

**Policy Recommendations for Strengthening Global Non-Proliferation Architecture
to Facilitate Peaceful Use without Increasing the Risk of Nuclear Proliferation**

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Essence

1. The ‘inalienable rights’ in Article IV of the NPT ought to be interpreted as including rights to access, or to research and develop, fuel cycle technology.
2. The ‘technology access denial’ approach would have difficulties in preventing indigenous development and clandestine acquisition as well as in getting political consent.
3. The ‘criteria-based approach’ may not be perfect but, with the combination of strengthened responses to cases of non-compliance with the NPT as well as the IAEA safeguards agreement, it would play a central role in global nuclear non-proliferation.
4. The ‘incentive approach’ may be effective as a supplementary measure when it is combined with other approaches.
5. Support provided to emerging nuclear states for their efforts in 3S-related infrastructure development and capacity building could also be an effective approach in terms of decoupling expanded use of nuclear energy from the risks of nuclear proliferation, nuclear accidents and nuclear terrorism.
6. Technology would be best utilized in raising barriers to proliferation and strengthening the verification of non-compliance.
7. Recognizing the central role of the ‘criteria-based approach’, the best mix of various approaches must be formulated.
8. Regulatory, restrictive measures alone are not able to facilitate non-proliferation values. Packaging them with incentive measures would further strengthen the effectiveness and efficiency of regulatory, restrictive measures.

Premises

As the use of nuclear energy expands worldwide, the risk of nuclear proliferation would also rise under the existing modality of the nuclear non-proliferation regime. The spread of

sensitive technology related to the nuclear fuel cycle would be the most critical issue that we have to address in reducing the risk of proliferation. Without appropriate measures to control the proliferation risk arising from the expansion of nuclear energy and technology worldwide, the world would become a more dangerous place.

However, it is not easy to find a solution. Article IV of the Nuclear Non-Proliferation Treaty (NPT) prescribes the 'inalienable right' of peaceful use of nuclear energy. This is normally interpreted as allowing state parties to the NPT to conduct research and development of, or have access to, sensitive nuclear fuel cycle technology *per se* as well as to benefit from such technology, under the condition of full compliance with Articles I, II, and III of the NPT. If it were possible to constrain the spread of sensitive technology through an approach of denying access to such technologies by restricting the transfer of technology, this would allow us to contain the risk of proliferation. However, there are several concerns. First, indigenous development of fuel cycle technology cannot be prevented as information on such technology would be relatively easily accessible. Second, clandestine acquisition of technology would occur, of dual use items in particular. Such concerns remind us of the difficulty in containing proliferation risks at the entry point of the proliferation cycle. Third, intensifying restrictions on technology transfer through such a 'technology access denial' approach might cause a serious political polarization and create more nuclear 'haves' and 'have-nots,' which could undermine the reliability and credibility of the existing non-proliferation regime.

Therefore, it is important to establish a set of criteria for international transfer of nuclear fuel cycle technology and possession of a nuclear fuel cycle program, in combination with strengthened safeguard mechanisms for detection, verification, and enforcement against non-compliance. The criteria-based approach would allow states that meet predetermined criteria to possess a nuclear fuel cycle. While the criteria-based approach has a restrictive nature, it does not categorically deny access to fuel cycle technology. It should be universally applicable, not only to non-nuclear weapons states but also to nuclear weapons states, to supply-side states as well as demand-side ones. The Nuclear Suppliers Group (NSG) has already been moving toward a criteria-based approach for transfer of enrichment and reprocessing facilities/equipment and technology. What is important is decoupling, as much as possible, the promotion of peaceful use from the risks of nuclear terrorism, diversion of nuclear materials and technology to military purposes and clandestine activities as well as nuclear accidents, without relaxing the conditions for

nuclear trade.

The point, for the purpose of non-proliferation, is how to effectively contain latent intentions with strategic motives by preventing covert/overt acquisition of technology using objective and universal rules and criteria. At the same time, in order to avoid being exploited in authorizing the acquisition of technology for ill-purposed activities, strict and severe measures must be taken against violations of and non-compliance with international rules and obligations. Without these measures, the effectiveness of such a criteria-based approach would not be guaranteed. The criteria-based approach is also important in maintaining the credibility and legitimacy of the global non-proliferation regime by providing assurance of rule-based governance, not of governance by politically discriminatory decisions.

Incentives such as assurance of fuel supply through multilateral fuel cycle arrangements are important measures to encouraging new nuclear energy states to give up pursuing their own national fuel cycles from an economic viewpoint. Participation in multilateral arrangements may also result in demonstrating the faithful commitment of participating states to global non-proliferation norms. Non-participation, despite economic rationality, may also be a good reason to suspect hidden intentions behind such a decision. However, multilateral arrangements alone may not be sufficient as non-proliferation measures since participation in a multilateral arrangement cannot become a legally-binding obligation. If it is not possible to have legally-binding multilateralization of all fuel cycle activities, the incentive approach, such as multilateral arrangements, may work complementarily with other approaches.

It should also be noted that the incentive approach mentioned above deals only with economic incentives, which are not sufficient. Equally important is dismantling potential proliferators' political and strategic motives. Although this question is beyond the scope of this policy recommendation, this recommendation takes into consideration the need to address a fundamental challenge for nuclear non-proliferation: the improvement of the regional security environment so that potential proliferators would not be tempted to pursue nuclear ambitions to cope with their regional security concerns.

Lastly, in order to decouple expanded use of nuclear energy from the risks of nuclear proliferation, nuclear accidents and nuclear terrorism, we have to ensure the 3Ss, namely

nuclear non-proliferation/safeguards, nuclear safety and nuclear security, in emerging nuclear states. Advanced nuclear states such as Japan have a role and responsibility to support their efforts on 3S-related infrastructure development and capacity building. In this respect, the proposals to establish support centers for nuclear security made by several states, including Japan, during the nuclear security summit should be promoted in terms of sharing the expertise of advanced nuclear states with emerging nuclear states.

The technological approach should also have value. Although the technological approach alone is not able to prevent nuclear proliferation, we can reduce the risk of proliferation through utilization of the technological approach in combination with other approaches. For example, combining the adoption of proliferation-resistant technologies and extrinsic measures for proliferation resistance such as safeguards will increase overall proliferation resistance. Efforts to obtain international consensus on the guidelines for proliferation resistance as well as R&D efforts for proliferation-resistant nuclear technology should be promoted. Also, innovation and improvement in safeguards technologies, such as technology for measurement and detection, help promote the non-proliferation capabilities of the international community.

In considering the pros and cons of various approaches, it is important to stress that finding and developing the ‘best mix’ of multiple approaches with a combination of ‘restrictions’ and ‘incentives’ is an urgent task for the world.

What to Do?

1. Increasing the IAEA’s capabilities of detection and verification of non-compliance

- Better utilization and improvement of the IAEA’s existing tool kit
 - ✧ Utilizing a ‘Special Inspection’ mechanism in cases of non-cooperation or insufficient cooperation by the states concerned. This should be accompanied by entitling the IAEA to conduct clearer and wider mandates of verification.
 - ✧ Facilitating universalization of the Additional Protocol, which would provide a greater mandate to the IAEA’s safeguards activities
 - Being aware of the responsibility and necessity for their own interests, nuclear supplier states, in cooperation with the IAEA, should provide assistance to those states that have not ratified the Additional Protocol in order to build and improve their legal and technical infrastructure for

ratification.

- Nuclear armed states should also accept safeguards under the Additional Protocol for their civilian nuclear facilities in order to reduce the inequality of non-proliferation obligations between nuclear armed states and others.
- Adding another mandate to the G8 Global Partnership to channel support and assistance for adherence to the Additional Protocol
- Re-allocating resources more effectively and providing new tools and resources
 - ✧ Equipping intelligence capabilities, including its own capacity for imaginary data analysis
 - ✧ Allocating more human, financial and technological resources to safeguards activities
 - ✧ Considering the re-allocation of resources to verification in order to cope with verification challenges
 - Records of compliance and cooperation with IAEA verification activities, in particular the application of integrated safeguards, could be introduced as a condition for reducing inspection burdens. It would also help incentivize member states to comply with the Additional Protocol to the IAEA safeguards agreement.
 - ✧ Introducing new technical means for verification and monitoring

2. Improving enforcement through strengthening the linkage between the IAEA and the United Nations Security Council to increase the deterrent effects of the IAEA Safeguards system

- Granting a more authoritative mandate to IAEA inspections through UN Security Council resolutions with reference to Chapter VII of the UN Charter in cases of inadequate cooperation from states subject to inspection
- Adopting another resolution supporting and strengthening UNSCR 1887 to recognize and define cases of non-compliance as threats to international peace and security under Chapter VII of the UN Charter
- Requiring UN Security Council deliberation for the approval of a request for withdrawal from the NPT. During deliberation, full compliance with the IAEA Safeguards agreement should be required as a condition for withdrawal.
- Strengthening sanctions against non-compliance

3. Utilizing a criteria-based approach and strengthening responses (sanctions) to non-compliance

- Introducing an ‘Additional Protocol Plus’ and supporting NSG efforts to set up new guidelines for nuclear trades
 - ✧ Items in the ‘AP Plus’ should include:
 - Inspection and verification of weaponization-related activities
 - Transparency of activities and programs related to nuclear energy
 - Increased accountability of nuclear programs
 - Records of compliance/non-compliance and cooperation with the IAEA

4. Encouraging appropriate use of incentives through multilateral fuel cycle arrangements

- Assurance of fuel supply through bilateral or multilateral arrangements backed by the IAEA will serve the purpose of giving states incentives to rely on the international nuclear fuel market, rather than pursue indigenous nuclear fuel cycles.
- It would also be necessary to initiate an international discussion to address the accumulation of spent fuel, in particular in small and medium-sized nuclear energy countries.
- Such incentives, combined with a criteria-based approach, would encourage states to ensure compliance.

5. Setting the ‘3Ss’ and liability as criteria for cooperation: synergetic impact of the 3Ss concept and the overarching concept of the international nuclear order

- Elements of the ‘3Ss’ should be discussed at an appropriate international forum so that this concept can be effectively introduced as an international norm and rule.
- Coupling nuclear energy cooperation with 3S-related capacity building and liability
 - ✧ The ‘3Ss’ as a means of maintaining the quality of nuclear energy programs
 - ✧ Substantial ‘3S’ and liability regulations and institutions would reduce the risk of nuclear proliferation and terrorism that could undermine global security, as well as nuclear accidents that could endanger the lives of local populations as well as the future of nuclear energy.
 - ✧ Advanced nuclear states must coordinate and cooperate in their support provided to emerging nuclear states for their efforts on 3S-related

infrastructure development and capacity building, in parallel with promoting energy cooperation.

6. Establishing codes of conduct for the nuclear business

- The '3Ss' and liability could be restrictive measures to prevent nuclear energy from being best utilized in host countries receiving cooperation. However, the '3Ss' and liability could also be understood as the criteria for cooperation in the nuclear business.
- Necessity of contribution to human resource and regulatory infrastructure development in recipient states
- No packaging of nuclear deals with military cooperation as a confidence building measure, in order to avoid undermining the strategic environment of the region

7. Utilizing technology for reducing threats of nuclear proliferation

- Pursuing proliferation-resistant fuel cycle technology
 - ✧ Increasing the proliferation resistance of the nuclear fuel cycle through the best combination of intrinsic technological solutions and extrinsic measures in order to increase the proliferation-resistant character of the nuclear fuel cycle.
- Facilitating research and development of proliferation-resistant reactor and fuel cycle technologies
- Promoting international research and development initiatives for fast reactor cycle technology, taking into account proliferation resistance, so that fast reactor cycle technology with proliferation resistance will be deployed globally in the future.
 - ✧ In this respect we need to make efforts to build an international consensus on the guidelines for proliferation resistance for fast reactor cycle technology that include both intrinsic features and extrinsic measures.
- Promoting the Next Generation Safeguards Initiative

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