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THE PROJECT ON MANAGING THE ATOM

Recommendations for Limiting Transfers of Enrichment and Reprocessing Technologies

BOTTOM LINES

- **Moderate the rhetoric on limiting enrichment and reprocessing transfers.** It makes more sense for the U.S. and others to offer attractive alternatives to new nuclear states than to propose arrangements that seek to deny what countries consider their sovereign rights.
- **Strengthen nonproliferation measures within the Nuclear Suppliers Group (NSG).** The NSG should adopt new guidelines that offer greater specificity in the rules governing transfers of enrichment and reprocessing. Members should also register their commitments to promote access to nuclear energy to those states that are in compliance with their NPT obligations.
- **Strengthen international cooperation beyond the NSG to deal with the most serious proliferation risks.** Bolstering fuel assurances, offering "cradle to grave" nuclear services to states with modest nuclear programs, encouraging multilateral controls on enrichment and reprocessing, and putting pressure on those who would transfer sensitive nuclear technology to NPT scofflaws—all these steps require that states work together to be effective.

By Fred McGoldrick

This policy brief is based on Limiting Transfers of Enrichment and Reprocessing Technology: Issues, Constraints, Options*, a report of the Project on Managing the Atom.*

For several years, the Nuclear Suppliers Group (NSG) has been unable to reach a consensus on the adoption of revised guidelines for its members. The most contentious issue is how to strengthen restraints on the transfer of enrichment and reprocessing (E&R) technologies in a manner that would be acceptable to all NSG members, and credible to the major exporting states and the nuclear industry. This issue will be back on the agenda this month when the NSG meets in plenary session.

At present, only a handful of states possess enrichment or reprocessing facilities, and very few countries that do not already possess them have declared plans or intentions to acquire such capabilities for their civil nuclear programs in the near future. Therefore, initiatives to discourage the spread of enrichment and reprocessing facilities have a limited, albeit important, target audience.

Since few states have a firm stake in acquiring E&R facilities, it may prove an opportune time to win broad agreement on strengthened international norms to discourage the spread of these technologies. Still, it will be challenging, and indeed may ultimately prove impossible, to reconcile the idea of restricting enrichment and reprocessing technologies with the views of many non-nuclear-weapon states and developing countries on what they regard as their inalienable rights to peaceful nuclear technology, including E&R.

Given the above considerations, governments should take the following steps.

TONE IT DOWN

Moderate the rhetoric on limiting E&R transfers in large international fora and stress the Article IV rights of NPT parties and assistance to developing countries. Given the sharp divisions in the global community on this issue, a broad international consensus that would be universally credible to NPT parties, national parliaments, and private industry is most likely not an achievable goal. The most pragmatic strategy would be to tone down the rhetoric, emphasize the rights of NPT parties to the peaceful uses of nuclear energy as long as they are in compliance with their nonproliferation objectives, and increase assistance to developing countries in building the infrastructure for peaceful nuclear programs that do not necessarily require them to build their own E&R facilities. In other words, it makes more sense to offer attractive incentives and opportunities as an alternative to national enrichment and reprocessing than to propose arrangements that openly seek to deny what countries consider their sovereign rights.

STRENGTHEN RESTRAINTS WITHIN THE NUCLEAR SUPPLIERS GROUP

Concentrate on reaching agreement on the clean text on E&R transfers in the NSG. The NSG has come very close to reaching agreement on the so-called "clean text" language for restraining E&R transfers. Abandoning the effort at this point would represent a major failure. Since there are no transfers of E&R contemplated in the foreseeable future, there is still ample time to try to obtain consensus on the clean text. With sufficient diplomatic effort, this could very well be achievable. The G-8 should continue to adopt the clean text either on an annual or more permanent basis.

If agreement on the current clean text proves impossible, adopt the objective criteria in the clean text. Taking this step would at least rule out E&R transfers to states that are not party to the NPT or that are not adhering to their nonproliferation commitments. This option would retain the existing NSG guidelines on E&R transfers, including the requirements to exercise restraint and to encourage multinational or supplier involvement in transferred E&R facilities.

Adopt new language in the NSG guidelines that would affirm Article IV rights and register commitments to promote international cooperation with states as long as they are in conformity with the obligations of NPT. If the NSG adopts the clean text or only the objective criteria, the group should take steps to mute criticisms of discrimination and denial of NPT rights and to help refute charges that the NSG is a cartel of nuclear haves seeking to deprive have-nots of the full benefits of peaceful nuclear technology. The NSG should therefore adopt, along with strengthened controls on E&R, new formulations in its published guidelines that would affirm the inalienable right of all NPT Parties to the peaceful uses of nuclear energy. NSG members should register their commitment to the exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy, in particular for developing countries, as long as they are in conformity with the obligations of NPT.

Strengthen NSG efforts on effective implementation of the existing guidelines. These guidelines have worked well to date, and the real problem has been the work of clandestine supply networks by rogue suppliers and countries seeking nuclear weapons. The NSG should commit to greater cooperation in sharing information on the techniques and methods that rogue supplier states and nuclear weapons aspirants employ to obtain exports illegally. This should include a greater willingness to share intelligence information among exporting states, both NSG members and non-NSG members.

STRENGTHEN OTHER NONPROLIFERATION MEASURES

Promote fuel assurances. A strategy of offering improved fuel assurances is likely to have positive but limited benefits in discouraging the spread of enrichment and reprocessing; this approach is likely to appeal only to small states that may be concerned about security of supply. In any event, the U.S. and Russian LEU stockpiles plus the IAEA fuel bank and the UK enrichment bond scheme ought to constitute sufficient fuel supply backup mechanisms without disrupting the global market.

Give serious consideration to placing enrichment and reprocessing facilities under some form of multinational auspices or control. Even if technology holders do not make an effort to make the multinational model a global norm, multinational enrichment ventures of one kind or another seem to have emerged as common practice among technology holders, with AREVA, URENCO, Angarsk, Silex and now USEC all involving some form of multinational participation. At a minimum this trend should be encouraged.

Recognize the limited application of the U.S.-UAE model of discouraging the spread of E&R. The model of nuclear cooperation that the United States has put into place with the United Arab Emirates will face considerable obstacles in winning acceptance by other states both in the region and elsewhere. Moreover, other suppliers are highly unlikely to follow this model. Thus the utility of this approach to preventing the spread of E&R may be limited to a very few countries; the prospects of it serving as a more general model are dim.

Seriously explore the feasibility of cradle-to-grave fuel cycle options, particularly for countries with small nuclear programs. Suppliers will generally face formidable public acceptance obstacles in trying to offer cradle-to-grave fuel cycle services, especially on a broad basis, since they would require some countries accepting spent fuel or nuclear waste from other countries. However, suppliers may find it possible to overcome political opposition if they limit their offers to assume responsibility for managing other countries' spent fuel to those nations that have small nuclear programs and/or are in regions of political instability or proliferation concern.

Give priority to development and deployment of improved safeguards techniques, including universal adoption of the Additional Protocol as well as physical protection for enrichment and reprocessing plants.

Continue further research, development, and demonstration of more proliferation-resistant fuel cycle technologies. These efforts must be accompanied by strengthened international safeguards, export controls, institutional checks, and other non-technical measures.

Apply the maximum diplomatic pressure to states that seek to transfer sensitive nuclear technology to countries that are in violation of their nonproliferation commitments, are located in unstable regions, or present unacceptable proliferation risks. Diplomatic interventions and interdictions have been the most effective means of stopping the spread of E&R (e.g. the United States with proposed German and French transfers of reprocessing to South Korea, Taiwan, and Pakistan in the 1970s, the U.S. diplomatic initiatives with proposed Russian transfers of enrichment technology to Iran, and the interdiction of Pakistani transfers of sensitive nuclear technology to Libya).

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Fred McGoldrick is an Associate of the Managing the Atom Project with extensive experience in nuclear non-proliferation and international nuclear policy fields. He held senior positions in the U.S. Department of Energy and the U.S. Department of State, where he negotiated U.S. peaceful nuclear cooperation agreements and helped shape U.S. policy to prevent the spread of nuclear weapons. He also served in the U.S. Mission to the International Atomic Energy Agency (IAEA) in Vienna. Since his retirement from the State Department, he has been a partner in Bengelsdorf, McGoldrick and Associates, LLC., an international consulting firm.

ABOUT THE PROJECT ON MANAGING THE ATOM

The Project on Managing the Atom (MTA) is the Harvard Kennedy School's principal research group on nuclear policy issues. Established in 1996, the purpose of the MTA project is to advance policy-relevant ideas and analysis for reducing the risks from nuclear and radiological terrorism; stopping nuclear proliferation and reducing nuclear arsenals; lowering the barriers to safe, secure, and peaceful nuclear-energy use; and addressing the connections among these problems. Through its pre- and post-doctoral fellows program, the MTA project also helps to prepare the next generation of leaders for work on nuclear policy problems. The MTA project provides its analyses to policy makers, scholars, journalists, and the public.

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