

**Proposals for Promoting the Peaceful Use of Nuclear Energy and  
Reinforcing Nuclear Non-Proliferation  
Toward a Simultaneous Solution to Global Warming and Energy Security**

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**Study Group on Nuclear Non-Proliferation**

**Background**

As indicated in the Fourth Assessment Report of the IPCC (Intergovernmental Panel on Climate Change), the main cause of global warming is the growth in emissions of greenhouse gases, predominantly through the use of fossil fuels. Coupled with recent rises in oil prices, the use of fossil fuels provides cause for concern also from the perspective of energy security. As China, India, and the other BRIC countries continue their economic growth, these threats will keep growing. In such circumstances, nuclear energy has been attracting increasing attention for its potential role as an effective means of addressing these two important issues, both of which are directly linked with the lives of citizens.

Using nuclear energy to generate electricity does not produce any carbon dioxide at all at the generation stage, so it is an extremely effective means of alleviating global warming. It already meets approximately 16 per cent of the world's demand for electricity, and with effective use of uranium resources, is considered capable of providing reliable supplies of energy for several centuries.

However, in order for nuclear power generation to fulfill its expected role into the future, there is a need for achieving a higher level of confidence in its safety and security. It is also vital to work to totally eliminate all nuclear proliferation concerns posed by the peaceful use of nuclear energy by strengthening international nuclear non-proliferation initiatives.

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) has 190 States Parties, making it one of the world's most universal treaties, and it forms the core of the international nuclear non-proliferation regime. Nevertheless, the treaty is less effective today than in past decades. Three countries—India, Pakistan and Israel—declined to sign the treaty from the start on the grounds including its unequal treatment of parties. Moreover, nuclear tests were conducted by India in 1974 and 1998 and by Pakistan in 1998.

North Korea declared its withdrawal from the NPT in January 2003 in the wake of suspicions that it was pursuing development of nuclear weapons through the enrichment of uranium, and after the halting of supplies of fuel oil that had been made to North Korea under the Agreed Framework between the U.S. and North Korea. A North Korean nuclear test followed in October 2006. The issue of North Korean nuclear capacity is of direct concern for Japan's security, and its abandonment is currently the subject of negotiation,

principally in bilateral talks between the U.S. and North Korea and in the six-party process. However, there is still no clear path to the elimination of North Korea's nuclear weapons.

In the Middle East, suspicions that Iran and other countries are developing nuclear weapons are still unresolved. The situation in Iran, where there is a possibility that the State is developing nuclear weapons under the cover of peaceful use, is pointed to as a serious problem inherent to the NPT. No clear solutions to this inherent structural challenge to the NPT have yet to emerge.

The menace of nuclear proliferation is not limited to action at the State level. Starting with the terrorist attacks on September 11, 2001, there has been a dramatic increase worldwide in terrorism perpetrated by non-State actors, and their activity is intensifying. Deterrence measures are ineffective against terrorists who have no specific land or people to defend. For that reason, there is a substantial risk that if such terrorists were to acquire nuclear weapons, they would be willing to use them. There is also concern that such non-State actors may steal some of the radioactive material that is widely traded around the world and use it in the form of dirty bombs rather than ordinary nuclear weapons.

In order to deal with the increasing menace of this sort of nuclear weapons development, there is a need to introduce and reinforce a range of control measures in the area of peaceful use of nuclear energy. However, many non-nuclear-weapon States are unlikely to be keen to concede new restrictions in the area of peaceful use of nuclear energy – especially if nuclear-weapon States continue to fail to fulfill their obligations for nuclear disarmament under Article VI of the NPT. Consequently, nuclear-weapon States will also need to make efforts for nuclear disarmament in response to the introduction of new measures for the purpose of nuclear non-proliferation.

Given the circumstances described above, we propose that the following measures be taken in the field of nuclear non-proliferation and disarmament.

## **Proposals**

### **1. Enhancing the functions of the IAEA**

The IAEA (International Atomic Energy Agency) celebrated its 50<sup>th</sup> anniversary in 2007. The international circumstances surrounding the Agency's work have changed greatly over that half-century. At the time when the IAEA was established, a few countries—basically countries with advanced economies and open societies—caused concerns about nuclear proliferation. For this reason, the IAEA's safeguards system was built on the declarations by its members with the assumption that verification of the correctness of declared information would be sufficient for safeguards purposes.

However, now that the Cold War is over, concern over nuclear proliferation focuses on a number of developing countries, some of which have closed societies. A need has arisen to quickly construct a new system that can prevent nuclear proliferation to countries of this type. Such need can be clearly seen from the discovery of nuclear weapons development in Iraq, a country that had never been cited by the IAEA for violating its safeguards agreement. Furthermore, there has recently been increasing concern about nuclear

proliferation among non-State actors. These changes in circumstances need to be taken into account. It is necessary to review the IAEA's functions and setup to enable it to respond rapidly and reliably to such threats and to establish a new perspective from which to confront nuclear proliferation effectively and efficiently. In particular, measures should emphasize points such as the following.

## **(1) Enhancing the IAEA's verification function**

### **(i) Requirements to conclude an Additional Protocol**

Following the discovery of nuclear weapons development in Iraq, the Model Additional Protocol was adopted in 1997 as a supplement to the existing safeguards agreements, extending the latter's cover to include undeclared facilities. This represents a breakthrough for the moves to strengthen the IAEA's verification functions, and ensuring that all parties conclude an Additional Protocol is vital to strengthening the NPT verification system. Concluding an Additional Protocol is not a legal obligation under the NPT, but it can be seen as an international standard for verifying compliance with NPT obligations, and it is important to ensure that all parties to the NPT share that understanding. This is an area in which Japan should play a leading role. Practical steps for doing this include, for example, using the G8 framework to reach agreement on making the supply of nuclear-related equipment, materials or technology conditional on concluding an Additional Protocol. More countries are expected to start using nuclear energy in the future, particularly in Asia, so Japan should take the initiative in promoting such agreement.

### **(ii) Establishment of a system for comprehensive analysis of public and other information**

In order to strengthen the IAEA's verification function, it is important to introduce new technology and concepts that surpass the current verification framework, and to establish at an early date a verification system in line with the objective of preventing nuclear proliferation. In order to do this, it is necessary to establish a system that allows performance of comprehensive verification based on analysis of public and other information, focusing on the proliferation paths that lead to possession of nuclear weapons.

## **(2) Collaborating with the Nuclear Suppliers Group**

Verification is a technique for detecting proliferation, not a technique for directly preventing it. The functions of the IAEA should be strengthened not only in the field of verification, but also in terms of preventing the proliferation of nuclear-related equipment, materials and technology. Prevention of the proliferation of nuclear-related equipment, materials and technology has largely been handled by the Nuclear Suppliers Group (NSG), but since the NSG is based on a 'gentleman's agreement,' it does not have a mechanism to verify the compliance with the agreement, including end use and re-transfer to third countries.

Serious consideration should be given to utilizing close links between the NSG and the IAEA to create an effective and efficient verification system regarding, for example, the

end use and end user of equipment, materials and technology covered. The IAEA would benefit from such links with the NSG in that it would receive information from the NSG that would be useful for its own verification activities. Japan should actively propose the consideration of such measures in fora such as the IAEA and NSG.

### **(3) Developing proliferation-resistant technologies**

As demand for generation of electricity from nuclear energy and for the uranium enrichment, nuclear fuel fabrication and spent fuel management grows around the world, the sensitive technology involved is expected to propagate extensively. The prevention of nuclear proliferation is primarily an issue of effort at the political level, and it cannot be achieved through technology alone. However, it would be effective to promote the development of proliferation-resistant technologies by improving on some of the characteristics inherent to the relevant technology, such as equipment and process design, and fuel characteristics. Systems for international collaboration should be established and strengthened to develop cost-effective technologies that incorporate properties providing proliferation resistance, with work taking place under IAEA leadership. Regarding this point, Japan potentially has a great deal to contribute, as its high levels of technology are likely to be useful in international collaborations. Japan should therefore work towards worldwide propagation of its proliferation-resistant technology.

## **2. Strengthening initiatives that supplement the NPT regime**

### **(1) Institutionalizing nuclear fuel supply assurance**

States Parties to the NPT are assured of an inalienable right to the peaceful use of nuclear energy. However, as symbolized by the suspicions of nuclear development by Iran, an increasing number of countries possess sensitive nuclear fuel cycle technologies, and this situation is a concern with regard to nuclear proliferation. At the same time, a stable supply of fuel is an indispensable requirement for countries that are newly adopting nuclear power. To prevent the proliferation of sensitive technology while at the same time enabling stable supplies of fuel to be secured, the advanced States that possess the ability to supply nuclear fuel and other necessities should actively cooperate in initiatives to construct systems to provide international fuel supply guarantees. From this perspective, efforts should now be made to integrate existing proposals, such as those of the six supplier States, Germany, Japan, Russia and the United Kingdom put forward at the 2006 IAEA Special Event. This could be done by the G8 or at other appropriate venues. The time has come to make this approach a reality.

### **(2) Strengthening and promoting export control and interdiction activities**

A. Q. Khan's nuclear black market is said to have played a significant role in nuclear development programs of Iran and North Korea, and this is another clear indication of the importance of the control of exports in addressing nuclear proliferation. Export controls are also important from the perspective of addressing nuclear proliferation among non-State actors. The NSG is an international group involved in controlling nuclear-related exports, but its membership numbers only 45 countries, most of which are advanced countries. As can be seen from the important role of countries such as Malaysia and the United Arab Emirates in the Khan Network, export controls need to be in place in all countries.

Regarding this issue, it is extremely important to ensure the implementation by all States of Security Council Resolution 1540 (2004), which imposes an obligation to take and enforce measures to establish domestic controls, including export controls. The 1540 Committee mandate, which is due to expire in April 2008, should be extended, and further measures should be taken to promote implementation of this resolution.

Export controls can never be 100 per cent effective in all situations, and many countries do not have systems for export controls in place. Border control action is necessary to prevent nuclear-related equipment and materials that have slipped past export controls from being unloaded at their destinations. It is important for the activities of the Proliferation Security Initiative (PSI), which is a coalition of the willing formed to achieve that objective, to be supported by the international community as a whole. It is also imperative to encourage as many countries as possible to ratify at the earliest opportunity the similarly-motivated Protocol of 2005 to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation.

### **(3) Enhancing nuclear security**

The illicit trafficking of nuclear materials, particularly from the former Soviet republics after the collapse of the Soviet Union at the end of the 20<sup>th</sup> century, and the international terrorism that became more active at the beginning of the 21<sup>st</sup> century together form the background to increased concern about the menace of nuclear terrorism. The use of nuclear weapons by terrorists is not necessarily an imminent threat, but the impact would be serious if such terrorism actually took place. The menace of dirty bombs utilizing radioactive material is also recognized to be a real threat. In order to handle this sort of nuclear-related menace from non-State actors, international norms relating to nuclear security must be urgently strengthened by the IAEA and applied rigorously by all States. At the same time, ratification of the International Convention for the Suppression of Acts of Nuclear Terrorism and the Convention on the Physical Protection of Nuclear Material, as amended, must be promoted more vigorously.

## **3. Promoting nuclear disarmament and effective use of materials from dismantled nuclear weapons**

### **(1) Nuclear disarmament**

The various measures described above need to be implemented in order to prevent the proliferation of nuclear weapons, regardless of whether among States or non-States. However, in many cases, the measures would embody an aspect of strengthening the controls applying to peaceful use of nuclear energy. In order for such new restrictions to be accepted by non-nuclear-weapon States including nonaligned countries, there is a need for the nuclear-weapon States to properly meet their obligations relating to nuclear disarmament. The need for nuclear disarmament also applies to those States outside the NPT that are *de facto* nuclear-weapon States.

Of the actual measures that should be taken by the *de jure* and *de facto* nuclear-weapon States, some of the most important are ratification of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) by those States that have not yet ratified it, efforts to put this Treaty into effect at an early date, and a continued moratorium on nuclear tests until the CTBT enters

into force. Immediate commencement of negotiations on a Fissile Material Cut-off Treaty (FMCT) and early agreement of the same are also vital, as are declarations for introducing or continuing a moratorium on the production of fissile material for nuclear weapons until an FMCT is concluded. For the U.S. and Russia, important issues include the extension of or replacement for the Strategic Arms Reduction Treaty (START-I) between the two countries that is scheduled to expire in 2009, and complete implementation and extension of or replacement for the Strategic Offensive Reduction Treaty (SORT) due to expire in 2012.

## **(2) Peaceful use of materials from dismantled nuclear weapons**

In addition to being meaningful for security, nuclear disarmament is also important from the perspective of peaceful use of nuclear energy. The nuclear material acquired through the reduction of nuclear weapons can be reused as fuel for nuclear power generation. The highly enriched uranium obtained by dismantling nuclear weapons from the former Soviet Union is being blended down and used as fuel for light water reactors. A similar approach is possible with plutonium, and at venues such as G8 meetings, Japan should actively advocate the accelerated reuse of plutonium from dismantled nuclear weapons as MOX fuel.