9. Preventing the Spread of Enrichment and Reprocessing

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Key Judgments

- As many countries consider nuclear energy, the potential spread of sensitive fuel cycle technologies (enrichment of uranium and reprocessing of spent fuel to separate plutonium) poses a serious challenge to nuclear nonproliferation.
- The latent potential to produce fissile material for weapons inherent in enrichment and reprocessing capabilities could be a substantial obstacle to further reductions of nuclear weapons.
- The most reliable and economical approach to nuclear energy is to rely on the international market for nuclear fuel services. But some will advocate indigenous enrichment and reprocessing capabilities to promote energy security, to avoid falling behind regional peers technologically, and to gain security benefits, despite the economic and political costs and risks.
- Advanced nuclear countries can offer a package of incentives to countries aspiring to nuclear energy as an alternative to sensitive fuel cycle activities, including:
  - Assurances of reliable supply of nuclear fuel, including a back-up safety net mechanism.
  - Reserves of enriched uranium.
  - Infrastructure assistance.

  - Facilitation of financing.
  - Spent fuel management.
- A practical and successful package of incentives would balance a number of competing interests in order to:
  - Provide tangible benefits to countries considering nuclear energy.
  - Respect the widespread desire not to foreclose rights.
  - Respect the national laws and regulations of supplier countries governing transfer of nuclear materials and technology.

Background

The Non-Proliferation Treaty (NPT) acknowledges the right to develop and use nuclear energy for peaceful purposes, provided this is done in conformity with the basic obligation of the Treaty not to acquire nuclear weapons.

Nuclear fuel cycle technologies, particularly uranium enrichment and spent fuel reprocessing, can be used to produce weapons-usable highly enriched uranium and plutonium, one of the most difficult steps in attaining a nuclear weapons capability. The spread of these sensitive elements of the nuclear fuel cycle is widely recognized as a major weakness of the nuclear nonproliferation regime. IAEA Director General ElBaradei has called it the Achilles Heel.

This weakness has been well understood since the 1960s. Over 30 years ago the International Nuclear Fuel Cycle Evaluation project looked into ways to curb proliferation of sensitive fuel cycle technologies, and developed ideas—a fuel supply safety net, an international fuel bank, and international spent fuel management—that are still being considered today. A recent multinational study, the February 2005 report of the IAEA Director General's Expert Group on Multilateral Approaches to the Nuclear Fuel Cycle, addressed similar ideas.

Four decades of talk and study have produced a range of good ideas, but today a country starting out in nuclear energy and considering whether or not to invest in fuel cycle facilities will find nothing

in place to provide confidence that if it encounters problems in fuel supply or spent fuel management, it can turn to the international community for help.

The goal is not in question. If additional countries enrich uranium or separate plutonium, that would bring them close to a nuclear weapons capability. We don't want to change the NPT, as that would open a counterproductive debate. So we want to create incentives to encourage countries considering nuclear energy to choose not to pursue indigenous enrichment and reprocessing.

The Iranian programs to enrich uranium and produce plutonium add urgency to the effort to encourage other states to choose a different path. Many of the incentives addressed here have already been offered to Iran by the EU (such as assured supply of fuel and return of spent fuel), as well as measures that go well beyond those addressed here. The impressive incentives the EU has offered have not led to a change in the course Iran is on, an indicator that the goal of the Iranian program is not just energy production.

The following is a brief discussion of a range of incentives that can be offered to countries considering nuclear energy as alternatives to indigenous enrichment and reprocessing. These incentives are not mutually exclusive, and in fact are mutually reinforcing. A diversity of approaches can help in the development of combinations that meet the needs of individual countries.

Fuel supply assurances

Fuel supply assurances have been discussed for decades as an incentive to pursue nuclear energy without indigenous sensitive fuel cycle facilities. In an effort to transition from discussion to actually putting a fuel supply mechanism in place, the United States led a group of six states that supply enriched uranium to the world market (the United States, France, Russia, and the URENCO partners Germany, the United Kingdom, and the Netherlands) that put forward to the

IAEA Director General in May 2006 a Concept for a Multilateral Mechanism for Reliable Access to Nuclear Fuel.

The six-country concept envisions several tiers:

- The existing commercial market, which is functioning well as a reliable and economical source of enriched uranium fuel.
- Establishment of a fuel supply assurance mechanism at the IAEA. If commercial supply arrangements were interrupted for reasons other than questions about nonproliferation obligations, and cannot be restored through normal commercial processes, a country could approach the IAEA and seek help through the mechanism. Following an assessment of, inter alia, the country's safeguards obligations and whether it had chosen to obtain fuel on the international market and not to pursue sensitive fuel cycle activities, the IAEA would seek to facilitate new supply arrangements.
- Mutual backup arrangements by commercial companies.
- Establishment of reserves of enriched uranium. The United States is converting to low-enriched uranium 17 tons of highly enriched uranium excess to our national security needs, to create a reserve to support fuel supply assurances. This will create a reserve of about 290 tons of LEU, enough to provide about 10 annual reloads for a typical nuclear power reactor. Russia intends to establish a reserve at Angarsk, and others are encouraged to establish similar reserves. The Nuclear Threat Initiative has pledged $50 million toward the creation of a reserve administered by the IAEA.

The six-country concept would focus initially on enriched uranium, and could be developed over time in a step-by-step manner to include natural uranium, fabricated fuel, and eventually the more complex question of spent fuel management.

Some on the IAEA Board (including South Africa, Brazil, and Argentina) have opposed the six-country concept on grounds that rights to nuclear technology should not be restricted.

Global Nuclear Energy Partnership

The United States launched the Global Nuclear Energy Partnership (GNEP) in February 2006 to promote international cooperation to enable expansion of nuclear energy worldwide, including cooperation on fuel cycle approaches that enhance energy security and nonproliferation. Partner nations aim to develop comprehensive fuel services, including assured supply and spent fuel management, to allow countries to enjoy the benefits of nuclear energy without indigenous enrichment and reprocessing.

The initial partners (the United States, France, Russia, Japan, and China) cooperate bilaterally and multilaterally under GNEP on the development of more proliferation-resistant fuel cycle approaches and reactor technologies, including advanced technologies for recycling spent fuel, advanced fast reactors, and power reactors appropriate for developing countries.

Ministers and other senior officials of these initial GNEP partners met in Washington in May 2007 to address international cooperation to support expansion of nuclear energy, including to nations currently without nuclear power. They agreed to convene a follow-on high-level conference with broader participation, which was held in September 2007 on the margins of the IAEA General Conference. Seventeen nations representing a broad range of nuclear energy experience have adopted a GNEP statement of principles, which addresses expansion of nuclear energy, enhanced safeguards, international fuel service frameworks, and advanced technologies. Multinational working groups were established to address comprehensive fuel services and nuclear infrastructure development.

International Uranium Enrichment Center at Angarsk

Russia has proposed the establishment of international centers providing nuclear fuel cycle services, beginning with enrichment. The first such center has been established at an existing enrichment plant at

Angarsk. Participants would conclude intergovernmental agreements with Russia, and could invest in the center and share in any profits. Russia intends to set aside a quantity of enriched uranium at the center as a reserve. Participants would have no access to enrichment technology. Kazakhstan, a major uranium producer, has become the first partner.

Participation in such a center could enhance confidence in enriched uranium supply in a number of ways:

- The existence of government-to-government agreements in addition to commercial contracts.
- The leverage as an equity investor.
- The establishment of a reserve at the center.

In addition, a country which believes enrichment is a potentially profitable endeavor would have the opportunity to invest in the center and share its financial returns as an alternative to investing in indigenous facilities.

Nuclear Threat Initiative (NTI) proposed reserve

The NTI has pledged $50 million toward the creation of an enriched uranium reserve to be owned and managed by the IAEA, provided this grant is matched by at least another $100 million from others. $150 million would purchase sufficient LEU for 2–3 annual reloads for a typical power reactor. The reserve is intended to support assurances of international supply of nuclear fuel to states that are meeting their nonproliferation obligations. The IAEA could draw on the reserve as a last resort in event of a supply disruption.

Conditions for access to the reserve would be determined by the IAEA Board, along with conditions required by the suppliers of the enriched uranium. A diversity of reserves would increase confidence in assurance of reliable access to nuclear fuel by increasing the likelihood that a country facing a supply disruption could have access to a reserve.

World Nuclear Association (WNA) proposal

The WNA, an international nuclear industry organization, proposed in May 2006 that enrichment supplier firms commit to back up each other in event of certain types of disruption. These mutual backup commitments would be included in commercial contracts between enrichers and customers.

These commitments by enrichers would be supported by commitments by their governments to allow exports of enriched uranium when called on to do so by the IAEA, and by commitments of all IAEA member governments not to retaliate against enrichment suppliers engaged in implementing these arrangements.

The WNA approach is a form of insurance against supply disruption. Enrichment suppliers would be compensated for the costs associated with providing this insurance (the cost of reserves, standby capacity, etc.). This commercial mutual backup supply arrangement would establish a safety net under the existing enrichment market, and would in turn be backed up by reserves established by governments.

The six-country concept and the possible framework suggested in the report of the IAEA Director General both drew on the ideas developed by the WNA.

Report of the IAEA Director General

Following up on the Chairman's report of the September 2006 IAEA Special Event on Assurances of Supply and Assurances of Non-Proliferation, the Director General issued a comprehensive report in June 2007, "Possible New Framework for the Utilization of Nuclear Energy: Options for Assurance of Supply of Nuclear Fuel." The report summarizes the full range of proposals for fuel supply assurances, and identifies common themes for a possible framework.

The suggested framework would have three levels:

- The existing global market arrangements for nuclear fuel.
- Backup commitments provided by suppliers of enrichment and

fuel fabrication services, and commitments of their respective governments.
- A physical reserve of enriched uranium and arrangements for fuel fabrication services.

The framework outlined in the Director General's report provides a useful basis for further development of a mechanism for reliable access to nuclear fuel. The suggested structure is compatible with the six-country concept and the WNA ideas, and the framework could readily accommodate any of the proposals that have been put forward (including the Russian fuel center, various enriched uranium reserves, a U.K. proposal for a bond backed by URENCO's production capability, a Japanese proposal for enhanced transparency in the nuclear fuel market, a German proposal for a multinational enrichment plant controlled by the IAEA, and others).

The way forward is to proceed with a step-by-step approach to put in place elements of a fuel assurance mechanism at the IAEA along the lines sketched out in the Director General's report, adding elements as they mature and as policy, technical, and legal issues are worked out.

U.S.-Russia Declaration on Nuclear Energy and Nonproliferation

In July 2007 the U.S. and Russian presidents declared their intention to work together and with others to develop a viable alternative to the acquisition of sensitive fuel cycle technologies. This effort draws upon and complements a range of existing activities, including the work at the IAEA on fuel supply assurances, the U.S. GNEP initiative, the Russian fuel center initiative, IAEA Technical Cooperation, and many others.

The intent is to develop an attractive offer for countries considering nuclear energy to encourage them to pursue nuclear energy without indigenous sensitive fuel cycle facilities. Such an offer would include a range of reactors and arrangements for fuel supply and spent

fuel management, assistance in infrastructure development (regulatory framework, safety and security culture) through IAEA Technical Cooperation, facilitation of national and multinational financing, and grid development.

Discussions have begun among interested supplier countries to develop the commercial and intergovernmental elements of such an attractive offer, with the intention of getting into a position in the near term to begin to engage with states considering nuclear energy.

Issues

Expansion of nuclear energy

A long list of countries is seriously considering nuclear power (Algeria, Australia, Azerbaijan, Belarus, Chile, Egypt, Georgia, Ghana, the Gulf Cooperation Council, Indonesia, Jordan, Kazakhstan, Libya, Lithuania (in partnership with Poland), Malaysia, Mexico, Morocco, Namibia, Nigeria, Norway, Syria, Turkey, Venezuela, Vietnam, and Yemen).

In part this interest in nuclear energy is a logical response to increasing energy demand for economic development, rising fossil fuel prices, and the pollution and greenhouse gas issues associated with fossil fuels. In many cases there may be other motivations as well, including a desire to participate in an advanced technology sector and avoid being left behind by the developed world, an interest in acquiring the "deterrent" inherent in a nuclear fuel cycle, and a perceived need to keep pace with regional rivals (e.g., Iran) in this field.

It follows that the decisions on nuclear energy that these countries will be making, in some cases soon, will include the question of whether to pursue nuclear fuel cycle activities, including enrichment and reprocessing. They will weigh the energy security, deterrence, and technology development considerations favoring investment in fuel cycle facilities against the economic and political costs and waste burden that favor relying on the international market.

There is therefore an opportunity to influence these decisions by taking steps to deal with concerns about the reliability of nuclear fuel services, assist in the development of necessary infrastructure, and offer ways to participate in nuclear technology. Such development of an attractive alternative to indigenous fuel cycle activities could make a positive difference in the outcomes of such deliberations worldwide.

Conditions/Rights/Beneficiary commitments

Many proposals explicitly condition access to the benefits of fuel supply assurances to countries that refrain from sensitive fuel cycle activities. For example, the mechanism envisaged in the six-country concept would be for states that have "chosen to obtain supplies on the international market and not to pursue sensitive fuel cycle activities." The Russian International Uranium Enrichment Center at Angarsk and the NTI enriched uranium reserve are also intended for states that do not have indigenous enrichment capabilities.

Many countries have expressed substantial opposition to such a condition for eligibility, including South Africa, Brazil, and Argentina, on grounds that rights to nuclear technology should not be restricted. Citing Article IV of the NPT ("the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II"), they argue that any assurance mechanism should be open to all IAEA member states in good standing, including those engaged in enrichment and reprocessing. There is strong and widespread resistance to the creation of another division between haves and have-nots based on fuel cycle technology.

For this reason, the possible framework developed by the IAEA in the June 2007 report of the Director General would be open to participation by all IAEA member states meeting safeguards, safety, and security standards. Many believe that any fuel supply framework established and administered at the IAEA would need to be open to all member states in good standing, and could not be restricted to

states without enrichment and reprocessing. Even without such conditions established by the IAEA, such restrictions might be attached by supplier states to their nuclear material, or be part of a contract or agreement between supplier and beneficiary states.

This raises a fundamental issue in the construction of incentives to encourage countries to make decisions not to pursue sensitive fuel cycle activities: should access to the benefits be restricted to states that do not have (or, in a stronger form, commit not to have) sensitive fuel cycle activities, or should the benefits be available to all to encourage, but not require, states not to pursue sensitive fuel cycle activities.

This is a difficult issue. Restricting eligibility to states without enrichment and reprocessing would create a stronger incentive, but would face widespread opposition in the IAEA, including many prospective target countries. A structure alleviating concerns about the supply of fuel services that is open to all could provide a weaker, but still positive, incentive to forgo indigenous activities.

There could be mixed approaches. An IAEA mechanism open to all could be supplemented by:

- Additional incentives as part of an agreement between supplier and beneficiary states that specifies the absence of indigenous sensitive activities.
- A commercial contract for the supply of a reactor and fuel that includes a provision not to pursue enrichment capabilities.
- Conditions a supplier state could apply to material provided by that state.

This is not a question of rights, but the development of incentives to encourage sovereign decisions not to pursue sensitive activities.

Supplier state commitments

Commitments of supplier states are an important element of assurances of reliable access to nuclear fuel services. This issue is complex

because supplier firms must navigate national laws and regulations, international standards and guidelines, and, in some cases, the terms of international agreements, all of which serve to control the transfer of nuclear materials. Given these legal requirements and standards, it is not possible for most supplier states to make unqualified commitments concerning what they will or will not do during the useful life of a reactor, a period of several decades.

Supplier states can commit, in principle, to endeavor to allow and expedite the export of nuclear materials in implementation of the mechanism, and to avoid opposing exports of others. The six-country concept calls for supplier states to make such qualified commitments.

At the other extreme are proposals for pre-negotiated agreements committing all participating supplier governments to guarantee all necessary export and transit licenses, and not to retaliate against substitute enrichment suppliers. While such an approach would increase confidence of potential beneficiaries, setting the standard this high risks extended (perhaps endless) discussion and failure.

Intermediate approaches include granting of long-term licenses for export of nuclear material (e.g., for multiple reloads, or for a duration that extends to the anticipated life of a reactor). While such long-term licenses would not guarantee that all future deliveries could be made, putting in place long-term licenses could expedite supply and increase confidence that supplier states would support implementation of a fuel supply mechanism.

Multinational Facilities

Establishment of multinational facilities to provide enrichment and other fuel cycle services has been studied extensively as an alternative to national facilities, and features prominently in the February 2005 report of the IAEA Expert Group on Multilateral Approaches to the Nuclear Fuel Cycle. In principle, multinational facilities under IAEA control might mitigate concerns about reliance on a few developed

countries for nuclear fuel, and represent an alternative to the costs and risks of indigenous efforts.

Potential problems with multinational facilities include:

- *Technology security.* A multinational enrichment facility staffed by nationals of many countries could facilitate the spread of enrichment technology. (The enrichment programs of Pakistan and Iran, for example, are based on technology stolen from URENCO, a multinational organization, by a Pakistani national employee.)
- *Incompatibility with the existing, partially privatized, enrichment industry.* Today's efficient and competitive technology is the proprietary intellectual property of enrichment enterprises in Europe, the United States, and Russia. The existing industry functions well as a reliable and economical supplier, and would not welcome multilateralization of existing facilities.
- *Cost.* Start-up costs for a new enrichment plant would be substantial (more than a billion dollars), and operation in competition with existing efficient enrichment suppliers would be costly as well.

A potential approach could be to establish a facility with multilateral ownership under IAEA control as a "black box," with equipment and operations supplied by an existing enrichment enterprise and no transfer of technology. An enrichment plant is being constructed in New Mexico by a European enrichment enterprise as a "black box."

Back end of the fuel cycle

Assistance in spent fuel management would represent a substantial benefit for countries considering nuclear energy, helping with (or perhaps relieving) the burden of disposition of spent fuel and waste. If advanced nuclear states were in a position to lease fresh fuel and take back spent fuel, this would be a strong incentive to forgo the costs and burdens of indigenous fuel cycle activities.

Unfortunately, the advanced nuclear states have not resolved ques-

tions concerning disposition of their own spent fuel, as the worldwide accumulation of spent fuel and reprocessed plutonium attests, and are not now in a position to take back the spent fuel of others. Russia takes back Russian-supplied fuel for storage and reprocessing in limited circumstances (Iran and a few long-term European customers). France is prepared to reprocess spent fuel, but returns the resulting plutonium, uranium, and fission products.

GNEP is developing advanced technology for recycling spent fuel, including consumption of transuranic elements in fast reactors. This would greatly reduce waste burdens and open a path for countries with advanced nuclear economies to lease fresh fuel and take back spent fuel for recycling.

In the interim, there is a need to develop a near-term approach to assistance with spent fuel management. This could involve:

- Arrangements for safe and secure storage of spent fuel for a period of time at the reactor site.
- Exploring the feasibility of arrangements for subsequent storage at regional or international facilities, pending recycling or final disposition.
- Exploring the feasibility of taking back spent fuel, opening up an option for suppliers to lease fresh fuel and take it back after it has been used.

States with advanced nuclear technology could offer countries considering nuclear energy technical advice and assistance on interim storage of spent fuel at the reactor site. Assistance could include help with site selection, establishment of wet or dry storage facilities, development of a regulatory framework, meeting international physical protection standards, and training of personnel. A more substantial commitment would be for the provider of fresh fuel to offer to assume responsibility for the safe and secure storage of the spent fuel at the reactor site.

A more difficult but more attractive approach would be to offer

to move spent fuel (after cooling for a few years) to an international repository for long-term storage. Finding an appropriate site would be a major challenge. A suitable site would need to be secure, geologically stable, accessible by ships and aircraft, and politically acceptable to the host nation and its neighbors. International storage on U.S. territories in the Pacific has been considered in the past, but abandoned following opposition from Pacific states and in Congress. A determined effort could be undertaken by supplier states and the IAEA to resume a search for an acceptable site for an international facility for temporary storage of spent fuel. If successful, this could allow an offer to states considering nuclear energy to remove spent fuel and place it in international storage.

The most attractive step that suppliers could take to help countries aspiring to nuclear energy would be to accept the return of spent fuel for storage, recycling, or disposition. With the partial exception of Russia, supplier states are not today in a position to make such an offer. The United States could examine the possibility of taking back spent fuel from states that are considering nuclear energy and do not pursue sensitive technologies, for near-term storage and eventual recycling once advanced technologies are available. This would be controversial pending the development of a disposition path for spent fuel generated in the United States.

Assistance in management and disposition of spent fuel for countries aspiring to nuclear energy could make an important contribution to encouraging them to forgo indigenous sensitive fuel cycle facilities, but will require substantial creative work to develop storage and disposition possibilities that do not now exist.

Elements of a solution

The elements listed here are not mutually exclusive, but are intended to be mutually supportive. They can be developed, combined, and drawn upon to produce packages appropriate for the specific situations

of individual target countries as incentives not to pursue sensitive fuel cycle activities.

- *Appropriate reactors.* Develop, in cooperation with potential customers, a range of reactors appropriate for the energy needs and grid capacities of a range of countries. For many developing countries, appropriate reactors may be smaller or modular in design to fit with national grids, and should be relatively easy to use safely and securely and relatively difficult to misuse. Small reactors (on the order of 300 Megawatts, about one-third the size of typical power reactors) would be appropriate for the grids of many developing countries. Such reactors could be available in 10–15 years. Some designs for such reactors could be loaded at the outset with a lifetime supply of fuel.
- *Assurances of a reliable supply of fuel.* Establish at the IAEA a mechanism for reliable access to nuclear fuel, following up on the framework suggested in the Director General's June 2007 report and incorporating a range of concepts outlined in that report. The mechanism would have several levels:

1. The existing commercial market.
2. A backup mechanism at the IAEA which could be invoked if commercial supply arrangements are interrupted (for reasons other than questions about compliance with nonproliferation obligations). The IAEA could then seek to facilitate alternative supply arrangements, and arrangements could be made for suppliers to back up each other. Initial elements of such a mechanism could be put in place in the coming months.
3. As a last resort, reserves of enriched uranium could be drawn upon. There would be national reserves (as the U.S. and Russia are creating) and reserves administered by the IAEA (as the NTI has proposed). Such reserves can be established now and filled with LEU over the next few years.

The fuel supply mechanism would initially cover enriched uranium (and perhaps fuel fabrication). Supplier states would support levels 2 and 3 by granting long-term licenses and making (qualified) commitments to endeavor to allow and expedite the export of nuclear materials in implementation of the mechanism, and to avoid opposing exports of others. The mechanism would be open to all IAEA member states in good standing; supplier states could impose additional conditions on the use of their materials. Other compatible ideas (e.g., the enrichment bond) could be included.

This global mechanism could be supplemented with fuel supply assurances that suppliers and supplier states can provide directly on a case-by-case basis to individual states aspiring to nuclear energy.

- Reserves of enriched uranium. Establish a number of enriched uranium reserves to support fuel supply assurances, including:
  - The reserve being created by the United States by converting 17 tons of HEU excess to military needs. This reserve will be located in and administered by the United States, and exports from it will be subject to the requirements of U.S. law.
  - The reserve to be administered by the IAEA proposed by the Nuclear Threat Initiative. States can contribute to the IAEA reserve in cash and in kind, to meet the $100 million in matching contributions required by the NTI grant. Subject to whatever restrictions are imposed by donors on material purchased through their contributions or provided in kind, the material in the IAEA reserve could be available for transfer at the discretion of the IAEA.
  - A reserve associated with the fuel center at Angarsk.

Diversity of reserves, with differing restrictions on access to their nuclear material, would increase confidence that enriched uranium in a reserve would be available and accessible to resolve a supply disruption.

- *Infrastructure assistance.* Offer assistance through IAEA Technical Cooperation to develop infrastructure necessary for responsible management of a nuclear power program. Some countries considering nuclear power have extensive experience in nuclear technology, some have none, and some are in between. In many cases a great deal of work must be done to put in place a nuclear regulatory framework, develop safety and security systems and cultures, and train specialized personnel. The IAEA is developing a document on infrastructure milestones which can be used to identify assistance needs. Financing such infrastructure development would be a substantial benefit to developing countries and an incentive for responsible nonproliferation decisions.
- *Financing.* International financial institutions routinely finance energy projects in developing countries, but have traditionally not supported nuclear projects. Such organizations can be encouraged where appropriate to reconsider this policy for states that have responsible nonproliferation policies. More generally, states can seek to facilitate financing of nuclear energy projects through national and international financial institutions for states pursuing nuclear power without sensitive fuel cycle facilities.
- *Spent fuel management.* Assistance in spent fuel management is a difficult but potentially important area for developing incentives to forgo sensitive fuel cycle activities. It would address and potentially ameliorate a serious problem for states considering nuclear energy. A multilateral effort can be undertaken to develop an approach including assistance in safe and secure storage at the reactor site for a period of time, followed by safe and secure storage at an international facility or return to the supplier country, pending disposition or recycling using advanced technologies as they become available.

The joint initiative launched by the July 3 Declaration on Nuclear Energy and Nonproliferation is designed to bring together this range of activities in a comprehensive way to offer economical and reliable access to nuclear energy and create an attractive alternative to the acquisition of sensitive fuel cycle facilities.