

Nuclear Disarmament

SUMMARY

- The total number of nuclear weapons worldwide (23,000) is currently less than half of the level reached at the end of the Cold War. The US and Russia hold together more than 95 percent of the global stockpile, including 2,200 and 2,780 deployed strategic warheads respectively.
- To achieve further progress states will need to establish (1) a verification process to monitor the reduction and dismantlement of nuclear weapons; (2) an enforcement system to ensure the implementation of agreements and deal with cases of noncompliance; and (3) security and stability conditions where countries will trust that they can safely reduce and ultimately eliminate their weapons.
- Each of these steps raises difficult and complex challenges. The chances of addressing them successfully will depend on the ability of states to develop cooperative security relationships.
- US President Barack Obama's commitment to a "world without nuclear weapons" and the conclusion of the US-Russia New START treaty have created a more positive context. Yet further concrete progress needs to be achieved in order to establish a new dynamic.
- The existing frameworks of negotiations, at the United Nations and between nuclear-weapon states, have their respective advantages and limitations; among the latter are the protracted delays for multilateral agreements to enter into force. At this stage, the prospect of agreeing on a more radical approach seems remote.
- A wide range of steps should be pursued to combine treaty negotiations and voluntary initiatives on reductions of nuclear weapons, as well as increased efforts to prevent the emergence of additional nuclear-armed states.

STATE OF PLAY

Nuclear disarmament is one of the three pillars of the NPT, along with nonproliferation and the peaceful use of nuclear energy. The commitment to pursue nuclear disarmament is expressed in Article VI of the treaty. It has been reaffirmed by the 1995

NPT Review Conference in its decision on "Principles and Objectives for Nuclear Non-Proliferation and Disarmament" and by the 2000 NPT Review Conference in the thirteen "practical steps" outlined in the final document of the conference.²⁵ Some progress has been achieved toward this objective (indeed more substantial than what is usually acknowledged), but much more remains to be done.

Nuclear arsenals

The total number of nuclear weapons worldwide is currently estimated to be around 23,000, which is less than half of what it was in the last years of the Cold War (65,000 nuclear weapons in 1986).²⁶

Official data on the categories of weapons (strategic versus nonstrategic) as well as the exact status of the stockpiles (in operational stockpiles, in reserve, or awaiting dismantlement) are seldom available, and there are no international mechanisms to verify the data related to nuclear forces and their reduction.

Current estimates of the total **national inventories of warheads**²⁷ in 2009 are Russia, 13,000; US, 9,400; France, 300; China, 240; United Kingdom, 185; Israel, 80; India, 60 to 70; Pakistan, 60; and North Korea, 5 or 6.

The numbers of **warheads in operational stockpiles**²⁸ are Russia, 4,834; US, 2,702; France, 300; China, 186; United Kingdom, 160; Israel, 80; India 60 to 70; and Pakistan 60.

These numbers illustrate the following:

1. The continued massive predominance of Russian and American nuclear stockpiles (more than 95 percent of the global inventories) compared to the other nuclear powers;
2. A general trend over the last twenty years toward a reduction of nuclear arsenals, due in particular to US and Russian bilaterally agreed reductions, and—on a much smaller scale—to British and

25 See excerpts in Annex II.

26 All figures for 2008 and 2009 in this section are from the *SIPRI Yearbook 2009* (Stockholm: SIPRI, 2009).

27 Including warheads in reserve or awaiting dismantlement.

28 The stockpiles of India, Pakistan, and Israel are thought to be only partly deployed.

French unilateral reductions.

3. A marked reduction in the number of *deployed* strategic warheads in US and Russian nuclear forces (from 10,000 to 6,000 each with the 1991 *Strategic Arms Reduction Treaty* [START], down to 1,700-2,200 each by 2012 with the 2002 *Strategic Offensive Reductions Treaty* [SORT], and to 1,550 each with the New START treaty within seven years from the date the treaty will enter into force).
4. The elimination by the US and Russia of all their ground-launched ballistic and cruise missiles with ranges between 500 and 5,500 kilometers, as a result of the 1987 *Intermediate-Range Nuclear Forces (INF) Treaty*. The US and Russia dismantled a total of around 2,700 missiles.
5. The continued presence of nonstrategic weapons in the arsenals of Russia (2,000 deployed nonstrategic warheads and several thousand held in reserve) and of the US (500 active nonstrategic warheads, including approximately 200 bombs deployed in Europe, and 800 in storage). Nonstrategic weapons are currently not limited by arms-control agreements.
6. The importance of reserve stockpiles, in particular for Russia (around 8,160 warheads in reserve or to be dismantled) and for the US (2,500 warheads in reserve and 4,200 awaiting dismantlement). The pace of dismantlement of weapons appears to be slower today in both countries than it was in the 1990s.

Fissile materials

The total stock of weapons-grade fissile materials worldwide is estimated to be, as of 2008, 1,370 tons of highly enriched uranium (HEU), 255 tons of separated plutonium in military stock, and 246 tons of separated plutonium in civilian stock.

As with weapons, official data on fissile-material inventories are seldom available, except for civilian stock (most of which is placed under IAEA safeguards) and stock declared in excess of military purposes. Current estimates are approximate and include significant margins of uncertainty. The estimated breakdown is the following:

- **highly enriched uranium:** Russia, 770 tons; US, 508 tons (declared); France, 35 tons; United Kingdom,

23.3 tons (declared); China, 20 tons; Pakistan, 2 tons; India, 0.6 ton; Israel, 0.1 ton; and non-nuclear-weapon states 10 tons (under IAEA safeguards).

- **separated plutonium in military stocks:** Russia, 145 tons; US, 92 tons; United Kingdom, 7.9 tons; France, 5 tons; China, 4 tons; India, 0.7 ton; Israel, 0.6 ton; Pakistan, 0.09 ton; and North Korea, 0.03 ton.
- **separated plutonium in civilian stocks:** United Kingdom, 77.7 tons; France, 54.9 tons; Japan, 46.7 tons; Russia, 44.9 tons; Germany, 15 tons; India, 6.4 tons; Switzerland, 0.05 ton; and US, zero.

These figures can be compared with the quantity of fissile materials necessary to build a warhead. For the IAEA, the “approximate amount of nuclear material for which the possibility of manufacturing a nuclear explosive device cannot be excluded” is 25 kilograms for HEU and 8 kg for plutonium.²⁹

American and Russian stockpiles amount to approximately 90 percent of HEU stock and separated plutonium in military stock. American and Russian holdings include a large proportion of stock reserved for naval reactor fuel (around 100 tons of HEU each) and of stock declared in excess of weapon needs (around 50 tons of plutonium each and around 150 tons of HEU to be blended down for each country). US and Russian stocks in excess of weapon needs will increase in the coming years as both countries continue to dismantle weapons.

The five nuclear-weapon states recognized by the NPT have all stopped their production of fissile materials for nuclear weapons, and—with the exception of China—all of them have declared that they have no plans to resume such production. Both India and Pakistan appear to be continuing their production of fissile materials for nuclear weapons.

WHAT ARE THE SUBSTANTIVE ISSUES?

To achieve further progress in nuclear disarmament, nuclear-weapon and non-nuclear-weapon states will need to cooperate on three main sets of issues. They will need to establish

- a verification process to monitor the reduction and dismantlement of weapons;
- an enforcement system to ensure the implementation of reductions and deal with cases of noncompliance; and

²⁹ International Atomic Energy Agency (IAEA), “IAEA Safeguards Glossary,” 2001, available at www-pub.iaea.org/MTCD/publications/PDF/nvs-3-cd/PDF/NVS3_scr.pdf.

- security and stability conditions where countries will trust that they can safely reduce and ultimately eliminate their nuclear weapons.

Verification

To agree to further cuts in their arsenals, nuclear states that are parties to an agreement will want to make sure that the other parties effectively carry out the agreed reductions and that they are not retaining a capacity to quickly reconstitute their forces.

The verification of reductions in the number of nuclear warheads in military arsenals and their effective dismantlement will then become a key requirement. This has not been the case so far. Previous US-Russia agreements focused on the limitations on levels of deployed warheads and did not include an obligation to destroy warheads removed from deployment. So states will have to innovate to establish a comprehensive verification system.

Typically, reduction agreements would be based on declarations by nuclear-weapon states of their numbers of deployed and nondeployed warheads, delivery vehicles, and fissile materials. A set of measures would have to be agreed upon in order to verify these declarations and to monitor the dismantling of warheads and delivery systems as well as the conversion of fissile material.

This would require putting in place a “chain of custody” to track warheads from deployment to dismantlement.³⁰ This process would include, in particular, the verification of records of past production of fissile materials, the establishment of tagging schemes to identify warheads, the inspection of facilities and monitoring of movements of materials in and out of facilities, and the adoption of measures to ensure that the dismantlement is irreversible.

Protection of classified information

At each step in the verification process, inspectors will have to ascertain that the devices that they monitor are indeed real warheads. A first hurdle is that inspectors will not be allowed to inspect the warheads themselves. To avoid risks of prolifera-

tion, the design of warheads will have to be protected, and inspectors will only be allowed to inspect the containers.

To overcome this difficulty, the inspectors will have to use “information barrier” technologies that, without revealing classified information, will allow them to authenticate warheads. States will have to agree on the use of such technologies.

This challenge is not only technological but also political. An adequate level of cooperation between parties will be needed so that each can trust the reliability of inspections based on “information barrier” technologies. Authentication procedures will be based on parameters related to the warhead given by the inspected party, and other parties will have to trust that these parameters are honest and accurate.³¹

Accuracy and completeness of declarations

Another challenge will be ascertaining that states effectively declare all their holdings, and that they do not divert some of them from the verification process. Warheads or fissile materials could be easily hidden in undeclared facilities, where they would be hard to detect.

Verification of stocks of fissile materials poses specific and difficult challenges. To verify holdings, inspectors will have to compare the quantity of nuclear material held according to accounting books of past production and the quantity measured by a physical inventory.

This will be an extremely difficult task. Even when records are well kept, discrepancies between records of past production and the current physical inventory are inevitable, due to measurement uncertainties and recording errors. For instance, the survey of the plutonium produced for weapons in the United States between 1944 and 1994 shows, for a production of more than 100 tons, an inventory difference of 2.8 tons.³² This would be the equivalent of several hundred warheads.

In many states, records of past production might not be complete, and discrepancies would be more important. This would make it even harder for

30 See Harold A. Feiveson, ed., *The Nuclear Turning Point: A Blueprint for Deep Cuts and De-Alerting of Nuclear Weapons* (Washington, DC: Brookings Institution, 1999).

31 See Georges Perkovich and James M. Acton, *Abolishing Nuclear Weapons*, Adelphi Paper 396 (Abingdon, UK: Routledge, 2008).

32 US Department of Energy, “Plutonium: the First 50 Years,” 1996, available at www.doeal.gov/SWEIS/DOEDocuments/004%20DOE-DP-0137%20Plutonium%2050%20Years.pdf.

inspectors to ascertain whether these discrepancies are due to inventory differences of a technical nature or whether they indicate possible dissimulation of fissile material.

States may also pursue uranium enrichment in undeclared facilities. Such activities would be hard to detect. This problem is not specific to disarmament but also exists in the nonproliferation context, and inspectors will have to use similar tools to those developed in the framework of the IAEA strengthened-safeguards system.

To address the risks of diversion and dissimulation, challenge inspections will be needed. But challenge inspections themselves have their own limitations, and states will have to agree on mechanisms of managed access to facilities to protect classified information.

Ultimately, the level of confidence that states have in the verification system will depend on the degree of transparency that the state parties themselves demonstrate. Developing such confidence will take time. The adoption of transparency measures should take place at an early stage in the disarmament process, so that state parties can progressively develop trust in each other's declarations.³³

Enforcement

There is currently no international process for monitoring nuclear disarmament. This contrasts with the architecture in place to ensure nonproliferation. The implementation of Russian and US agreements is left to mutual verification by the parties themselves. The involvement of the UN Security Council and of the IAEA in ensuring the disarmament of Iraq remains a unique case.

States will need to create an enforcement system to achieve progress in reductions and ultimately move to zero. This system will have to be robust enough to detect and deter noncompliance and to act against a possible break-out.

Monitoring disarmament

The verification measures described above could be implemented through a great variety of arrangements. This will very much depend on the format of disarmament negotiations, which could be bilateral in some cases and multilateral in others. As

states achieve further progress in nuclear disarmament, monitoring will probably combine activities carried out by the parties themselves and by an international authority.

In the early stages—as is currently the case with US-Russia negotiations—nuclear-weapon states may tend to keep verification activities to themselves in order to protect classified information. They may also establish verification bodies staffed by the parties themselves.

But more transparency and more international involvement will be needed for the international community to be able to trust arms-control and disarmament measures. The Preparatory Commission of the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) is a first instance, although on an interim basis, of such international involvement. The issue of international verification will also have to be addressed by the upcoming negotiations on a treaty to ban the production of fissile materials for nuclear weapons. The IAEA could play a role in this field, given that the verification system that would be required to monitor a ban would be quite similar to the IAEA safeguards system.³⁴

Whatever monitoring arrangements of arms-control and disarmament agreements are developed, verification bodies will have to be granted robust mandates for inspections, and they will need to be backed by equally robust mechanisms to enforce compliance if need be.

Enforcing disarmament

States will need to decide whether they wish to grant authority to a specific body to settle disputes that may arise in the implementation of disarmament agreements. They will also have to decide whether cases of noncompliance should be reported to a specific body or to the Security Council. Given the nature of the issues at hand, the Security Council itself may consider that they fall within its purview.

During the process of reduction of nuclear forces, the responsibility of enforcing disarmament agreements, whether trusted to the Security Council or another specific body, will be particularly difficult to assume. The Security Council has

³³ See Feiveson, *The Nuclear Turning Point*.

³⁴ Tariq Rauf, "A Cut-Off of Production of Weapon-Usable Fissionable Material: Considerations, Requirements and IAEA Capabilities," Statement at the Conference on Disarmament, Geneva, 2006, available at www.fissilematerials.org/ipfm/site_down/rauf06.pdf.

only limited experience in dealing with nuclear issues (mostly the disarmament of Iraq and the proliferation crises in North Korea and Iran), and its overall record is mixed. The ability of the Council to act depends on the degree of consensus among its members. When the Council is united, as it was on Iraq in the early 1990s, the degree of performance is good. When there are significant differences between its members, as has so far been the case with Iran, the Council is less effective.

At the ultimate stage of the elimination of weapons, enforcing compliance will be equally complex. The renewal of the debate on a nuclear-weapon-free world has helped identify the issues at stake.³⁵ Questions have been raised about how the Security Council would be able to deal with nuclear break-outs: What degree of proof will Security Council members require to decide on action, and how quickly will they be able to act? What sanctions would be effective? Would the Security Council be able to take action if one of the (former) nuclear-weapon states is noncompliant? In a nuclear-weapon-free world, what international military action would be possible against a nuclear break-out?

There are no easy answers at this stage to these questions. But the discussion on how to enforce nuclear disarmament points to two areas where progress can be achieved:

- Much will depend on the capacity of the UN membership to reform the Security Council in a way that will strengthen its legitimacy as well as its efficiency. Increased efforts to improve the methods of work of the Council and the tools at its disposal will also matter.
- Developing a consensus on disarmament measures is equally needed. States will have to ensure that each step in the disarmament process is backed by a strong consensus among all the parties, and that these views are adequately expressed to the members of the Security Council.

Stability and security

To reduce their nuclear forces, nuclear states will need to be convinced that such reductions enhance

their security. The objective of progressing toward nuclear disarmament “in a way that promotes international stability, and based on the principle of undiminished security for all,”³⁶ as reaffirmed at the 2000 NPT Review Conference, remains a complex one.

Addressing regional or global tensions

In the current strategic context, many analysts question the relevance of nuclear weapons, and subscribe to the view of the authors of the Shultz-Perry initiative, that “with nuclear weapons more widely available, deterrence is decreasingly effective and increasingly hazardous.”³⁷

Yet, in the eye of their possessors, nuclear forces remain the ultimate guarantee against the threat of aggression, be it nuclear, conventional, chemical, or biological. Nuclear-armed states (as well as the thirty or so countries that rely on a US or Russian nuclear umbrella) continue to widely accept the notion that their arsenals will deter major conflict. Proponents of deterrence also credit nuclear weapons with having “moderated the behavior of the great powers toward one another” and do not see a realistic substitute for them in this role.³⁸

In fact—independent of steps taken by some of them to reduce their forces—all nuclear powers, whether recognized by the NPT or not, have continued modernizing their weapons and their means of delivery.

Continued reliance on nuclear weapons stems from regional tensions (as in the Middle East and South Asia) or from global security imbalances (as illustrated by concerns voiced by Russia and China over US conventional dominance). It also reflects the need to defend against the emergence of future risks, as expressed by US Defense Secretary Robert Gates: “Our nuclear arsenal is vital for a final reason: we simply cannot predict the future. (...) We have to be prepared for contingencies we haven't even considered.”³⁹

The main challenge in progressing toward disarmament will be to address effectively these insecurities. Disarmament steps may themselves

35 Perkovich and Acton, *Abolishing Nuclear Weapons*.

36 See Annex II of this report, “2000 NPT Review Conference (Excerpt from the Final Document)—Thirteen steps.”

37 Georges Shultz, William Perry, Henry Kissinger, and Sam Nunn, “Toward a Nuclear-Free World,” *Wall Street Journal*, January 15, 2008, p.13-A.

38 Franck Miller, “Disarmament and Deterrence: A Practitioner’s View,” part of “Abolishing Nuclear Weapons: A Debate,” Carnegie Endowment for International Peace, 2009, available at www.carnegieendowment.org/publications/index.cfm?fa=view&id=22748.

39 Robert Gates, “Nuclear Weapons and Deterrence in the 21st Century,” speech delivered at the Carnegie Endowment for International Peace, October 2008.

contribute to easing tensions. But no long-term progress can be achieved without increased efforts to settle regional conflicts and to establish a system of cooperative security to resolve tensions between states.

Moving toward lower levels of forces

Not all these difficulties can be easily resolved and they will require increased cooperative efforts. But they should not stand in the way of further reductions toward a point where nuclear weapons could be counted in hundreds rather than in thousands.

In agreeing to disarmament measures, states will want to make sure that reductions will be carried forward in a way that preserves their security, and does not create imbalances. Some nuclear powers already assume a posture of minimal deterrence, and they may consider it difficult to move beyond that point.

As levels of forces are lowered, preserving stability may become increasingly complex. Small imbalances may have a stronger destabilizing effect than they did at previous levels. States will need to trust that their reduced forces are not exposed to the risk of a preemptive strike by other parties, should the situation deteriorate. One way to do so could be to allow each nuclear-weapon state to maintain at all stages of the reduction process “a core of invulnerable weapons, for example on submarines at sea.”⁴⁰

WHAT ARE THE OPPORTUNITIES FOR, AND OBSTACLES TO, PROGRESS?

A new mindset

President Obama's commitment expressed in Prague in April 2009 “to seek the peace and security of a world without nuclear weapons”—and the endorsement of this goal by most nuclear-weapon states—has created a new context in favor of disarmament.

If indeed significant steps are taken toward disarmament, this new mindset will also help increase support among the UN membership for nonproliferation efforts. This would create a more positive dynamic on nuclear issues, where disarma-

ment and nonproliferation efforts would reinforce each other.

New START treaty

A first step is the signature on April 8, 2010, by the US and Russia of a new treaty on reducing and limiting strategic offensive arms to replace START, which expired in December 2009. The new treaty commits the United States and Russia to limiting their deployed strategic warheads to a maximum of 1,550 each (from a range of 1,700–2,200 in the 2002 Moscow *SORT Treaty*), and their deployed strategic delivery vehicles to a maximum of 700 each.

Work Program of the Conference on Disarmament

Another source of optimism was the agreement reached in May last year by the Conference on Disarmament on its 2009 annual work program,⁴¹ ending a twelve-year deadlock. In particular, the Conference agreed to establish a working group tasked with negotiating a treaty banning the production of fissile material for nuclear weapons. It also agreed to create a working group to exchange views on practical steps to reduce and ultimately eliminate nuclear weapons, and another one on negative security assurances, and to appoint a special coordinator on a comprehensive program of disarmament. The Conference, however, was not able to begin implementation of this program last year. Difficulties reappeared in 2010, and the Conference has yet to agree on its work program.

Not yet a new dynamic

The next steps will be crucial to test the determination of the US and Russia to lead toward further nuclear-arms reductions and to engage the other nuclear powers.

Pursuing deeper US and Russian reductions

The US and Russia have agreed in principle to “pursue new and verifiable reductions in (their) strategic offensive arsenals in a step-by-step process.”⁴² The New START treaty, concluded this year, should be followed by other negotiations to achieve deeper cuts in the nuclear forces of both countries.

⁴⁰ Feiveson, ed., *The Nuclear Turning Point*.

⁴¹ Conference on Disarmament, Doc. CD/1864, May 29, 2009.

⁴² Dimitriy A. Medvedev and Barack Obama, “Regarding Negotiations on Further Reductions in Strategic Offensive Arms,” joint statement released on April 1, 2009, available at www.whitehouse.gov/the_press_office/Joint-Statement-by-Dmitriy-A-Medvedev-and-Barack-Obama/.

Future US-Russian strategic negotiations will have to break new ground:

- In order to move toward substantially lower levels of forces, both countries will have to establish a more robust verification system. The New START treaty builds on the verification measures of the 1991 START treaty relating to deployed warheads, to which new elements have been added. But it does not require the parties to destroy the warheads that will be removed from deployment. The verification of the reductions in the overall number of warheads (and not only the number of weapons in deployment) and their dismantlement should become the focus of future negotiations.
- The two countries will have to address changes in the global security situation and their respective responses to it. Whereas the US used to put the emphasis on nuclear capabilities to defend against Soviet conventional superiority, it is now the turn of Russia to rely increasingly on its nuclear force to compensate for American conventional dominance.
- The US and Russia will have to reach a clearer understanding on the issue of missile defense. The New START treaty does not constrain current or planned US missile-defense programs. But the issue remains contentious.⁴³ A limited missile defense, aimed at intercepting a handful of missiles from a proliferating state, would not affect the balance of forces between the two countries at their current, and even lower, levels. However, an enlarged missile-defense system would probably not be compatible with deeper cuts. The US will have to alleviate the concerns expressed by Russia as well as by others, including China. In the longer term, missile defense could however be an interesting option to defend against break-outs in a nuclear-weapon-free world.

Engaging the other nuclear powers

The pledge of the US administration to secure authorization by the Senate to ratify the *Comprehensive Nuclear-Test-Ban Treaty* (CTBT) gives new hope for the promotion of multilateral arms-control and disarmament instruments. A failure to ratify the CTBT would be a hard blow to current efforts to move disarmament forward. But a success would encourage the eight other states (China, Egypt, India, Indonesia, Iran, Israel, North

Korea, and Pakistan) whose ratification is needed for the treaty to enter into force. Indonesia has already announced it would ratify the CTBT if the US does, and it is quite likely that China would also follow. Increased efforts would still be needed to bring on board the remaining countries for which the issue of CTBT ratification is often linked to regional considerations.

The agreement at the Conference on Disarmament on its 2009 work program briefly opened the way to the negotiation of a treaty banning the production of fissile material for nuclear weapons (a *Fissile-Material Cut-off Treaty*). The Conference has yet to renew in 2010 its agreement for this year's program. The FMCT negotiation will be an arduous process as some nuclear powers (India and Pakistan in particular) are still reluctant to accept a cap on their production of fissile material. Members of the Conference will also have to find common ground on many contentious issues:

- Negotiators will have to agree on the scope of the treaty and decide whether it should be limited to future production of fissile material for weapons or whether it should also cover existing stocks (a step that is opposed by most nuclear-armed states). One option for avoiding a deadlock would be to provide for separate arrangements on the existing stocks.
- They will also have to agree on verification measures. One hurdle has been removed by the current US administration, which supports a "verified" treaty, whereas its predecessor opposed international verification. Robust verification measures will be needed to monitor compliance with the treaty. They should be similar to those existing in the framework of the strengthened IAEA safeguards for monitoring compliance with the NPT in order to avoid discrepancies between the two regimes.

Further steps to develop trust

To gain momentum, progress toward nuclear disarmament will need to be supported by increased efforts to strengthen the nonproliferation regime and to renovate international security relationships.

43 At the time of the conclusion of the New START treaty, both sides issued unilateral statements on missile defense. The US statement emphasizes that nothing in the treaty would limit current or planned US missile-defense programs. Russia's statement specifies that "the exceptional circumstances referred to in Article 14 of the Treaty [on withdrawal from the Treaty] include increasing the capabilities of the USA's missile defence system in such a way that threatens the potential of the strategic nuclear forces of the Russian Federation."

Need to resolve the current proliferation crises

Resolving the nuclear crises in North Korea and Iran should be a priority. A failure to do so would make further progress toward disarmament very unlikely, as current nuclear-armed states would want to preserve their own forces to defend against new threats.

If unchecked, the two crises could generate proliferating cascades in Northeast Asia and in the Middle East, with neighboring countries hedging against these emerging risks or even deciding to develop their own nuclear capacity. This would complicate further disarmament efforts.

The current proliferation crises also represent a test of the capacity of the international community, and specifically the Security Council, to react effectively to nuclear challenges and to serve in the future as the backbone of an enforcement system for nonproliferation and disarmament.

More generally, a strengthened nuclear nonproliferation regime will be an essential requirement in order to progress toward a nuclear-weapon-free world. The reduction of existing arsenals should be matched by adequate measures to prevent the emergence of new ones. Strengthening the IAEA verification authority, as well as developing international control of fuel-cycle activities, is of particular importance in this regard.

Need to establish cooperative relationships among nuclear powers

Trust among nuclear states will be essential to move the disarmament process forward. In the absence of mutual trust, states could be tempted to develop alternative strategies to hedge against possible destabilizing effects of force reductions. The adoption of transparency measures in nuclear stockpiles could, for instance, become an incentive for some nuclear powers to increase their stocks in order to reach parity with their competitors. Reductions in nuclear arsenals could be compensated by a new race in conventional armaments. One can think of many ways in which things could go wrong.

However crucial, trust will be extremely difficult to instill between state parties that in many cases are also potential or former adversaries. Trust can

only develop over time. States will also need a proven record of reliability to gain confidence in the verification process and in the enforcement system.

A wide range of efforts will be needed to support this process:

- In the international security system, steps toward nuclear disarmament should be supplemented by other disarmament efforts to ensure that nuclear-force reductions would not create imbalances. In this regard, the clause in Article VI of the NPT obligating all states to pursue “general and complete disarmament” should not be considered an empty one, and more attention should be given to the interplay between nuclear disarmament and the other areas of cooperative security.⁴⁴
- In each state, internal regulations will also be needed to carry out disarmament commitments. One area of particular interest will be the promotion of transparency, openness, and access to information. In this spirit, many analysts support the idea of offering specific protection to whistleblowers who would report undeclared activities.

DO WE HAVE THE RIGHT FRAMEWORKS?

Existing frameworks

Progress toward nuclear disarmament can be pursued along two main tracks: (1) the “United Nations track,” which includes the General Assembly with the First Committee, the NPT with its review cycle, and the Conference on Disarmament; and (2) the “ad hoc track” of nuclear-armed states, which is currently limited to US-Russia negotiations and to unilateral steps taken by other nuclear states (mostly the UK and France).

Both tracks offer their specific advantages: universality and legitimacy for the UN; flexibility and adaptability for the ad hoc formats. Yet both have their own limitations: progress can be blocked at the UN by the lack of consensus; and it is dependent on the goodwill of the nuclear states in the ad hoc track.

In this context, recent efforts toward nuclear disarmament could very much lose their momentum when it comes to concrete implementation:

- In the UN track, fourteen years after its signature,

⁴⁴ See Randy Rydell, “Nuclear Disarmament and General and Complete Disarmament,” in *The Challenge of Abolishing Nuclear Weapons*, edited by David Krieger (New York: Transaction, 2009).

the CTBT has not yet entered into force and the FMCT may not be concluded for years (not to mention its entry into force).

- In the ad hoc track, much depends on the ability of the US and Russia to achieve deep reductions. The question will then arise on how to include the other nuclear states in a multilateral effort toward further reductions. Deep cuts will most likely not be possible unless all nuclear powers join the disarmament process. If discussions among the five permanent members of the Security Council (P5) can constitute a possible format for the nuclear states recognized by the NPT, there is no obvious solution for the inclusion of the non-NPT nuclear powers.

Are there alternative fora and instruments?

The limitations of the existing formats lead one to consider which other options could either replace or supplement them.

The Model Nuclear-Weapon Convention

One option would be to replace the current step-by-step approach with a more radical one, which would be to prohibit all nuclear weapons, as is the case with biological and chemical weapons.

This is what is proposed by the *Model Nuclear Weapons Convention* co-sponsored by Costa Rica and Malaysia:⁴⁵ The convention would prohibit the production, stockpiling, use, and threatened use of nuclear weapons, as well as the production of weapon-usable fissile material. States would be required to destroy their arsenals and their delivery vehicles.

Nuclear weapons would be eliminated through a series of five phases ranging from taking the weapons off alert and removing them from deployment, to dismantling the warheads and placing the fissile material under international control. These phases will be linked to a precise calendar starting with the entry into force of the convention, which would itself be dependent on the ratification by all nuclear-weapon and nuclear-capable states.

The convention would establish a verification system under the responsibility of an international

agency. Cases of noncompliance would be brought to the attention of the UN General Assembly and the Security Council. The convention would also grant protection to citizens who reported suspected violations of its obligations.

The attraction of a *Model Nuclear Weapons Convention* is its offering a comprehensive plan integrating all aspects of nuclear disarmament. It is also its main weakness, as the prospect of securing the agreement of all nuclear powers on such a plan seems in the present context quite remote. At this stage, China is the only nuclear-weapon state who has expressed interest in this concept.

Other options

Other options would be to propose voluntary measures to accelerate the adoption of steps toward disarmament.

This is, for instance, already the case with the de facto moratorium on nuclear testing pending the entry into force of the CTBT. All NPT nuclear-weapon states, as well as India, currently adhere to this moratorium.

A similar moratorium could be established for the production of fissile material for nuclear weapons, pending the conclusion and entry into force of the FMCT. At this stage all the NPT nuclear-weapon states, except China, have declared that they have ceased their production and have no plans to resume it. None of the non-NPT nuclear powers has done so.

Other voluntary, informal arrangements have been proposed in the area of fissile material, such as the establishment of guidelines to which nuclear powers would be invited to subscribe on a voluntary basis.⁴⁶ These guidelines would call on states to make regular declarations of their fissile-material stocks and to apply the highest standards of accountancy and physical protection to these stocks. States would also make regular declarations of their stocks in excess of weapons needs, which they would place under IAEA safeguards and convert to non-weapon-usable forms.

⁴⁵ United Nations, *Letter Dated 17 December 2007 From the Permanent Representatives of Costa Rica and Malaysia to the United Nations Addressed to the Secretary-General*, UN Doc. A/62/650, January 18, 2008.

⁴⁶ See Robert J. Einhorn, "Controlling Fissile Materials and Ending Nuclear Testing," paper presented to International Conference on Nuclear Disarmament, Oslo, February 26-27, 2008, available at www.ctbto.org/fileadmin/user_upload/pdf/External_Reports/paper-einhorn.pdf.

DISARMAMENT AND THE NPT REVIEW CONFERENCE

Context

Disarmament is at the heart of what is often described as the “grand bargain” of the NPT: the idea that non-nuclear states have committed not to seek nuclear weapons and that nuclear powers have, in return, committed to pursue the elimination of their weapons. There are three other “bargains” stemming from the treaty. In exchange for their pledge not to acquire atomic weapons, non-nuclear states can expect (1) the promotion of nuclear cooperation and of exchanges in technologies and materials; (2) assurances from the weapon states that they will not use nuclear arms against non-nuclear states; and (3) the confidence that other non-weapon states will also not seek nuclear weapons, thereby increasing regional and global security. But the reciprocal commitment not to acquire weapons on one side and to pursue their elimination on the other is seen by a majority of states as the cornerstone of the treaty and of its indefinite extension in 1995.

Against this backdrop, the lack of progress in nuclear disarmament has generated considerable frustration among non-nuclear states. Many of them argue that they have to meet increasingly stringent nonproliferation requirements whereas nuclear-weapon states do not seem to be keeping their part of the grand bargain.

Over the recent years, nuclear-weapon states have taken some of the thirteen “practical steps” toward nuclear disarmament adopted at the 2000 NPT Review Conference.⁴⁷ Three weapon states (France, Russia, and UK) have ratified the CTBT and all of them observe a moratorium on nuclear testing. All weapon states have stopped their production of fissile materials for nuclear weapons and two states (UK and USA) have declared their stocks of fissile materials. Three states (France, UK, and USA) have announced unilateral reductions in their stockpiles and have increased transparency about their weapons. And three states (Russia, UK, and USA) have taken steps to develop verification capabilities for the achievement of a nuclear-weapon-free world. However, progress is unequal among

weapon states, and much more still needs to be done.

As in previous conferences, nuclear disarmament will be among the most intensely debated issues at the Review Conference. A successful outcome in this area will be essential to restore confidence in the nonproliferation regime and to strengthen the NPT. The renewed commitment, endorsed by all weapon states, to “create the conditions for a world without nuclear weapons”⁴⁸ and the recent conclusion of the US-Russia New START treaty provide for a more positive atmosphere. But it will be a difficult task for the conference to define the way forward.

Perspectives

At this stage, the most promising approach seems to combine step-by-step treaty negotiations on reductions of nuclear forces and less formal, voluntary measures with a quicker impact: (1) the main priority is to move forward US-Russia negotiations on reducing their strategic arsenals and to break the deadlock over the CTBT and FMCT; (2) in support of these steps, the five nuclear-weapon states should agree on voluntary initiatives such as a moratorium on the production of fissile material for nuclear weapons, transparency measures on their existing stocks of fissile material, and the dismantling of their nuclear-testing sites as well as of their facilities for the production of fissile material for weapons; and (3) in addition to reductions in strategic offensive forces, efforts should be undertaken to begin treaty negotiations on reducing and eliminating nonstrategic weapons (2,000 in Russian operational stockpiles and several thousand in reserve, and 500 in US operational stockpiles and 800 in reserve). The idea of a multilateral treaty to eliminate intermediate-range ground-launched missiles could also be explored.

To reach an agreement, the Review Conference will have to identify goals that will be both ambitious and realistic. It will also have to take into account the variety of actors that are required to take disarmament steps: primarily the weapon states, but also the non-nuclear states, and the nuclear-armed states that are not party to the NPT.

47 Sharon Squassoni, “Grading Progress on 13 Steps Toward Disarmament,” Carnegie Endowment for International Peace, May 8, 2009, available at www.carnegieendowment.org/files/13_steps.pdf.

48 UN Security Council Resolution 1887 (September 24, 2009), UN Doc. S/RES/1887.

These categories are more heterogeneous than it seems. Weapons states have different approaches and records in disarmament. So do the non-nuclear states for instruments which apply to them (for instance, the CTBT and the future FMCT). On their part, non-NPT states have remained outside international disarmament frameworks, and are at times in a position to block progress, as the discussion in Geneva on an FCMT shows. Although the Review Conference has little bearing on non-NPT states, these countries should be incited to join disarmament efforts.

More generally, a prerequisite for the success of

further disarmament is to restore and promote trust between the nuclear-armed states, as well as between them and the non-weapon states. In this regard, steps toward nuclear disarmament cannot be considered separately from larger efforts to strengthen cooperative security and to promote disarmament in other areas. To this end, progress is needed on a wide range of issues, from improving international frameworks for conflict resolution to increasing internal transparency within states. These issues go beyond the scope of the NPT review process, but they should be taken into account in defining the way forward.