocessing.¹² In February 2004, President Bush independently suggested an arrangement to assure nuclear fuel supply to states that would give

¹² Mohamed ElBaradei, "Toward a Safer World," *The Economist*, (October 18, 2003): 47-48.

up pursuing their own nuclear fuel cycle.¹³ The U.S. Department of Energy also made a proposal on the establishment of a fuel bank to provide 17.4 tons of highly enriched uranium to be blended down for fuel reserves.¹⁴

Japan is anxious about being excluded from a group of suppliers. If it fails to become an inner circle member of a fuel cycle (or fuel suppliers) community, the possibility for Japan to secure its nuclear fuel will be terminated, and its energy supply will be less secure.

In the early stage of developing a nuclear energy program in a country, securing a stable availability of fuel in an international market is very critical, as the Japanese experience shows. Therefore, in principle, the Japanese government and industry supports the idea of establishing an international mechanism to assure nuclear fuel supply.

Japan, in part as a response, as well as a supplement to an idea of a “Concept for a Multilateral Mechanism for Reliable Access to Nuclear Fuel” proposed by France, Germany, the Netherlands, the Russian Federation, the United Kingdom and the United States (E6 proposal, E for enrichment) in June 2006, submitted its proposal, “Japan’s Proposal: IAEA Standby Arrangements System for the Assurance of Nuclear Fuel Supply.”¹⁵

While the E6 proposal deals only with uranium enrichment services, Japan’s proposal covers all important activities of the front-end of nuclear fuel cycle – uranium supply, storage, conversion, and fuel fabrication – taking into account the possibility that market failure might occur at any stage of fuel cycle. The Japanese proposal is also more careful in the categorization of states participating in the fuel supply system, avoiding the simple dichotomy of supplier states

¹³ U.S. President George W. Bush. *Remarks by the President on Weapons of Mass Destruction Proliferation*, (National Defense University, USA, 11 February 2004).

¹⁴ International Atomic Energy Agency, *Communication dated 28 September 2005 from the Permanent Mission of the United States to the Agency*, INFCIRC/659, 29 September 2005.

¹⁵ International Atomic Energy Agency, *Communication received on 12 September 2006 from the Permanent Mission of Japan to the Agency concerning arrangements for the assurance of nuclear fuel supply*, INFCIRC/683, 15 September 15, 2006.

and recipient states, which the E6 proposal employs. Japan, which now has the enrichment capacity only to cover a part of domestic demand, hopes and plans to export fuel in the future, but may not fall into any category under the E6 plan. Other countries like Canada and Australia, which export uranium to fuel fabrication states, may also not be categorized by this dichotomy.

Japan is also concerned that the possibility of a multilateral fuel cycle control system might undermine the NPT rather than reinforce it, if the system is perceived as inconsistent with the Article IV, creating new 'haves' and 'have-nots' problems in the NPT framework that has already accepted the inequality in possession of nuclear weapons.

In Japan, there are also some voices that raise technical concerns over assurance of supply. For example, stockpile of fuel should not be in the form of the final product of fuel assemblies since models of fuel assemblies are different in one type of reactor from another. It is not practical to have all types of fuel assemblies as reserves. In that case, uranium fuel should be made available in the form of enriched uranium dioxide (UO₂) powder or yellow cake (U₃O₈). But in this case, a new problem emerges on who would produce fuel assemblies, and how intellectual property rights related to fuel assemblies, loading and operating fuel in a reactor are dealt with.

Whereas it is predicted that it would take a relatively long time before such an idea would become an operational mechanism after gaining an international agreement, Japan's strategy, at least for the time being in dealing with the idea of multilateral control of fuel cycles is twofold. First, it must secure a seat in a small decision making community on this matter. Second, it must secure a future possibility of Japan becoming a supplier state (or at least, self-sufficient supplier) of nuclear fuel.

Conclusion

As energy security and environmental concerns rise, the role of nuclear energy is increasing. As the use of nuclear energy expands, safety, security, and safeguards (nonproliferation) risks are also increasing. In order to develop nuclear power safely and smoothly, we do need to cope with such risks by all means including technological approaches such as GNEP's R&D on proliferation resistant reactors and fuel cycles, sophisticated safeguards and detection, international mechanisms and cooperation such as PSI, export control regimes, assurance of fuel supply and multilateral control of fuel cycle, and reinforcing the nonproliferation norms stemming from the NPT. Strengthening norms would eventually contribute to effective enforcement of nonproliferation rules and implementation of various nonproliferation mechanisms by reducing political costs of enforcement and of bringing other countries into adherence to such nonproliferation measures.

In such an environment, needless to say, the United States, Japan, and India are required to take more proactive roles in establishing robust and effective global nonproliferation mechanisms. In particular, the three countries need to work together to envision ways to further strengthen cooperation with India in civilian nuclear programs and reinforce global nonproliferation norms. This trilateral relationship in the nonproliferation area should not only be a mutually beneficial arrangement, but also a vehicle to promote global interests in nonproliferation. The roles and responsibilities of India will be further increased as it steps forward to become a more responsible global power, and the United States and Japan should cooperate with India to this end.