Controlling the Nuclear Fuel Cycle

Nuclear power, which has experienced little growth since the 1980s, is likely to expand in coming decades, including in many countries with little or no nuclear power today. This expansion will have global ramifications as more and more countries seek the technology and materials necessary to develop their nuclear industries.

Today, a select few countries — France, Germany, the Netherlands, Russia, the United Kingdom and the United States — provide the services necessary to keep nuclear power plants running, including the preparation of uranium for use in reactors and the handling or reprocessing of spent fuel and waste recovered from reactors. While these states have the capacity to meet the demand for any foreseeable expansion in nuclear energy, for many reasons, other states will likely seek to develop the know-how to produce nuclear fuel. Motivations may run the gamut, from interest in developing a nuclear weapon, to the desire to assure needed supplies. For some countries it is a matter of national prestige; for others it is the desire to profit from selling such services and materials in the global marketplace.

The nuclear fuel cycle — which begins with the mining and processing of uranium ore; proceeds with conversion, enrichment, and fabrication of uranium into fuel for use in a reactor; and ends with reprocessing of spent fuel or disposal of waste (see accompanying chart, page 6) — has been described as the Achilles heel of the nuclear non-proliferation regime. The greatest danger from the spread of nuclear energy, highlighted by the cases of Iran and North Korea, is the proliferation of nuclear non-proliferation regime.

First Session of the United Nations General Assembly

The first session of the United Nations General Assembly opened on 10 January 1946 at Central Hall in London, United Kingdom. Clement Attlee, Prime Minister of the United Kingdom, addressing the General Assembly. (London, United Kingdom, 10 January 1946)
Women, Peace and Security

Security Council Resolution 1325, which passed unanimously on 31 October 2000, marked the first time the United Nations Security Council specifically addressed the unique impact of war on women and the importance of women’s contributions to conflict resolution, peace processes and post-conflict nation building.

The passage of the Resolution signaled a new level of awareness in the Security Council concerning gender issues, but now in its eighth year, many of the promises of the Resolution remain just that, promises. Despite the Resolution’s recognition that women and children “account for the vast majority of those adversely affected by armed conflict,” sexual violence continues to be used as a weapon of war against women and girls in numerous conflicts globally. Despite its recognition of “the important role women play in the prevention and resolution of conflicts and in peace-building,” women are still underrepresented at peace tables and in legislating bodies. Despite its call to expand the role and contribution of women in UN peacekeeping operations, women make up only a tiny fraction of peacekeepers deployed worldwide.

Gender remains a thorny and problematic subject in our public and private lives. Women have not achieved equality with men in any country or any arena. In their private lives, women continue to bear the majority of the burden of caring for families, much of their work unpaid and unrecognized. Women face violence in their homes in many forms, including honor killings, bride burnings and genital mutilation. Millions of women still die in childbirth each year. In their public lives, women’s wages lag. Almost nowhere do women form a critical mass in government or business.

The words have been said over and over: Women’s rights are human rights! Equality now! Women hold up half the sky. The words have been said over and over: Women’s roles in conflict prevention and resolution that empower women, and it is imperative that we press our governments to act in ways that empower women, and it is imperative that we not wait for governments but where possible begin bringing about change on our own.

The Editor

Implementing Security Council Resolution 1325

United Nations Security Council Resolution 1325 was historic in recognizing the impact of war on women and the vital role women play in peacebuilding and reconstruction.

It provides a comprehensive political framework that makes women and gender equality relevant to negotiating peace agreements, planning peacekeeping operations, and reconstructing war-torn societies. It makes the pursuit of gender equality relevant to every area of the Security Council’s work, from peacekeeping and mediation, to monitoring elections, to reforming the security sector. But implementation has lagged in many areas, as seen in the continued absence of women from peace negotiations and their marginalization in post-conflict recovery efforts. In the nearly eight years since its adoption, however, the harshest evidence of weak implementation can be seen in the increasing use of sexual violence as a method of warfare. Until such violence is recognized as a national and international security threat, Resolution 1325 will never achieve full implementation.

Preventing Sexual Violence

The protection of women from sexual violence in conflict situations is a basic requirement of human security. Reports of rape, sexual slavery and forced pregnancy in conflict and post-conflict settings — in the Democratic Republic of Congo, Haiti, Kenya, Sudan, and Timor-Leste — show the widespread use of sexual violence as a tactic of warfare. It rips families apart and prevents communities from recovering, undermining chances for building sustainable peace and respect for the rule of law. If it is not prevented and perpetrators are not punished, such violence can become the norm even for ordinary citizens, threatening to prolong conflict.

The use of sexual violence in times of war is by no means a new phenomenon. Its widespread use in the 1990s in the conflicts in the former Yugoslavia and elsewhere brought the matter to broader public attention. As a result, sexual violence has been recognized as a war crime, a crime against humanity, a form of torture, and in some cases, genocide. But recognition alone has not been an effective deterrent. There are increasing reports that in addition to being perpetrated by the armed forces of governments and rebel militias, sexual violence is becoming socially normalized in some contexts, taken up as a routine practice by ordinary citizens. It is still not seen as a threat to peace and security by the Security Council and other international security actors, however, and therefore does not elicit the same type of prevention response as do some other forms of violence against civilians.

Standard measures of conflict intensity — based largely on the number of battle-related deaths per year — do not record the off-battlefield tortures represented by organized rape, and the ensuing destruction of family, community and the spirit of women and children. This lack of recognition has serious consequences. If sexual violence is not seen as a security matter, measures related to security that might prevent such violence are not taken. The ensuing humanitarian responses ultimately can do little more than patch up the small number of survivors who seek help. Women who are affected by such violence remain invisible and uncoun ted victims of war.

Reforming the Security Sector

If this is to change, one important challenge in strengthening implementation of Security Council Resolution 1325 is to bring about gender-sensitive reform of the security sector — those organizations that are authorized or able to use force or the threat of force to protect a state and its civilians. In all conflict areas where UNIFEM has worked, we have seen women’s willingness to take risks — reaching across ethnic and religious boundaries to bring communities together. But we cannot rely simply on the bravery of women; systems must be in place. In Rwanda, for example, after police said they could not protect women as they lacked vehicles for rapid response, the United Nations Development Fund for Women (UNIFEM) and the UN Development Program (UNDP) responded by setting up specialized gender desks in police stations and providing them with training, hotlines and motorcycles to reach women in remote areas.
districts. In 2007, the program expanded its work to the Rwanda Defence Forces (the country’s national army), training 2,293 military officers, including 598 deployed in a peace mission in Darfur, and currently provisions are being made for the peacekeeping mission in Liberia. This served as a role model, and as a result, the number of female applicants to the fledgling Liberian national police force more than tripled. With Liberia as its model, the British government could aid a priority sector reform by encouraging greater support for women’s participation in the police and military and encourage countries contributing to peacekeeping troops to send more female police.

Ensuring Women’s Participation

The second major challenge in implementing 1325 is ensuring women’s participation in peace processes. Resolution 1325 was visionary and forward looking in organizing women’s real and potential roles in conflict prevention and peace-building. Yet nearly eight years after its passage, women’s contribution to conflict prevention, dialogue and mediation is neither recognized nor sought after.

A major reason for this is that women are seen primarily as victims, rarely as agents, in waging either war or peace. In many if not most conflicts, women are engaged in both processes – as providers of food and support to combatants, and often as combatants themselves, on the one hand, and in caring for communities and reaching across religious and ethnic boundaries to rebuild lines of connection, communication and trust, on the other. This makes it critical to engage women fully in all aspects of peace-building, including mediation, confidence-building and negotiations.

Time and again we have seen that women who are members of belligerent parties, are willing to bridge divides in the interests of ending violence. Usually this occurs as a temporary agreement to jump start the peace process and enable women to reach a unified position to take part in peace talks. In many cases, however, it sets in motion a process of building connections and engaging a broad and more diverse group in public decision-making, which is not only key to lasting peace, but lies at the heart of democratic governance.

We saw this clearly in South Africa, where women were fully engaged in the struggle against apartheid and took a strong leadership role during the post-apartheid transition. A coalition of women’s groups advocated for and ultimately brought about a more democratic process for constitutional and legislative reform. Their insistence on a participatory approach required the government to seek civil society input on proposed policies, leading to the expansion of the definition and scope of security and allowing the population to articulate its concerns in a national dialogue on security sector reform.

In Somalia, women presented themselves as a “sixth clan” in an effort to participate in the peace negotiations in 1993 and again in 2000, resulting in clauses to divisions to a “vision of gender equality” relevant to women of all clans. Although the negotiated agreements did not last, the experience enabled women to come together across clan lines again when a new round of negotiations began in 2002. As a result of their unity, women ultimately assisted in the creation of a National Charter that guaranteed women 25 seats in the 245-member Transitional National Assembly.

Elsewhere too, UNIFEM’s experience has shown that women are bridge-divides in post-conflict societies to involve broad sectors of the public and lay the foundation for more inclusive governance. In Afghanistan, among the 500 representatives to the constitutional drafting committee, 102 were women of various languages, ethnicities and political affiliations. Overcoming many obstacles, their persistence led to a guarantee of women’s equality in the final draft of the new constitution, including a quota for women in the lower house of parliament.

In Bougainville, in a long-running separatist struggle with Papua New Guinea, women returned from peace talks to their communities and were reportedly the only leaders to initiate a public information campaign to make widely known the terms of the peace accord and the steps agreed to implement it. More recently, in Kosovo, at the time of the official negotiations in Vienna, the Women’s Peace Coalition brought together women’s networks on both sides to agree on an action plan to build dialogue across all ethnic groups and support human rights for all people.

Implementing Security Council Resolution 1325

For women to be able to fulfil their potential – as builders of a sustainable peace and creators of more just and inclusive societies – it is important that UN Member States and the UN system as a whole renew our determination to strengthen the implementation of Security Council Resolution 1325. Once again – as in bringing into Resolution the Before the Council in 2000 – the consistent advocacy and actions of women’s rights activists and networks is essential.

Article 1 of the UN Charter states as its purpose “to take collective measures for the prevention and removal of threats to peace.” Yet debate continues about whether strengthening action on Resolution 1325 is an effective means to address threats to peace. The risk that post-conflict societies will slip back into violence – for failure to engage important stakeholders in building sustainable peace – should impel stronger action to implement Resolution 1325 at all levels. What this will take, however, is a determination to enable women to play a more high-profile role as world leaders and peace-makers everywhere, building a global commitment to peace, not just in relation to armed conflict but also in disputes over economic rights and opportunities and the denial of legitimate identity and voice to different populations that nurtures extremism and non-state violence. To begin with, women everywhere must raise a cry of outrage about the tolerance of sexual violence as a method of warfare. Implementing Resolution 1325 means ending the use of such violence, prosecuting its perpetrators, and above all, putting women at the heart of all peace-building and recovery processes, helping to ensure that violent conflict is a thing of the past.

Joanne Sandler is the ad interim executive director of UNIFEM.

Resolution 1325

Urges Member States to ensure increased representation of women at all levels of decision-making.

Encourages the Secretary-General to appoint more women as special representatives and envoys.

Further urges the Secretary-General to seek to expand the role and contribution of women in United Nations field-based operations.

Requests the Secretary-General to provide to Member States training guidelines and materials on the protection, rights and the particular needs of women, as well as on the importance of involving women in peacekeeping and peace-building operations.

Calls on all actors involved, when negotiating and implementing peace agreements, to adopt a gender perspective.

Calls on all parties to armed conflict to respect fully international law applicable to the rights and protection of women and girls.

Calls on all parties to armed conflict to take special measures to protect women and girls from gender-based violence.

Emphasizes the responsibility of all States to put an end to impunity and to prosecute those responsible for genocide, crimes against humanity, and war crimes including those relating to sexual and other violence against women and girls.

Encourages all those involved in the planning for disarmament, demobilization and reintegration to consider the different needs of female and male ex-combatants.

The full text of the Resolution is available at www.un.org/Docs/sc/unsc_resolutions00.htm.

Congolese Women Rejoice after Signing of Peace Accord in Goma

Women representative of the local civil society rejoice at the signing of the peace accord between the representatives of the rebel movements and the government of the Democratic Republic of Congo to end fighting in the east of the country (23 January 2008).
Transforming Words into Action
Security Council Resolution 1325

At the 2005 World Summit, heads of state and government acknowledged the inextricable link between development, peace and security and the essential role of gender equality to advance development, peace and security.

One of the greatest challenges facing the United Nations in these areas is turning policies into practice. In gender equality and the empowerment of women, we are witnessing a serious gap between global policy commitments and the implementation of those commitments. Yet policy commitments alone have almost no impact on the everyday life of women; action is required.

There is a growing body of evidence that bringing women to the peace table enriches the process, improves the quality of agreements reached and increases the chances of successful implementation. Involving women in post-conflict governance reduces the likelihood of a return to war. Reconstruction also works best when it involves women in all phases. In Rwanda, for example, which has the highest number of female parliamentarians in the world, post-conflict reconstruction was focused on rebuilding homes on lands to which female heads of household now had titles, providing livelihoods for women and shelter for those orphaned by the genocide.

However, stories abound about women and girls who face an appalling level of insecurity and violence during armed conflict or peace. Their bodies are increasingly used as a battleground and their rights are trampled. Moreover, women who are thus victimized continue to face a massive deficit of justice. Violators often commit their crimes with impunity, which encourages them to persist.

Securities Council Resolution 1325
In its Resolution 1325 (2000), the Security Council called for action to address these challenges. The Resolution has fundamentally changed the image of women, from exclusively victims of war to active participants as peacemakers, peace-builders and negotiators, and created a political framework that makes women — and a gender perspective — relevant to all peace, post conflict and humanitarian efforts. This gives the Resolution a unique importance; it has entered into public consciousness as only a few resolutions ever have. It is increasingly becoming the centerpiece of a global movement reflecting a growing awareness of the importance of enhancing women’s role in conflict prevention and resolution.

Accomplishments at the Grassroots Level
Governments bear the primary responsibility for the implementation of the Resolution, and great deal has been accomplished at the national level during the seven years since the Resolution’s adoption. There have been undoubted gains in many areas, including gender mainstreaming in peace mandates and operations, awareness of the importance of gender, gender equality is a fact underlying all our development, peace and security efforts.

Action by the Security Council
The Security Council has paved the way for national implementation by focusing more on gender issues in its debates on specific conflicts and by including specific mandates regarding the status of women. It increasingly focuses on sexual and gender-based violence in conflict areas. In the Democratic Republic of Congo, for example, where the scale and severity of sexual violence has been unacceptable, the Council, in its Resolution 1794 (2007), requested MINUSC (UN Organizational Mission in the Democratic Republic of Congo) to pursue a comprehensive mission-wide strategy to strengthen prevention, protection and response to sexual violence.

The true success of Resolution 1325 will be apparent the day gender equality is a fact underlying all our development, peace and security efforts.
their 2000 Review Conference that their “ultimate goal is complete and total disarmament and arms control,” but by no means all, of these great goals. Multilateral conventions were negotiated to prohibit biological and chemical weapons. States possessing nuclear weapons declared major reductions in deployments and their stockpiles as the Cold War faded in the late 1980s. Most states with nuclear weapons have said that they have stopped producing fissile material for weapons. The de facto moratorium on nuclear testing is continuing. Several types of nuclear-weapon delivery systems have been retired. The NPT, which was extended indefinitely in 1995, has helped to slow the rate of proliferation, and it remains the only multilateral treaty committing the nuclear-weapon states to pursue disarmament. Safeguards have been improved over the last decade, as has physical security. The world community has also devoted increased attention to issues relating to conventional armaments—including the illicit trade in small arms and light weapons, landmines, cluster munitions, other inhumane weapons, and most recently, arms trade standards.

With a dedicated commitment — combining both priority and persistence — from civil society and concerned governments, the world could well witness a renaissance of disarmament.

**Reasons for Hope**

There is a new global debate underway on nuclear disarmament, stimulated in part by a group led by George Shultz, William Perry, Henry Kissinger and Sam Nunn. I have spoken at two of their meetings and am impressed with their serious commitment and the positive reactions they have gained worldwide. In the last two years, there has been an outpouring of new proposals and initiatives from civil society—as well as from some governments—to revitalize not just the nuclear disarmament agenda, but all of the great causes that are incorporated in the wider family of issues known as GCD. We are working on all of these issues in the UN’s new Office for Disarmament Affairs, and the Secretary-General is a strong supporter of disarmament.

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**Disarmament: A Look Ahead**

(continued from page 1)

good, certain documented cases or allegations of non-compliance have occurred, most apparently in the activities of the Democratic People’s Republic of Korea, Iraq and Libya as parties to the NPT, while the Security Council is still seeking to resolve certain nuclear concerns in Iran.

The Comprehensive Test Ban Treaty has not entered into force, while negotiations on a fissile material treaty have still not begun at the Conference on Disarmament, nor have negotiations or discussions on a nuclear weapon convention or a multilateral treaty on security assurances. There is also no follow-up treaty to the Strategic Arms Reduction Treaty (START) I, which expires next year.

The Anti-Ballistic Missile Treaty has been abrogated, and there is no multilateral treaty for missiles, nor is there a treaty outlawing space weapons.

In the field of conventional arms, aissance of disarmament, progress on this issue is indispensable. Fortunately, there is not only a need for hope, but also some grounds for it.

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The Nuclear Fuel Cycle (continued from page 1)

Currently on the table are a number of proposals to assure the supply of nuclear fuel to those who need it (step one in the outline above). In addition, Russia and the United States have already begun their much more far-reaching initiatives, which collectively deal with the full nuclear fuel cycle.

The Russian and US initiatives and the proposals put forth by other groups (which are discussed in greater detail below) differ on a number of axes. Scope: some deal with only the front end of the nuclear fuel cycle and others deal with the full cycle, including waste management. Objective: many deal narrowly with existing arsenals; some are premised on restricting access to nuclear fuel technology. Method: some seek to reinforce the existing nuclear fuel supply market through agreements; others deal with construction of physical or virtual reprocess or production plants; many combine these two methods.

Existing Initiatives

Global Nuclear Energy Partnership (GNEP). Announced on 6 February 2006 by the Bush administration, an aim of this program is the development of “cradle to grave” nuclear fuel cycle services, with particular focus on development of the back end of the nuclear fuel cycle (the reprocessing of uranium and the management of spent fuel, plutonium and waste). The program’s goal is to contain the spread of technology that could lead to proliferation.

Under GNEP the world nuclear market would be divided into supplier states — responsible for providing fuel services, including the take-back, reprocessing and final disposal of spent fuel — and client states, which would not operate their own fuel cycle facilities. Under the program, however, participating states “would not give up any rights” to develop nuclear technology for peaceful purposes, as recognized under the nuclear Non-Proliferation Treaty (NPT). It remains unclear which participating or prospective states might be considered to be supplier or client states under GNEP, or what the criteria or process will be for determining this.

Another goal of GNEP is to develop new, proliferation-resistant technology to deal with the back end of the nuclear fuel cycle and the storage and disposal of waste, including plutonium. GNEP envisions the development and demonstration of advanced burner reactors, a new type of reactor intended to consume the highly radiotoxic elements (known as transuranic materials) produced by light water nuclear reactors. These elements remain highly radiotoxic for hundreds of thousands of years and some can be used in nuclear weapons. The US is also working on reprocessing technologies that do not separate pure plutonium. In 2007, the US Department of Energy awarded $16 million dollars for research and development of these two technologies, with the goal of developing full-scale demonstration facilities. After heavy criticism from the House of Representatives, however, the US Congress, in fiscal year 2008, denied the administration funding for demonstration or commercialization of these technologies, directing the Department of Energy to instead continue research and development.

Twenty-one states have joined GNEP to date. Advanced nuclear fuel cycle and supplier states considering joining include Brazil, the Netherlands and Germany. But key states remain outside the initiative, including South Africa, which has publicly ruled out joining GNEP for fear it might restrict the development of its own nuclear fuel cycle program. India, Israel and Pakistan, which have been excluded from the global nuclear market for fear it might restrict the development of their own nuclear fuel cycle programs, as non-parties to the NPT, have also declined to join. The US attempt to reserve nuclear cooperation with India — through India-specific exemptions in non-proliferation rules — might allow it to one day join.

The Nuclear Fuel Cycle

5. Fabrication

Enriched uranium hexafluoride (UF₆) is converted to uranium dioxide (UO₂) powder and pressed into pellets, which are inserted into thin tubes to form fuel rods. The rods are sealed and assembled in clusters for use in the core of the reactor.

6. Nuclear Reactor

In the core of the reactor, the U-235 isotope splits, producing heat in a continuous process or chain reaction. Some of the U-238 in the reactor core is turned into plutonium and approximately half is fissioned or split, providing energy. The heat is used to produce steam, which drives a turbine and electric generator, producing electricity. Approximately 1/3 of the spent fuel is removed every 12 to 18 months, to be replaced with fresh fuel.

7. Spent Fuel Storage

Spent fuel assemblies removed from the reactor core are highly radioactive and give off a lot of heat. They are stored in special ponds to allow the radioactivity and heat to decay. The spent fuel can be either reprocessed or sent to final disposal.

8. Reprocessing

Spent fuel contains approximately 96% of the original uranium. The fissionable U-235 content is reduced to less than 1%. Approximately 3% of the spent fuel comprises waste products and the remaining 1% is plutonium (Pu). Reprocessing separates uranium and plutonium from the waste products. Recovered uranium can be returned to the conversion plant for conversion to uranium hexafluoride (UF₆) and then enrichment. Reactor-grade plutonium can be blended with enriched uranium to produce a mixed oxide (MOX) fuel which can be loaded into reactors.

9. Final Disposal

Final disposal has not yet taken place.
nario of similar exemptions being offered to the other two non-NPT states, it is unlikely Pakistan or Israel would be eligible to join such an initiative, thus leaving them unbound by any developing rules restricting nuclear trade. The Democratic People’s Republic of Korea (North Korea) and Iran will also likely remain outside the reach of GNEP.

Global Nuclear Power Infrastructure Program. Announced on 25 January 2006 by Russian President Vladimir Putin, this initiative entails the establishment of an International Uranium Enrichment Center (IUEC) in eastern Siberia. The center is scheduled to come on line in 2013 and will also handle waste management. Member states participating in the IUEC would be entitled to fuel produced by the facility but would not have access to Russia uranium enrichment technology. The long term goal is establishment of a network of regional international nuclear fuel cycle centers to provide fuels services, including uranium enrichment, under IAEA safeguards. The program could cause incorporation of spent fuel reprocessing and development of fast reactors to manage spent fuel, similar to GNEP. In addition, Russia has announced it intends to establish a low-enriched uranium reserve (nuclear fuel bank) at the site.

Since 2006, Russia has pushed forward with the IUEC, which it says is open to all states without political preconditions. On 10 May 2007, Kazakhstan and Russia concluded a final agreement to establish the center. Soon after, Ukrainian President Viktor Yankovych signed a protocol of intent to join. On 29 November 2007, the Armenian government reportedly approved a plan to join the center. Uzbekistan, however, reportedly turned down an offer to join. In addition, Russian officials have claimed that Mongolia and South Korea have expressed interest in the center.

Complementary but Problematic Approaches

Both Russian and US officials have described their respective proposals as complementary; the Russian proposal focuses on multilateral and potentially regional approaches to the front end of the nuclear fuel cycle, whereas the US proposal provides a framework for development of proliferation-resistant technologies and services related to the back end of the fuel cycle. Both proposals are premised on providing reliable supply of nuclear fuel services without transferring proliferation-sensitive technology.

Unlike other fuel cycle proposals currently on the table at the IAEA, neither of these initiatives depends on a decision from the IAEA to proceed, although both involve the IAEA to varying degrees.

Both initiatives are also potentially problematic in ways that could undermine their goal of non-proliferation. Neither addresses the issue of states that are determined to develop indigenous nuclear fuel cycles, such as Iran. While high operating costs and the availability of inexpensive uranium has limited the spread of commercial reprocessing plants and studies have suggested that this trend will likely hold for at least 50 years, there is concern among some experts that US resumption of plutonium reprocessing under GNEP may make such technology more attractive to others, leading to proliferation. Other experts have expressed doubts about the non-proliferation benefits to be gained from the “proliferation proof” reprocessing techniques called for under GNEP, which could also give states experience applicable to separating weapons-useable plutonium. An unintended outcome of GNEP could be that it results in more states seeking to develop the nuclear fuel cycle in the short term, in order to avoid facing an expected future cutoff in the supply of related nuclear technology.

With the Russian initiative, the paucity of states joining the IUEC in part demonstrates the reluctance of states to invest in facilities from which they will not also benefit in terms of development and sharing of technology. Thus, while both programs can address some non-proliferation concerns, especially in the cases where assurance of supply might be a decisive factor in determining whether a state pursues its own fuel cycle, neither provides an airtight solution to the problems of the fuel cycle.

Other Current Proposals

The IAEA presently has more than a dozen proposals on the nuclear fuel cycle before it, including those listed below. None has yet been acted upon by the Board of Governors, which next meets in June. The following proposals are those that have been made public by IAEA member states:

Reliable Access to Nuclear Fuel (RANF). Also referred to as the Six Nation Concept, this proposal was presented to the IAEA Board on 31 May 2006 by the governments of France, Germany, the Netherlands, Russia, the United Kingdom and the United States. The concept calls for establishment of a formal IAEA mechanism to provide reliable access to low-enriched uranium fuel in the event of supply disruptions not related to technical or economic problems, in collaboration with nuclear suppliers. To be eligible, a client state — as opposed to a supplier state — would have to have comprehensively safeguarded enrichment facilities, leading to proliferation. Other experts have expressed doubts about the non-proliferation benefits to be gained from the “proliferation proof” reprocessing technologies called for under GNEP, which could also give states experience applicable to separating weapons-useable plutonium. An unintended outcome of GNEP could be that it results in more states seeking to develop the nuclear fuel cycle in the short term, in order to avoid facing an expected future cutoff in the supply of related nuclear technology.

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International Nuclear Fuel Bank. On 19 September 2006, the Nuclear Threat Initiative (NTI), a non-governmental organization working to reduce the threat to the United States from chemical, biological and nuclear weapons, pledged $50 million to the IAEA toward creation of an international nuclear fuel bank. Although this proposal is intended as a backup mechanism for states that “make the necessary nuclear fuel commitments,” the “proliferation proof” capabilities, the NTI contribution is contingent only upon the IAEA taking action to establish a mechanism and an additional pledge of at least $100 million from one or more IAEA member states, provided this occurs within two years. All other conditions — the structure of the mechanism, its locations, and its conditions for supply — would be up to the IAEA and its member states to decide. On 26 December 2007, the governments of Norway pledged $5 million for “the contribution of the United States to create a low-enriched uranium stockpile for an International Nuclear Fuel Bank,” with no preconditions. In September 2006, the government of Norway pledged $5 million toward this initiative. No other state has yet to come forward with a commitment.

Multilateral Enrichment Sanctuary Project. Proposed by Germany on 19 September 2006, the core of this concept is the establishment of interested states or companies of a commercial — but competitively neutral — uranium enrichment plant to be administered by the IAEA and located on international territory to be ceded to the Agency for this purpose. The proposal does not envisage restrictions on nuclear technology beyond those in the NPT and all states would retain the right to construct their own enrichment plants. Under the proposal, the plant would be constructed as a “black box” so as to ensure no technology is transferred to the IAEA. The site of the plant would have to be located in a state that presently enriches.

Internationalization of the Nuclear Fuel Cycle. Greece has proposed a two-track plan to place the nuclear fuel cycle under multilateral control. The first track would be increased transparency in all nuclear transactions, facilities, and development plans, through the IAEA. The second track would be to place all nuclear fuel transactions, including existing civilian enrichment and reprocessing facilities, under the auspices of a nuclear fuel bank, thus rendering national fuel cycle programs unnecessary.

Next Steps

On 15 June 2007, the IAEA Board of Governors received a report assessing the legal, technical and economic aspects of proposals on multilateralization of the nuclear fuel cycle submitted by IAEA member states over the past two years. No action is likely to be taken on the report before the IAEA Board meeting.

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The Nuclear Fuel Cycle
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on 2 June 2008. Even once agreement exists to push any proposal forward, development and construction of new facilities would likely take several years. It is uncertain when or how the IAEA Board will act on any of these proposals. The Board customarily makes decisions by consensus, although recently on matters related to Iran’s nuclear program it has taken contested votes. Contested votes seem unlikely in the case of current proposals, however, as the proposals require the widest possible political support to succeed.

Although several proposals are quite broad (e.g., those envisioning multilateral control of the fuel cycle), the present focus will likely remain on assuring supply mechanisms. Many of the elements described above contain common elements and several were expressly written to be complementary, so it seems likely that any mechanism emerging from the IAEA will contain elements from multiple sources. There is widespread support in principle for establishment of a low-enriched uranium reserve, as called for by NTI and the RANP, but almost all the process for determining criteria for access may be divisive. Further-reaching proposals, even those with broad support from major powers, such as the RANP concept, may experience difficulty due to the presence on the Board of states such as Brazil, Pakistan, South Africa and others that might feel these initiatives compromise their national interests.

History does not leave room for much optimism in the short term. Despite this history, however, the existence of ongoing related initiatives and the widespread support of advanced nuclear supplier states could play an important role in moving the issue forward. A major question exists, however, and that is whether the establishment of fuel assurance mechanisms will ultimately prevent proliferation. The final report of the Weapons of Mass Destruction Commission questioned whether it was possible to make assurance mechanisms, such as a fuel bank, sufficiently reliable to states that have to plan for changing geopolitical scenarios. Ultimately, such assurances may not have much bearing on states determined to develop nuclear technology.

There is also the question of whether non-nuclear weapon states will accept additional restraints on their “right” to develop nuclear energy for peaceful purposes. The NPT guarantees this right to any non-nuclear states that agree not to acquire nuclear weapons. The other side of this issue is whether the nuclear weapon states agree to a path of nuclear disarmament. In light of all this, where do we stand? It does seem likely one or more of the proposals to regulate the nuclear fuel cycle will come to fruition, but it also seems likely that the nuclear fuel cycle debate will continue.

Michael Spies is research associate for the Lawyers’ Committee on Nuclear Policy and editor of the Arms Control Reporter.

Work Stalls in the Conference on Disarmament
Highlighting the sense of urgency felt by many, Secretary-General Ban Ki-moon opened the first session of the Conference on Disarmament in January with the message that “we need progress,” but work once again has largely stalled. A draft decision has been introduced which would allow work to move forward in four key areas: 1. a ban on the production of materials used to produce nuclear bombs (fissile materials), 2. nuclear disarmament, 3. prevention of an arms race in outer space, and 4. security assurances that nuclear weapons will not be used against non-nuclear weapon states. The draft decision, which is nearly identical in substance to the proposal for work put forward last year in the CD, calls for negotiations on a fissile material treaty, while proposing only discussions on the other three areas. While the CD has reached near consensus on this proposal, some members continue to stall movement, including Pakistan and China.

Disputes center primarily on whether a fissile material treaty would deal with existing stocks of such materials and whether and how it would be verifiable.

Russia and China have introduced a draft Treaty on the Prevention of the Placement of Weapons in Outer Space, saying their intent is to spur “research” on the topic but that negotiations will wait for “appropriate conditions.” The draft treaty defines outer space, outer space objects and weapons in outer space (all of which are likely to be contentious issues), but leaves open a number of questions, including how to deal with militarization of space that has already taken place and how to deal with dual-use technology that can be applied to both peaceful and military purposes.

The draft treaty also bans only the use of space weapons but not the development or testing of such weapons. The current session of the CD concludes on 28 March, and the second session will be held 12 May-27 June 2008. For continuing coverage of the CD, go to www.reachingcriticalwill.org. See also Disarmament Times (Winter 2007) for a wrap up of work in the CD in 2007, available online at http://disarm.igc.org.

Progress on a Cluster Munitions Ban
Seventy-two countries have endorsed the Wellington Declaration, calling for a treaty to prohibit cluster munitions. Representatives in New Zealand at the last preparatory conference of what has become known as the Oslo Process largely rejected attempts to weaken the draft treaty as they prepare to begin negotiations on that treaty in Dublin at the end of May. Those that have signed on to the Wellington Declaration will be invited to participate in negotiations in Dublin. Efforts were made on several fronts to weaken the treaty, including by exempting certain cluster munitions from the ban and providing a transition period during which such munitions would still be allowed. In the end, however, these efforts were thwarted and such measures were kept out of the body of the treaty, instead being offered in a “compendium” which has a lesser status than the text of the treaty.

Shultz, Perry, Kissinger and Nunn Call for a World Free of Nuclear Weapons
“The accelerating spread of nuclear weapons, nuclear know-how and nuclear material has brought us to a nuclear tipping point,” write George Shultz, William Perry, Henry Kissinger and Sam Nunn in their second essay published in the Wall Street Journal (15 January 2008). But, they continue, “the steps we are taking now to address these threats are not adequate to the danger.” Noting the extraordinary “interest, momentum and growing political space that has been created to address these issues,” the writers lay out a path to disarmament with the ultimate goal of a world free of nuclear weapons. The steps they outline include increasing the warning and reassurance efforts to deal with militarization of space that has already taken place and how to deal with dual-use technology that can be applied to both peaceful and military purposes.

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Notes
1. The Congressional Research Service notes that, informally, US policy recognizes 10 states as having an enrichment capability: Argentina, Brazil, China, France, Germany, Japan, the Netherlands, Russia, the United Kingdom and the United States. Other states that have developed or are developing an independent enrichment capability include India, Iran, Pakistan, South Africa, and possibly Israel. Nikitin et al, “Managing the Nuclear Fuel Cycle: Policy Implications of Expanding Global Access to Nuclear Power,” Congressional Research Service Report for Congress, January 30, 2008.
2. Transuranic elements are artificial elements beyond uranium in the Periodic Table of Elements, especially referring to neptunium, plutonium, americium, and curium. Transuranic elements are created in nuclear power plants. Spent nuclear fuel discharged from light water reactors contains about 94 percent uranium, one percent transuranic elements, and up to five percent fission products. Transuranic elements remain more radioactive than the original uranium for hundreds of thousands of years (as opposed to fission products, which remain radioactive for several centuries). Certain transuranic elements can be used in nuclear weapons.
3. The original members are China, France, Japan, Russia and the US. Joining them are Australia, Bulgaria, Canada, Ghana, Hungary, Italy, Jordan, Kazakhstan, Lithuania, Poland, Romania, Senegal, Slovenia, South Korea, Ukraine, Uzbekistan and Uruguay. The NCWC was established at the 2000 NPT conference and can be found at www.ncwc.org.
4. The Nuclear Threat Initiative is a non-governmental group working to reduce the global threats from biological, chemical and weapons. NTI is co-chaired by Ted Turner and Sam Nunn. Their website is www.nti.org.

The NGO Committee on Disarmament, Peace and Security presents
A Fissile Material (Cut-Off) Treaty and Its Verification
A Progress Report from the International Panel on Fissile Materials (IPFM) with Frank Von Hippel, Professor of Public and International Affairs, Princeton University and Co-Chair of the IPFM
Thursday, April 17, 2008, 1:15 pm, United Nations Conference Room 2
A Discussion with Participants in the Hoover Plan
April 15 or 16 (further details to be determined)
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