



IAEA BULLETIN

INTERNATIONAL ATOMIC ENERGY AGENCY

The Right Moves

Nuclear Law & Disorder
The NPT's Moment of Truth
7 Steps to Raising Security



IAEA
ATOMS FOR PEACE

The International Atomic Energy Agency is the world's centre of nuclear cooperation. Created in 1957 as the intergovernmental "atoms for peace" organization within the UN system, the IAEA contributes to global peace, development, and security in essential ways — helping to prevent the spread of nuclear weapons, and fostering safe, secure and peaceful uses of beneficial nuclear technologies for human development.

The IAEA mission covers three main pillars of work, with authority rooted in its Statute:

- ① **Safeguards & Verification**, including safeguards inspections under legal agreements with States to verify the exclusively peaceful nature of nuclear material and activities.
- ② **Safety & Security**, including the establishment of safety standards, codes, and guides and assistance to help States apply them.
- ③ **Science & Technology**, including technical and research support for nuclear applications in health, agriculture, energy, environment and other fields.

The work is multi-faceted and engages multiple governmental and other partners at national, regional and international levels in and outside the UN system. IAEA programmes and budgets are set through decisions of its own policymaking bodies — the 35-member Board of Governors and the General Conference of all Member States. Reports on IAEA activities are submitted periodically or as cases warrant to the UN Security Council and UN General Assembly.

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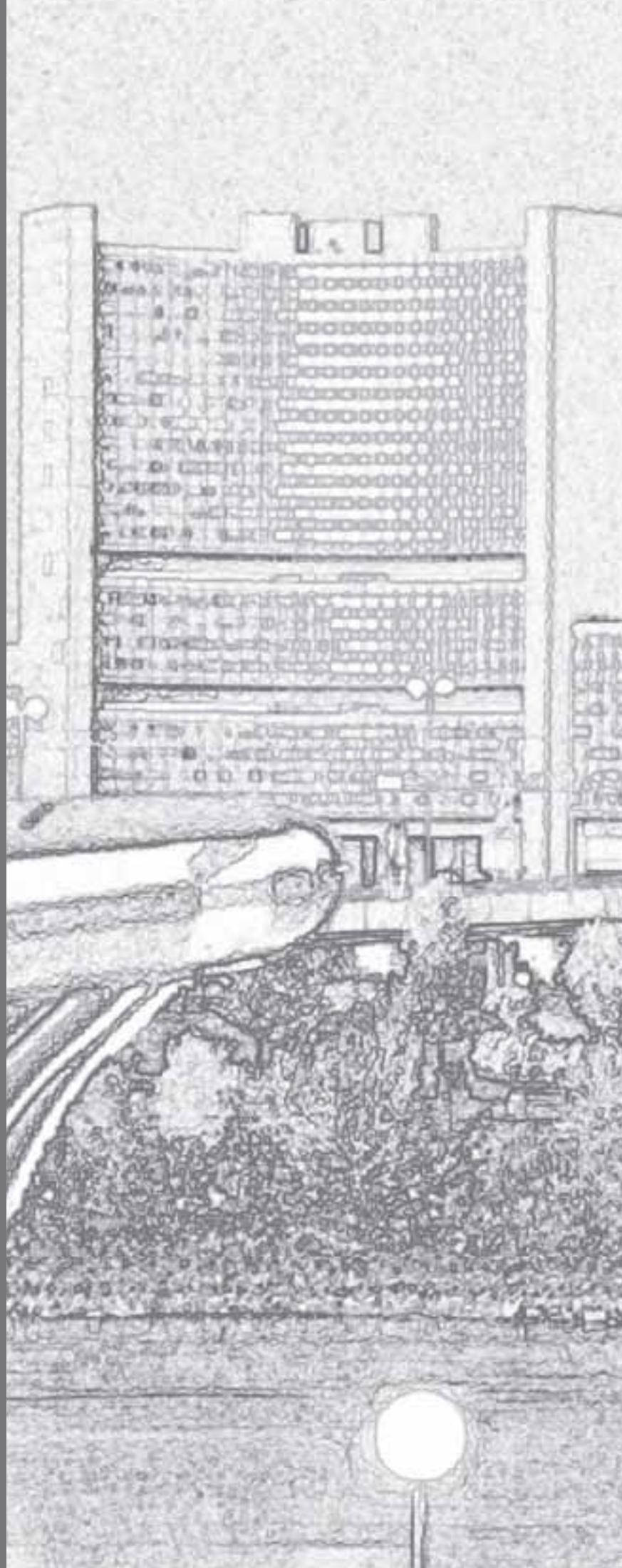
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The Right Moves

At times it seems the world is coming apart. And then it comes together. Witness the aftermath of Asia's devastating tidal waves, and the world's resolve to help the thousands and thousands of victims. Politics and differences fall to the higher power of Earth and our shared humanity. We come together to make the right moves.

International security demands a like and unified response against common threats of our own making. Opportunities abound in 2005 — a “year of bold decision” in the words of UN Secretary-General Kofi Annan. In May, 189 States are called to decide directions for the Nuclear Non-Proliferation Treaty (NPT), a pact they joined over the past 35 years to block the spread of nuclear bombs. In September, a world summit of leaders decides reform paths vital to cutting poverty, disease, and hunger — threats beside the bomb that too many people must overcome just to live another day.

The NPT Review Conference will show how bold and decisive the year might be. Heading into it, the treaty's parties — five countries with and 184 without known nuclear bombs — stand divided in more ways than one. This edition's distinguished authors debate contentious issues and prospects for resolving them. Most everyone agrees the Conference outcome is pivotal to the world's nuclear regime, including the IAEA's central roles. Few agree on what that outcome might be.

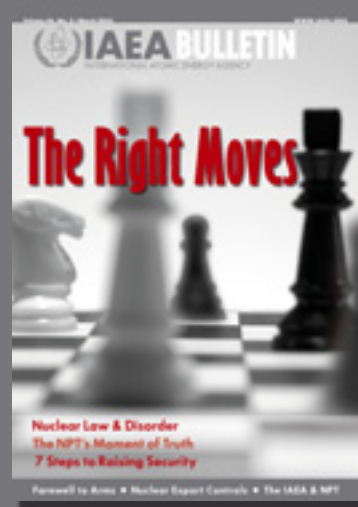
The debate today is bigger than the NPT alone, or any single piece on the complex chessboard of 21st century security strategies. Realities and repercussions of poverty, the lure and danger of nuclear arms, the spectre of nightmare terrorist attacks all complicate the security environment and search for answers.

IAEA Director General Mohamed ElBaradei stands among leaders who see ways forward. He has proposed steps to raise the world's security, by reinforcing a collective framework better suited to curb nuclear proliferation and borderless threats. He says we can “win a race against time” if countries join forces.

The same message resounds from a high-level international panel of sixteen experienced leaders. Their report to the UN on global security threats, challenges and change — which helps set the stage of the September summit — underlines the urgency of rebuilding the world's security system on shared values, responsibilities, actions. Their 101 recommendations take the world deep into this century with actions grounded in a new understanding of human security.

We see a glimpse of the bold new vision at work in Asia — achieving a better, more secure world is less and less about “us” and “them”. It's all about “we” and our willingness to come together and make the right moves.

— *Lothar Wedekind, Editor-in-Chief*



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CONTENTS

THE NUCLEAR NON-PROLIFERATION TREATY (NPT) IN 2005

4 What Next for the NPT?

Facing the Moment of Truth

Roland Timerbaev, former Russian Ambassador and veteran of NPT Review Conferences, outlines issues facing countries when they meet in May 2005.

8 The World's Nuclear Non-Proliferation Regime in Time



George Bunn of the United States, who helped negotiate the NPT in the 1960s, scores the treaty's record over the past 35 years.

10 Nuclear Law & Disorder

Douglas Roche, Canada's former Ambassador for Disarmament, urges centrist States to restore order to the political chaos surrounding the NPT.

12 Farewell to Arms

What's Blocking Nuclear Disarmament?

Germany's **Harald Müller**, Director of the Peace Research Institute in Frankfurt, offers his views on why the world may be caught in a dangerous gamble.

Sidebar: 13 Steps...and Counting

16 Reframing the Debate Against Nuclear Weapons

Rhianna Tyson points out why all countries and citizen groups must work to restore the NPT's "grand bargain".

20 The IAEA & the NPT

The Verification Challenge

The IAEA's **Tariq Rauf** and **Jan Lodding** take stock of developments influencing the Agency's safeguards responsibilities under the treaty.

Sidebar: Strengthening Nuclear Safeguards

26 Upgrading Nuclear Safeguards in Kazakhstan

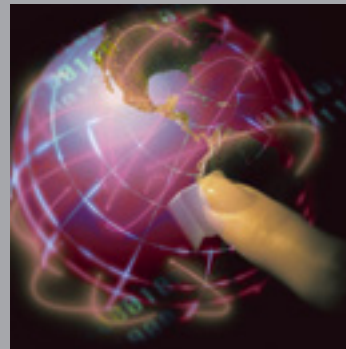


IAEA's **Maribeth Hunt** & **Kenji Murakami** report on IAEA verification at a key facility.

28 IAEA Technical Cooperation & the NPT

IAEA Deputy Director General **Ana Maria Cetto** and **Paulo Barretto** review the Agency's role supporting global cooperation for peaceful uses of nuclear technologies.

31 Nuclear Export Controls Closing the Gaps



Fritz Schmidt explores the roles and limitations of the export control system based on the NPT.

THE RIGHT MOVES FOR NUCLEAR & GLOBAL SECURITY

34 A Race We Can Win

IAEA Chief **Mohamed ElBaradei** proposes ways to reinforce nuclear and global security and beat what he calls a “race against time.”

Sidebar: 7 Steps to Raise Security

38 Nuclear Fuel Cycle

Which Way Forward for Multilateral Approaches?



Bruno Pellaud, former head of IAEA safeguards, reviews approaches to lower proliferation risks associated with the civilian nuclear fuel cycle.

41 Securing Nuclear & Radiological Materials

GTRI Moves Ahead

Spencer Abraham, former US Secretary of Energy, highlights a new partnership to reduce the chance of a “dirty bomb” and other threats involving dangerous materials.

Sidebar: IAEA Global Nuclear Security Initiatives
Protecting the Olympic Games

45 Obstacles & Opportunities

US & Russian Academies Forge Ties for Nuclear Security

Christopher Eldridge reports on ways US and Russian Academies are working together to curb threats of nuclear terrorism and proliferation.

47 Nuclear Technology & the Developing World

Kathleen Walsh examines how the world’s changed security and economic environment are leading to stronger proliferation controls in everyone’s best interests.

50 Fast Forward for the United Nations

UN Secretary-General **Kofi Annan** outlines his vision of tomorrow’s United Nations for securing a better world.

53 End the Nuclear Threat



UN Messenger for Peace **Michael Douglas** promotes the promise of “no nukes” and the vital roles of the United Nations and IAEA.

56 How We Think About Peace & Security

Masako Toki and **William Potter** review the ABC’s of initiatives for disarmament and non-proliferation education.

59 Rethinking a Dangerous Game of Chance



Pakistani educator **Faisal Bari** takes a close, critical, and personal look at why countries think they need nuclear weapons.

61 Shared Pledge, Shared Vision

The IAEA & Africa’s New Partnership

The IAEA’s **Ali Boussaha** and Senegal’s **Christian Sina Diatta** highlight strides toward goals of development and human security.

65 Text & Members of the Nuclear Non-Proliferation Treaty

What Next for the NPT?

Facing the Moment of Truth by Roland Timerbaev

For over 30 years, the Nuclear Non-Proliferation Treaty (NPT) has been the center and foundation of an interlocking network of agreements, organizations and international arrangements. They were designed to slow down, if not effectively bring to an end, the further spread of nuclear weapons. The regime was intended to include all the nations of the world — those that had nuclear weapons and those that might wish to acquire them in future.

Though this goal has never been fully achieved, the NPT, over the years, has been a reasonable success. If there had been no NPT, the total number of nuclear-weapon States (NWS) might have reached 30 or 40 by now. But today we have only eight, with one or two still trying to reach nuclear-weapon status. Since the conclusion of the NPT many more countries have given up nuclear weapon programs than have started them. There are fewer nuclear weapons in the world and fewer States with nuclear weapons programs than there were twenty or thirty years ago.

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The single most significant factor in producing this result has been the global non-proliferation legal norm established by the NPT, as well as the incentives for remaining non-nuclear States that the NPT helped initiate and provide. So, NPT achievements are indisputable. The treaty has gained an almost universal adherence. Only three nations

have chosen not to join it — India, Pakistan and Israel — and one State, North Korea, has decided to withdraw from the treaty.

This unquestionable success could never have been achieved without long-term cooperation among many States, and primarily between the United States and the Russian Federation. Both nations, as co-chairs of the Eighteen-Nation Disarmament Committee, initiated, back in the 1960s, the negotiation of the NPT, and, with the support of many other countries, the treaty was successfully concluded.

Since then, the international treaty regime has been consistently improved, updated and extended. To name only a few additional non-proliferation measures, one should mention the IAEA comprehensive system of safeguards (INFCIRC/153); the Zangger Committee; the Nuclear Suppliers Group (NSG); the Tlatelolco, Rarotonga, Bangkok and Pelindaba Treaties establishing nuclear-weapon-free zones in their respective regions of the world; the Brazil-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC); and the IAEA additional protocol to comprehensive safeguards agreements of 1997 (INFCIRC/540).

Among the most recent additions to the regime are the global partnership against the spread of weapons and materials of mass destruction agreed among the G-8 nations in 2002; the US-led Proliferation Security Initiative (PSI) to interdict illegal transfers of weapons and materials; the Security Council Resolution 1540(2004) requiring States to increase security for weapons and materials and enact stricter export controls and laws to criminalize proliferation activities by individuals and corporations; the Global Threat Reduction Initiative (GTRI), jointly coordinated by the United States and Russia, which seeks to identify and secure dangerous materials at nuclear research reactors in many States.

of their commitments under Article VI, including the conclusion of the CTBT. In addition, the conference adopted a decision, co-sponsored by the NPT depositories — Russia, United Kingdom, and the US — calling for the establishment in the region of the Middle East of a zone free of any weapons of mass destruction.

At the 2000 Review Conference, the countries of the so-called New Agenda Coalition (Brazil, Egypt, Ireland, New Zealand, Mexico, South Africa, and Sweden) succeeded in getting, also by consensus, the agreement of all the NWS to implement the so-called “thirteen steps”, which were aimed at making systematic and progressive efforts to implement Article VI. Again, number one among these steps was to be “the early entry into force of the Comprehensive Nuclear-Test Ban Treaty”.

As a result, the last two Review Conferences have been concluded on an optimistic note, with consensus decisions, well-intended promises and pledges and renewed hopes for more productive efforts in implementing the provisions of the NPT, thus contributing to the strengthening of the regime. Even testing by India and Pakistan of nuclear explosive devices in May 1998 has not shaken the universal belief in the regime’s viability.

Against this background and with the recent record described above, what may we face in 2005? Would the next Review Conference continue to give the assurance of the continued robustness of the treaty regime or, on the contrary, may we have to witness the beginning of its disintegration?

It is a hard question to answer at this point in time. Usually, delegations arrive at Review Conferences with their extreme positions and start haggling until the time when such conferences reach “the moment of truth”, which happens at the very end. This, however, belongs to the domain of diplomatic tactics. In reality, whether or not the 2005 conference is to adopt a formal final document, would not affect very much the present very distressing situation with regard to the actual status of the treaty’s implementation and of the non-proliferation regime as such.

The NPT regime may survive as a livable international legal and practically applied norm only if it is consistently adhered to and supported by *all* its members — both the NWS and NNWS — and if the remaining non-member States are included in the regime in some way and in a capacity that would be generally acceptable. One of the most important goals in assuring the survivability of the regime is the intent of the NWS to lessen their reliance on nuclear weapons as a prime factor of their foreign policy objectives and practices. This is one of the most pressing requirements included among the “thirteen steps” adopted by the 2000 Review Conference and pursued by NNWS during the 2005 preparatory process.

In more concrete terms, what, in my opinion, could be done to assure the successive outcome of the 2005 Review Conference and the further strengthening of the international non-proliferation regime?

The *sine qua non* condition is an *even-handed* and *balanced* approach by the NPT States to reviewing the operation of the treaty in its totality in order to help achieve its *universal* compliance. Some of the needed steps to assure an orderly and generally accommodating conduct of the Conference are discussed here.



First NPT Review Conference, Geneva, 5 May 1975. Partial view of the presiding table. Left to right: Dr. Sigvard Eklund, DG of the IAEA; UN Secretary General Kurt Waldheim; and Mrs. Inga Thorsson (Sweden), President of the Conference.

① First and foremost, there must be a positive movement towards the earliest entry into force of the CTBT. Only 33 of the 44 states, whose ratification is needed for the CTBT to become effective, have ratified it. While it is hardly realistic to expect the US Senate, in its present composition, to give by two-thirds majority its advice and consent to the treaty ratification in the near future, the reaffirmation by the US Administration of its support for the treaty would be very helpful in reassuring the international community as to where the United States stands vis-à-vis the nuclear test ban. The leadership of the China has on many occasions announced its intention to obtain the ratification of the CTBT, and the approaching Review Conference is the appropriate time for fulfilling this pledge. Pending such time as the CTBT legally enters into force, a moratorium on nuclear-weapon-test explosions should be newly reaffirmed.

② Next, it would be highly important for all the NWS to jointly or independently proclaim their serious intention to diminish the role of the nuclear factor in their security and foreign policies. This should be accompanied by



The World's Non-Proliferation Regime in Time *by George Bunn*

The idea for a treaty to prevent the spread of nuclear weapons to more countries was supported unanimously by the UN General Assembly in 1961. At that time, only Britain, France, the Soviet Union and United States had tested nuclear weapons. Then China did in 1964. These five States became the five States permitted by the Nuclear Non-Proliferation Treaty (NPT) to have nuclear weapons — until a future day when nuclear disarmament could be negotiated. They were already the Permanent Five (P-5) members of the UN Security Council.

Negotiations toward the NPT were led by the Soviet Union and the United States but included the other members of the Eighteen Nation Disarmament Conference — allies of the two plus India and the seven other non-aligned members. The resulting treaty was signed in 1968.

The NPT permits the P-5 to have nuclear weapons. All other NPT signatories are “non-nuclear-weapon States” who are prohibited from acquiring nuclear weapons. To gain their signatures, the NPT promises assistance to them in the peaceful uses of nuclear energy and negotiations toward nuclear disarmament. As IAEA Director General Mohamed ElBaradei said recently: “The NPT contains a triangular linkage: verified nuclear non-proliferation; cooperation in peaceful uses of nuclear energy; and nuclear disarmament. Without this linkage, there would have been no agreement on the NPT in 1968.

Besides the P-5, the treaty now has 184 countries that have promised not to have nuclear weapons and that have agreed to accept inspections by the IAEA to verify that they are carrying out their promises. However, India, Pakistan, and Israel refused to join the treaty, and the Democratic Peoples Republic of Korea (North Korea) withdrew from it.

As one of the negotiators of the NPT, I can remember the vigorous participation of India in the debates at the Geneva disarmament conference over the treaty. Some of the language of the treaty came from India. At first I expected India to join, but, after several years of attempts to persuade it to do so, it became clear it would not. Pakistan had not been one of the negotiating parties, but did not

join after its rival India refused to do so. The US negotiated with Israel during the 1960s in an attempt to persuade it not to seek nuclear weapons, but to no avail. The Soviet Union persuaded North Korea to join, but North Korea delayed signing an inspection agreement with the IAEA for years, and then, after signing one, refused to give IAEA inspectors access to all its nuclear activities. In 2003, it announced its withdrawal from the NPT. Of these four countries, only India and Pakistan have tested nuclear weapons. Israel and North Korea are assumed to have them.

① The *first* and greatest success of the NPT is that only these nine countries are believed to have nuclear weapons: the NPT-permitted P-5 plus India, Pakistan, Israel and North Korea. Without the NPT, I believe that 30-40 countries would now have nuclear weapons. That would have included at least these nine plus Argentina, Australia, Belarus, Brazil, Canada, Egypt, Germany, Indonesia, Italy, Japan, Kazakhstan, the Netherlands, Norway, Romania, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan (China), Ukraine, the former Yugoslavia—all of which have had nuclear research programs or other nuclear activities. If, without the NPT, these countries had continued their research to the point of making nuclear weapons, some of their neighbors and rivals would no doubt have sought nuclear weapons as well.

② The non-proliferation regime today includes much more than the NPT. The IAEA standards for inspection were the next most important element. The IAEA inspection requirements negotiated in the early 1970s were shown to be inadequate by Iraq’s success in hiding its nuclear-weapon efforts before and during the Gulf War of 1991. The Additional Protocol of 1997 is slowly replacing these requirements, but, as of December 2004, was in effect in only 62 NPT member countries.

③ The regime includes the agreements creating nuclear-weapon free zones in Africa, Latin America, Southeast Asia, the South Pacific, and Mongolia. The countries that formed these zones are also members of the NPT.

④ The regime includes suggestions for standards and financial assistance plus requirements for physical protection of nuclear material from theft by terrorists or others. These efforts range from the Convention on Physical Protection of Nuclear Material, to the technical assistance provided by the IAEA and some countries, to the financial assistance offered by the G-8 and some other IAEA members to countries that need assistance in order to provide better security for nuclear material in their possession, to an April 2004 Security Council resolution that requires countries having nuclear materials to protect them in various ways from being acquired by “non-State actors” such as terrorists. In addition, though with a smaller current membership than these multilateral regimes, the Proliferation Security Initiative is a cooperative arrangement calling for border, airport and ship inspections of shipments to prevent the illegal transport of nuclear weapons, materials or technology.

⑤ The regime includes prohibitions on testing such as the 1963 Limited Test Ban Treaty and the 1996 Comprehensive Test Ban Treaty. The first prohibits nuclear weapons tests everywhere but underground, and the second will prohibit them even underground if it goes into force. For the large majority of NPT members not having nuclear weapons, these treaties contribute to non-proliferation not just by inhibiting testing but by reducing the discrimination inherent in the NPT between those permitted to have nuclear weapons and those not so permitted. These members see an agreement to stop testing by the P-5 as a step of compliance by the P-5 with their NPT promise to cease the nuclear arms race, reduce their nuclear weapons and move toward nuclear disarmament.

⑥ The regime includes “no-first-use promises” by the P-5 to other NPT members, usually called “negative security assurances.” All of the P-5 but China have stated some exceptions to these promises. (The US exception permits use of nuclear weapons against a non-nuclear-weapon NPT member if it attacks another non-weapon NPT member while the attacker is in alliance with a State having nuclear weapons. Recently, the United States asserted another exception by saying it might use nuclear weapons to counter a biological or chemical attack.) These promises were meant to help reassure NPT members without nuclear weapons that they did not need to acquire them because the P-5 would not use nuclear weapons against them.

⑦ The regime includes promises by the P-5 that some protection will be provided to other NPT members in the event of a threat of attack, promises called “positive security assurances.” The P-5 have promised to seek immediate UN Security Council orders providing security assistance to any NPT member not having nuclear weapons if it is threatened with attack by another nation’s nuclear weapons. For allies of some of the P-5, allies not having nuclear weapons, there are stronger assurances: promises of mil-

itary help if an ally is attacked or threatened with attack, promises made, for example, to NATO allies. Though often not thought of as elements of the non-proliferation regime, these alliances may well be essential to keeping countries such as Germany, Italy, Japan and South Korea from seeking nuclear weapons.

⑧ The regime includes various multilateral institutions such as the IAEA, the UN Security Council, the periodic NPT Review Conferences, and the UN General Assembly First Committee which considers non-proliferation recommendations for General Assembly adoption.

⑨ An important but not sufficiently effective element of the regime is the Nuclear Suppliers’ Group. It has long had a recommendation against export of uranium enrichment and plutonium separation technology—unless the recipient is a facility owned and operated by a bilateral or other international organization in which operating experts from one country can watch those from another to assure that the plutonium or enriched uranium produced by the technology is not used to make nuclear weapons.

Mohamed ElBaradei has recommended a much stronger requirement, and the G-8 agreed in June of 2004 not to export any uranium enrichment or plutonium separation technology for a year. However, gaining widespread agreement to deny the technology useful for enriching uranium and separating plutonium to any country not now having it will not be easy. The NPT recognized an “inalienable right” to develop and use nuclear energy “for peaceful purposes without discrimination,” even for NPT members that had agreed not to acquire nuclear weapons, *so long as they did not make nuclear weapons*. The enrichment and separation technologies can be used for making weapons as well as for fueling peaceful nuclear reactors. And, some NPT members not having nuclear weapons have argued that they have an “inalienable right” to acquire these technologies. How this problem will be solved is not yet clear, but it must be if the non-proliferation regime is to survive. The regime is seriously challenged today. It needs strengthening—including this and other steps if it is to continue to be effective.

George Bunn helped negotiate the Nuclear Non-Proliferation Treaty, and later became US ambassador to the Geneva Disarmament Conference. He has also taught at the US Naval War College and the University of Wisconsin Law School, and served as Dean of that law school. During his distinguished career, which he concluded in 2004, he worked for the US Atomic Energy Commission, the US Nuclear Regulatory Commission, a major Washington law firm, the US Arms Control and Disarmament Agency, and the Stanford University Center for International Security and Cooperation.

Nuclear Law & Disorder

by Douglas Roche

One would like to say that world attention will be focussed on the 2005 Review Conference of the Nuclear Non-Proliferation Treaty (NPT), that governments will rush to implement the 13 Practical Steps to nuclear disarmament already agreed on, that the combined actions of the political and civil order will greatly reduce the present high level of danger of the use of nuclear weapons.

Unfortunately, in the real world of political disorder that we live in, none of this is likely to occur. One risks being labelled a “dreamer” or worse, an “idealist,” for expressing the straightforward yet maddeningly complex truth that governments have a solemn duty to eliminate the very weapons that can doom humanity.

For twenty years I have followed the tortuous history of the NPT, as leader of the Canadian delegation to the 1985 Review Conference, as an author writing about the 1995 Review and Extension Conference, and as Chairman of the Middle Powers Initiative working closely with a number of governments at the 2000 Review Conference. I have attended all three preparatory meetings for the 2005 Conference. There is no doubt in my mind that the present crisis is the worst the NPT has experienced. The treaty is on the verge of collapse, and the proliferation of nuclear weapons, both among those who already have them and those who want them, is staring us in the face. It is truly shocking that the public knows so little about the nature of the danger and that governments, for the most part, are so desultory in their approach to the upholding of law.

While NPT meetings have never been free of conflict, the battles of the past were frequently patched over by an application of goodwill and a minimum show of trust. Now the goodwill and trust are gone largely because the nuclear-weapons States (NWS) have tried to change the rules of the game. At least before, there was recognition that the NPT was obtained through a bargain, with the NWS agreeing to negotiate the elimination of their nuclear weapons and share nuclear technology for peaceful purposes in return for the non-nuclear States shunning the acquisition of nuclear weapons.

Adherence to that bargain enabled the indefinite extension of the treaty in 1995 and the achievement of an “unequivocal undertaking” in 2000 toward elimination through a programme of 13 Practical Steps. Now the US is rejecting the commitments of 2000 and premising its aggressive diplomacy on the assertion that the problem of the NPT lies not in the NWS’s own actions but in the lack of compliance by States such as North Korea and Iran. The United Kingdom, France and Russia are abetting the US in the new tactics of shifting attention away from Article VI disarmament commitments and towards break-out States.

Brazil bluntly warned: “The fulfillment of the 13 steps on nuclear disarmament agreed during the 2000 Review Conference have been significantly — one could even say systematically — challenged by action and omission, and various reservations and selective interpretation by Nuclear Weapon States. Disregard for the provisions of Article VI may ultimately affect the nature of the fundamental bargain on which the Treaty’s legitimacy rests.”

The whole international community, nuclear and non-nuclear alike, is concerned about proliferation. But the new attempt by the NWS to gloss over the discriminatory aspects of the NPT, which are now becoming permanent, has caused the patience of the members of the Non-Aligned Movement to snap. They see a two-class world of nuclear haves and have-nots becoming a permanent feature of the global landscape. They see the US researching the development of a new, “usable” nuclear weapon and NATO, an expanding military alliance, clinging to the doctrine that nuclear weapons are “essential.” In such chaos, the NPT is eroding and the prospect of multiple nuclear-weapons States, a fear that caused nations to produce the NPT in the first place, is looming once more.

Compounding the nuclear risk is the threat of nuclear terrorism, which is growing day by day. It is estimated that 40 countries have the knowledge to produce nuclear weapons, and the existence of an extensive illicit market for nuclear items shows the inadequacy of the present export control system. Despite the arduous efforts of the International Atomic Energy Agency (which is seriously underfunded

relative to the inspection responsibilities it has been given), the margin of security is, as IAEA Director General Mohamed ElBaradei put it, “thin and worrisome.” US Senator Edward Kennedy of Massachusetts goes further. “If Al Qaeda can obtain or assemble a nuclear weapon, they will certainly use it – on New York or Washington or any other major American city. The greatest danger we face in the days and weeks and months ahead is a nuclear 9/11, and we hope and pray that it is not already too late to prevent.”

New Agenda, New Bridge

Security Council Resolution 1540, requiring all States to take measures to prevent non-State actors from acquiring nuclear, chemical and biological weapons, is a helpful step to stemming proliferation. The Proliferation Security Initiative of the US seeks to interdict the transfer of nuclear materials on the high seas. The constant monitoring by the IAEA, where it is able to operate, gives a measure of confidence. Yet, as Russia conceded at the NPT Third Preparatory Meeting in 2004, “Terrorists are smart and resourceful and are willing to go to any length to get hold of the weapons of mass destruction production components in order to strike at innocent people.” The eminent physicist, Frank von Hippel, says “nothing could be simpler” than for terrorists to obtain highly enriched uranium and set off an explosive device with power equal to that of the Hiroshima bomb.

The task awaiting the 2005 Review of the NPT is to convince the nuclear-weapons States that the only hope of stopping the proliferation of nuclear weapons is to address nuclear disarmament with the same eagerness. This is precisely the stance taken by Foreign Ministers of the New Agenda Coalition (Brazil, Egypt, Ireland, Mexico, New Zealand, South Africa and Sweden), who recently wrote: “Nuclear non-proliferation and nuclear disarmament are two sides of the same coin and both must be energetically pursued.”

The New Agenda, which showed impressive leadership at the 2000 NPT Review in negotiating the 13 Practical Steps with the nuclear-weapons States, is now clearly reaching out to other middle power States to build up what might be called the “moderate middle” in the nuclear weapons debate. The New Agenda resolution presented to United Nations General Assembly was much leaner and more attractive to the non-nuclear States of NATO than previously.

This strategy was rewarded when eight NATO States — Belgium, Canada, Germany, Lithuania, Luxembourg, The Netherlands, Norway and Turkey — voted for the resolution, an action which effectively built a bridge between NATO and the New Agenda. The overall vote was 135 in favour, 5 opposed and 25 abstentions. Although the three Western nuclear-weapons States maintained their opposition to the New Agenda’s overtures, the new “bridge” shows

that a group of centrist States may be in position to produce a positive outcome for the 2005 NPT Review.

The priorities for action, as identified by the New Agenda, would not be difficult to achieve provided the nuclear-weapons States cooperate on: early entry-into-force of the Comprehensive Test Ban Treaty; reduction of non-strategic nuclear weapons and non-development of new types of nuclear weapons; negotiation of an effectively verifiable fissile material cut-off treaty; establishment of a subsidiary body to deal with nuclear weapons at the Conference on Disarmament; and compliance with the principles of irreversibility and transparency and development of verification capabilities.

A new common front may yet be able to inject new life into the only worldwide legal instrument we have to stop the spread of nuclear weapons.

But it is precisely this co-operation, or rather lack of it, between the nuclear haves and have nots that is the central issue. There has been little co-operation in the 35-year history of the NPT. Will the recognition of new dangers finally jolt governments into action? Much will now depend on the actions taken by the re-elected Bush Administration in the US.

It seems to me that the only way to stop the NPT erosion is for a new burst of energy to be shown by the middle power States — the New Agenda, non-nuclear NATO, the European Union and a few other like-minded States – to shore up and influence the centre positions in the nuclear weapons debate. Even though India, Pakistan and Israel continue to shun the NPT, it is also in the interests of these countries to cooperate in implementing the New Agenda’s list of priorities.

Can we expect this burst of energy if parliamentarians and the public remain docile? A new common front of an awakened civil society and caring middle power States may yet be able to inject new life into the only worldwide legal instrument we have to stop the spread of nuclear weapons.

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Farewell to Arms by Harald Müller

What's Blocking Nuclear Disarmament?

In the 1960s, when the United States and Soviet Union submitted their draft non-proliferation treaty to the 18-member Disarmament Committee in Geneva, it was exactly that — a treaty to prevent the proliferation of nuclear weapons to more States. It prohibited non-nuclear weapon States from acquiring nuclear weapons and prohibited the five acknowledged nuclear-weapon States from supplying them.

However, it was not possible to conclude a treaty on those terms alone. Consequently, Article IV (on peaceful nuclear cooperation) and VI (on disarmament) were added. Only on the basis of this “bargain” could the global Nuclear Non-Proliferation Treaty (NPT) come into existence.

It is ironic that the nuclear-weapon States that care for their own sovereignty rights would overlook that sovereignty is also dear to other States.

Today, in an era of stagnating nuclear disarmament, one hears voices from some nuclear-weapon States that the disarmament stipulation was without substance and unnecessary. They argue that non-nuclear weapon States care only about their security and nothing else. Proliferation would hurt their security, the argument goes, while the arsenals of

the nuclear powers would have no negative effect upon it. Therefore, they reason, disarmament really has no relation to the treaty and its future stability.

This line of thinking is a serious and potentially fatal error. Security is a very important consideration for States, but by no means the only one. It is ironic that the nuclear-weapon States that care for their own sovereignty rights would overlook that sovereignty is also dear to other States.

Renouncing the most powerful weapons of one's time — as NPT non-nuclear weapon States pledge to do — is a historically unprecedented move by States having the resources to acquire them. This is a waiver of sovereign equality that could only be gained by the promise that it would be temporary.

What we have today is the makings of a dangerous gamble. Nuclear-weapon States appear unwilling to implement their disarmament undertakings under the NPT's Article VI. At the same time, they insist that non-nuclear weapon States meticulously observe Articles II (renunciation of nuclear weapons) and III (nuclear safeguards), and that they even adhere to new requirements every now and then (such as renouncing fuel cycle activities).

A Gamble of Slippery Slopes

The gamble is that all this is happening without nuclear-weapon States being ready to offer any quid pro quo. Their stance enhances the discomfort of an increasing number of non-nuclear weapon States with the Treaty. While this will not lead to a mass exodus, it reduces the willingness to accept tougher verification, compliance and enforcement measures and might thus, over time, erode the effectiveness of the NPT. If the Treaty is perceived as losing its value, withdrawing from it might eventually be seen as a consideration. Nuclear-weapon States, always so weary

about “slippery slopes,” should keep this most slippery of all slopes in mind.

Particular developments in the last few years add to the gamble. In 1995, and even more so in 2000, a change of attitude and strategy by the non-nuclear weapon States regarding Article VI had set in. Rather than demanding utopian and thus unrealistic, overly far-reaching steps from the nuclear “haves”, they proposed tangible, incremental steps. After long and hard negotiations, a “Program of Action” was accepted by consensus. Acceptance came in the context of the “Principles and Objectives” of the 1995 NPT Review and Extension Conference, and in the “thirteen steps” (that are, in fact, 21 individual measures) in the final declaration of the 2000 Review Conference.

If the Treaty is perceived as losing its value, withdrawing from it might eventually be seen as a consideration. Nuclear-weapon States, always so weary about “slippery slopes,” should keep this most slippery of all slopes in mind.

At this point, non-nuclear weapon States had believed that they shared with their nuclear-armed counterparts a solid outlook on how to proceed with the implementation of Article VI. No one had the illusion that all the steps would be strictly implemented. Most accepted that the failure to achieve an agreed amendment to the Anti-Ballistic Missile Treaty between Washington and Moscow led to the scrapping of that Treaty. But the pathetic under-achievement of the “Thirteen Steps,” accompanied by statements of several nuclear-weapon States that they did not feel bound by these agreed measures (that are, as the common interpretation of the NPT community of how Article VI is meant to be fulfilled, politically binding) came as a shock and led to great frustration among the majority of NPT members.

A Better Posture

If we start from the notion of the “bargain” and accept that nuclear disarmament will not happen overnight, nuclear-weapon States could assume a different posture. A State faithful to its disarmament obligation might be guided by the following principles:

- ◆ Stick to the absolute minimum number of warheads in your arsenal that is likely to deter your enemy - or combination thereof - from threatening the survival of your state.
- ◆ Develop a doctrine and respective deployment policy in a strictly retaliatory manner.
- ◆ Avoid technical and doctrinal developments that tend to reserve a role for nuclear weapons beyond this limited deterrence/retaliatory role.
- ◆ Avoid all offensive postures that may drive additional actors into the belief that their survival might be at stake, motivating a desire for nuclear weapons.
- ◆ Take all efforts to find alternative ways to provide for your security, ranging from stronger conventional defence to solving the conflict for whose prevention the nuclear weapons were destined, i.e. replacing the hostile deterrence relationship by means of cooperative security, a solution that, of course, hinges on the readiness of the other side to reciprocate.
- ◆ Eliminate all nuclear weapons not needed for ensuring survival, and eliminate the last nuclear weapon if alternative ways for ensuring survival have been established.

A quick look at the “Thirteen Steps” show that they are largely compatible with such a posture. (*See box.*)

Looking at the thirteen steps makes it all the more astonishing that nuclear-weapon States move reluctantly. The steps themselves present reasonable options that should be in the best interests of nuclear-weapon States. They create much more reliable mutual expectations, confidence and transparency without eliminating the deterrent value in which the nuclear powers all appear still to believe. In addition, several of the measures contained in the steps — such as reducing non-strategic nuclear arms, a verified cut-off and the submission to IAEA safeguards of fissile material no longer destined for weapons — serve, indirectly, the globally shared goal of fighting terrorism. They make access by non-State actors to nuclear weapons and related materials more difficult — an objective that has been endorsed and pursued by Resolution 1540 adopted by the Security Council in April 2004.

Nowadays, nuclear-weapon States do not face existential threats against which unfettered options for keeping or acquiring large arsenals or revolutionary new weapons would appear necessary. If there is any concern that nuclear activities in North Korea or Iran may lead to the emergence of new nuclear powers, the world’s existing arsenals are more than enough to control that risk.

Just as clearly, there is no need for these options in humanitarian intervention or peacekeeping or peace-enforcing

13 Steps...and Counting

The 13 practical steps adopted by NPT States in 2000 consist of 21 individual measures:

❶ The importance and urgency of signatures and ratifications, without delay and without conditions and in accordance with constitutional processes, to achieve the early entry into force of the Comprehensive Nuclear-Test-Ban Treaty.

❷ A moratorium on nuclear-weapon-test explosions or any other nuclear explosions pending entry into force of that Treaty.

❸ The necessity of negotiations in the Conference on Disarmament on a non-discriminatory, multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices in accordance with the statement of the Special Coordinator in 1995 and the mandate contained therein, taking into consideration both nuclear disarmament and nuclear non-proliferation objectives. The Conference on Disarmament is urged to agree on a programme of work which includes the immediate commencement of negotiations on such a treaty with a view to their conclusion within five years.

❹ The necessity of establishing in the Conference on Disarmament an appropriate subsidiary body with a mandate to deal with nuclear disarmament. The Conference on Disarmament is urged to agree on a programme of work which includes the immediate establishment of such a body.

❺ The principle of irreversibility to apply to nuclear disarmament, nuclear and other related arms control and reduction measures.

❻ An unequivocal undertaking by the nuclear-weapon States to accomplish the total elimination of their nuclear arsenals leading to nuclear disarmament, to which all States parties are committed under Article VI.

❼ The early entry into force and full implementation of START II and the conclusion of START III as soon as possible while preserving and strengthening the Treaty on the Limitation of Anti-Ballistic Missile Systems as a cornerstone of strategic stability and as a basis for further reductions of strategic offensive weapons, in accordance with its provisions.

❽ The completion and implementation of the Trilateral Initiative between the United States of America, the Russian Federation and the International Atomic Energy Agency.

❾ Steps by all the nuclear-weapon States leading to nuclear disarmament in a way that promotes international stability, and based on the principle of undiminished security for all:

◆ Further efforts by the nuclear-weapon States to reduce their nuclear arsenals unilaterally;

◆ Increased transparency by the nuclear-weapon States with regard to the nuclear weapons capabilities and the implementation of agreements pursuant to Article VI and as a voluntary confidence-building measure to support further progress on nuclear disarmament;

◆ The further reduction of non-strategic nuclear weapons, based on unilateral initiatives and as an integral part of the nuclear arms reduction and disarmament process;

◆ Concrete agreed measures to further reduce the operational status of nuclear weapons systems;

◆ A diminishing role for nuclear weapons in security policies to minimize the risk that these weapons will ever be used and to facilitate the process of their total elimination;

◆ The engagement as soon as appropriate of all the nuclear-weapon States in the process leading to the total elimination of their nuclear weapons.

❿ Arrangements by all nuclear-weapon States to place, as soon as practicable, fissile material designated by each of them as no longer required for military purposes under IAEA or other relevant international verification and arrangements for the disposition of such material for peaceful purposes, to ensure that such material remains permanently outside military programmes.

⓫ Reaffirmation that the ultimate objective of the efforts of States in the disarmament process is general and complete disarmament under effective international control.

⓬ Regular reports, within the framework of the strengthened review process for the Nuclear Non-Proliferation Treaty, by all States parties on the implementation of Article VI and paragraph 4 (c) of the 1995 Decision on "Principles and Objectives for Nuclear Non-Proliferation and Disarmament", and recalling the advisory opinion of the International Court of Justice of 8 July 1996.

⓭ The further development of the verification capabilities that will be required to provide assurance of compliance with nuclear disarmament agreements for the achievement and maintenance of a nuclear-weapon-free world.

UN Advisory Board on Disarmament

The UN Secretary-General's Advisory Board on Disarmament was set up in 1978, tasked with making practical recommendations on arms control, non-proliferation, and disarmament issues.

Most recently, the Board has examined terrorism and weapons of mass destruction; compliance, verification and enforcement of multilateral disarmament treaties; revolution in military affairs; disarmament and human security; disarmament and development; prevention of weaponization of outer space; and curbing the proliferation of small arms and light weapons, among others. It also initiated the United Nations Study on Disarmament and Non-Proliferation Education, adopted by the General Assembly in 2002.

The Board has 22 members, appointed by the Secretary-General and serving in their personal capacities.

In addition to advising the Secretary-General, the Board reviews studies and research under the auspices of the United Nations or institutions within the United Nations system; serves as the Board of Trustees of the United Nations Institute for Disarmament Research (UNIDIR); and advises the Secretary-General on the implementation of the United Nations Disarmament Information Programme. The Director of UNIDIR participates as ex officio member of the Board.

For more information, check the web pages of the United Nations at www.un.org/issues/m-disarm.asp

missions. To the contrary, considering the employment of nuclear weapons in such contingencies would contradict the 1996 advisory opinion of the International Court of Justice. The Court said that, if at all, the use of nuclear weapons was only justifiable if national survival were at stake.

Neither are nuclear weapons needed for keeping a hostile leadership at bay or eliminating it, as the Yugoslav, Afghan, and Iraqi experiences demonstrate. And conventional options are also available to counter the threat of biological or chemical weapons.

Even if nuclear deterrence were seen as a needed option, sharply reduced arsenals would still suffice to do the job. And against the scourge of our time, transnational terrorism, nuclear weapons have no use at all.

Restoring Confidence

What, then, is holding up nuclear disarmament? In my view, residual distrust is one problem. It persuades some nuclear-weapon States to keep the option for larger arsenals open if ballistic missile defences are introduced. Beyond this specific strategic concern, it appears that keeping freedom of action as such is valued highly by some — so highly that even legal and political undertakings are pushed aside.

The fear of a "slippery slope" is another problem. Fears that disarmament could lead uncontrollably to the untimely elimination of all nuclear weapons run strong. Even the completely reasonable and beneficial measures agreed in 2000 appear as such a big risk that nuclear-weapon States are not willing to take the first step. And of course, the members of the nuclear weapon complexes are happy to supply new notions of threats to which nuclear answers such as "bunker busters" or "mini-nukes" that have been on their wish-list for decades — with shifting targets, to be sure are then warmly recommended.

The United Nations Advisory Board on Disarmament Matters has tried to identify the priorities in the field of nuclear disarmament. A report to UN Secretary-General Kofi Annan and his High-Level Panel sets priorities with the objective of preventing nuclear terrorism. It recommended further reduction and eventual elimination of non-strategic nuclear weapons; the prompt start of negotiations for a verifiable treaty to provide for the cut-off of the production of fissile material for weapons purposes; and a convention for the ban of radiological weapons and warfare.

In connection with the "thirteen steps", this list of priorities provides a good program of action that could be tackled immediately. Such an initiative could restore some of the confidence lost by the international community in the validity of the disarmament undertakings of nuclear-weapon States.

Without such a move forward, recriminations within the NPT family may mount — weakening the determination to confront the double risks of more nuclear proliferation and terrorist access to the most horrible weapons of our time.

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Reframing the Debate

Against Nuclear Weapons by Rhianna Tyson

“Some 35,000 nuclear weapons remain in the arsenals of the nuclear powers, with thousands still deployed on hair-trigger alert. Whatever rationale these weapons may once have had has long since dwindled. Political, moral, and legal constraints on actually using them further undermine their strategic utility without, however, reducing the risks of inadvertent war or proliferation. The objective of nuclear non-proliferation is not helped by the fact that the nuclear weapon States continue to insist that those weapons in their hands enhance security, while in the hands of others they are a threat to world peace. If we were making steady progress towards disarmament, this situation would be less alarming. Unfortunately, the reverse is true.”

— **United Nations Secretary-General Kofi Annan**

Something is wrong with the nuclear disarmament and non-proliferation regime. Although seemingly well-equipped with an arsenal of legal and political mechanisms, such as the Nuclear Non-Proliferation Treaty (NPT), the 1996 Advisory Opinion of the International Court of Justice (ICJ), decades’ worth of General Assembly (GA) resolutions and even a recent slew of ad-hoc, plurilateral initiatives such as the Proliferation Security Initiative, the regime created to prevent the catastrophe of nuclear war remains inadequate.

This insufficiency is even starker when viewed in relation to the regimes controlling other weapons of mass destruction. Despite its own challenges, the Organization for the Prohibition on Chemical Weapons remains relatively well-funded and well-situated to facilitate the implementation of the Chemical Weapons Convention (CWC). Even the Biological and Toxin Weapons Convention (BTWC), while still lacking the necessary verification mechanisms, has managed to effectively criminalize not just the use and threat of use of biological weapons, but also their production, development and stockpiling.

Meanwhile, the anti-nuclear regime seems to be faltering. Progress made in recent years has been all but negated; consensus-based agreements are rejected just a few years after being reached. Despite the threats posed by State or non-State proliferation, an increasing likelihood of a return to nuclear testing and the development of new nuclear weapons, a handful of powerful people continue to view these weapons as a legitimate source of security.

All States Parties and non-governmental organizations (NGOs) should approach the seventh NPT Review Conference in May 2005 as a major opportunity to reinvigorate the nuclear disarmament regime and transform it into an effective tool by which a true collective security can be ensured. First, however, we must reclaim the ground that has been eroded in recent years by the vertical and horizontal proliferation threats stemming from various corners of the globe.

A Dangerous Delinkage

One of the most disastrous trends in recent years has been the systematic attempts to break the inextricable link between disarmament and non-proliferation.

Many non-nuclear weapon States (NNWS) have noted the “mutually reinforcing” and complementary nature of the nuclear regime, a relationship of twin goals that Uganda has dubbed an “umbilical link between non-proliferation and disarmament.” This link ensures that, as UN Under-Secretary General for Disarmament Affairs Nobuyasu Abe asserted, “working on disarmament in the long run serves the cause of non-proliferation.”

Likewise, de-linking one from the other inarguably serves to undermine both. Recent non-proliferation measures, such as the Proliferation Security Initiative and Security

Council resolution 1540, are led by the very countries which hold nuclear weapons as an integral source of their own security. Furthermore, these initiatives are pursued in a context of abysmal progress on nuclear disarmament. As a result, “non-proliferation” is viewed by some as a goal for the nuclear mighty, leaving NNWS to harp only on disarmament objectives of the Treaty. This results in a false polarization, grossly demonstrated by the failed Third Preparatory Committee for the 2005 NPT Review Conference, with NNWS on one end of the advocacy spectrum and nuclear-weapon States (NWS) on the other. In the end, progress is made nowhere and threats to global security are exacerbated.

We must reclaim the ground that has been eroded in recent years by the vertical and horizontal proliferation threats stemming from various corners of the globe.

It is not enough to reiterate the now clichéd truism of a two-sided coin; we need to explain that it is precisely the evil, cancerous nature of nuclear weapons that comprise the foundation of this inter-linkage. In a sick body, doctors do not try to contain cancerous cells to one organ of the body. Physicians understand that if even one cell contains a cancerous mutation, it will inevitably spread to other organs and eventually kill the person entirely. Likewise, the continued development, stockpiling and threats to use nuclear weapons (inherent in nuclear deterrence theory), by the NWS will ensure that eventually, at some point, despite decades of treaties, GA resolutions and ICJ rulings, others will succeed in acquiring nuclear weapons for themselves.

Prohibition vs. Control

The chemical and biological regimes, by contrast, are not predicated on a “Do As I Say, Not As I Do” mentality, even though, at the time of the CWC and BTWC negotiations (in 1997 and 1972, respectively) the weapons programs of a few States were decidedly more advanced than that of others. The key to these conventions, contrary to that of the NPT, is that they sought to delegitimize the weapons themselves. Governments at that time did not recognize the “use” and “threat of use” of biological and chemical weapons (BCWs) as evil; rather, it was the weapons themselves that abhorred governmental representatives and brought them to the negotiating table. Through negotiating a convention outlawing not only their use and threat of use, but also their production, development and stockpiling, governments implicitly recognized that complete prohibition remained the only way to guarantee against their use or threat.

The nuclear weapons regime, by contrast, continually thinks of new and innovative ways of *controlling* these deadly weapons, rather than of criminalizing the pursuit *and* possession of them, by States as well as non-State actors. Over the past few decades of WMD non-proliferation discourse, there occurred a severe disconnect: we have demonized the use of anthrax and sarin gas against soldiers and civilians, yet the destruction and radiation of generations of peoples remain an acceptable, albeit undesirable, option for some governments.

Human Security

Most of the major progress made toward disarmament in many areas can be attributed to the successful employment of a human security approach to the weapons. Advocates of a ban on landmines, for instance, constantly emphasized the devastating humanitarian effects of these weapons, even after the conflict had desisted. The success of the campaign to ban nuclear testing, too, was in large part due to the public attention to the levels of radioactive strontium-90 in the teeth of babies around the world as a result of atmospheric testing.

This type of advocacy effectively utilizes a human security approach to the disarmament discourse. The Independent Commission on Human Security (CHS) defines a framework of human security as one that protects “the vital core of all human lives in ways that enhance human freedoms and human fulfillment.”

A human security framework focuses on the threats to personal and communal safety, rather than the defense of borders. It looks at what human beings need to feel secure in their daily lives.

A human security framework focuses on the threats to personal and communal safety, rather than the defense of borders. It looks at what human beings need to feel secure in their daily lives. Do they have enough to eat? Are they literate and educated and able to make choices in their lives? Are they comfortable walking the streets, free from the fear of gun violence, sexual violence, racial violence? Do they feel safe traveling outside of their native areas, without fear of retribution for what their government has done to others in their name?

A national security framework, by contrast, focuses first and foremost on the defense of borders and the perpetuation of the current power structures on the national level. “National security” is often invoked as justification for the

rejection of important security treaties such as the Ottawa Convention, the Comprehensive Test Ban Treaty, or even the NPT. National security is also used to legitimize the development, deployment, use and threat of use of a weapon with the potential of eradicating an entire people.

It could be argued that our failure to suffuse a human security framework with that of national security has resulted in the current inadequacies of the nuclear regime. It is precisely this type of synthesized framework that can facilitate the shift from a control regime to one of prohibition.

Allies in the Fight

Civil society can help to reframe the nuclear debate. We include doctors who understand the disastrous effects of the nuclear age, from mining to testing to actual use. We are comprised of indigenous peoples who have suffered for more than 60 years. We include women who have given birth to jellyfish babies, whose radioactive environment ate away at their bones before they could fully develop in their mothers' wombs. We are also comprised of scientists and engineers, whose ingenuity that brought about the nuclear age, can help devise ways of getting the genie back into the lamp and create verifiable mechanisms for keeping him there.

It could be argued that our failure to suffuse a human security framework with that of national security has resulted in the current inadequacies of the nuclear regime.

Many States have already recognized the invaluable contribution that NGOs have provided in the campaign to eliminate nuclear weapons. New Zealand, in its statement to the General Debate at the 59th session of the First Committee noted "the tireless and often unpaid work (of NGOs) in keeping information and debate flowing about these issues, and for keeping up the pressure on governments to take practical steps toward disarmament."

On an immediate level, NGOs have the ability to concretize and demonstrate the potential of agreements reached by governments. Step 12 of the 13 Practical Steps adopted by NPT States in 2000, for instance, calls for "regular reports, within the framework of the NPT strengthened review process, by all States parties on the implementation of Article VI". To support this decision, the Women's International League for Peace and Freedom offers an annual "Shadow Report: Accountability is Democracy, Transparency is Security," which accounts for all nuclear holdings, both

military and civilian around the world. The report demonstrates the utility of such transparency, not only under the Step 12 framework, but also in the campaign to create a global inventory of all nuclear materials, as suggested by Germany in a working paper submitted to the Preparatory Committee (NPT/CONF.2005/PC.III/WP.16).

The utility of NGOs is illustrated not only in what they could help governments accomplish, but what they themselves have already achieved. The huge progress made in creating a prohibition regime of anti-personnel landmines was largely attributed to the work of NGO coalitions such as the International Campaign to Ban Landmines. Likewise, the International Action Network on Small Arms was also instrumental in bringing about the first Conference on the Illicit Trade of Small Arms and Light Weapons in All its Aspects, held in July 2001.

The UN Secretary-General reflected the potential of increased interaction with NGOs when, in his response to the Cardoso panel on UN reforms, he acknowledged the "need for a more organized and sustained dialogue with the NGO community", recognizing that "(m)ore effective engagement with NGOs... increases the likelihood that United Nations decisions will be better understood and supported by a broad and diverse public."

All governments should be urged to recognize, as Croatia has, "the growing beneficial role that civil society plays in the field of disarmament... (which) may give additional impetus to initiatives to break the deadlock and finally move the multilateral disarmament agenda forward."

If the 2005 NPT Review Conference is to avoid the type of stalemate that has mired so much else of the disarmament machinery, any additional impetus is needed more than ever.

Opportunities at Hand

One of the goals of the Review Conference, then, should be to utilize the opportunity to reframe nuclear weapons to ultimately push us toward a viable prohibition regime. The first step is to reassert the inalienable relationship between disarmament and non-proliferation; this must remain one of the most important goals.

In the absence of a total prohibition regime, the Review Conference should seek to ensure "tit for tat" measures that appease both the disarmament advocates and the non-proliferation champions.

Non-nuclear weapon States should engage in broad consultations amongst themselves, with a view to reach consensus on a variety of strategic non-proliferation measures. Such unified NNWS support would demonstrate good faith commitments to the non-proliferation goals of the NPT and

would also provide incentive and pressure on the NWS to offer their own creative offers of disarmament.

There already exist a range of important and potentially effective non-proliferation measures that continue to amass support. The support for the additional protocol to IAEA safeguards agreements as a condition to Article IV, for example, has grown exponentially since the idea was first floated years ago. All NPT States should also heed the advice of the Secretary-General's High-Level Panel on Threats, Challenges and Change, which asserted that, "Multilayered action is required. The first layer of an effective strategy to prevent the proliferation of nuclear, radiological, chemical and biological weapons should feature global instruments that reduce the demand for them. The second layer should contain global instruments that operate on the supply side — to limit the capacity of both States and non-State actors to acquire weapons and the materials and expertise needed to build them. The third layer must consist of Security Council enforcement activity underpinned by credible, shared information and analysis. The fourth layer must comprise national and international civilian and public health defence."

Meanwhile, NWS should be prepared to submit national plans on disarmament to the Review Conference. These national plans would demonstrate the "good faith" efforts to "unequivocal(ly) undertak(e) to accomplish the total elimination of their nuclear arsenals," as agreed upon in Step 6 of the 13 Steps. Experts such as Dr. Patricia Lewis, Director of the United Nations Institute for Disarmament Research, has already put forth this proposal at the 59th session of the First Committee, and NGOs have incorporated this call in a new, global abolition campaign entitled "Dare To Plan."

National plans would outline the conditions that must be met in order for them to start dismantling their arsenals in an irreversible manner. Israel, for instance, while a non-signatory to the NPT, has offered several times that peace treaties with its neighbors could serve as an invaluable impetus to reining them into the NPT family. France and the UK often maintain that significant reductions from Russia and the US must be a precursor to further cuts in their own arsenals.

The national plans would then also outline what unilateral steps they would take after these conditions were met, replete with timeframes and milestones. How long would it take each government to de-alert all nuclear weapons? What steps would have to be taken prior to and during the dismantlement process? What are their plans for the remaining fissile materials and what kind of assistance, if any, would be necessary in order for them to fulfill their plans?

India, another non-NPT State, has already devised such a national plan for disarmament under the Rajiv Gandhi

administration, which the current Congress government is seeking to purportedly update and revise.

Such plans would not only be a welcome demonstration of their commitment to Article VI; they would also facilitate a greater working relationship with the civil society community of experts, technicians, scientists and security analysts, who can offer insight and analysis and help them to refine and execute their plans when the time is right. Grassroots NGOs would also be offered food-for-thought, a platform around which they could mobilize public support and launch outreach and educational initiatives to promote the goals and objectives of disarmament in a human security framework.

A Choice of Futures

The world's governments soon will review the oft-cited "cornerstone of the disarmament regime." If the 2005 NPT Review Conference is allowed to dissipate into a prostrated, ineffective talk shop, polarized by diverging, narrow concepts of national security, they will ensure security for no one. All States and citizen groups must work to reinstate the primacy of the grand bargain: non-proliferation in exchange for disarmament. They must not pit one of the twin goals against the other; rather, they should utilize the opportunity to engage with civil society, high-level governmental representatives and each other in order to ostracize the nuclear weapons, rather than those who seek them, as the threat to global security that they are. Fulfilling this potential will take concerted effort from all, most especially from those already in possession of these deadly arsenals.

As Dr. Ron McCoy, President of the Nobel prize-winning International Physicians for the Prevention of Nuclear War, has stated on behalf of more than 70 NGOs, "When we ask you to consider the human implications of the choice between proliferation and non-proliferation, between disarmament and a perpetual enslavement to nuclear weapons, we are really presenting you with the choice between two futures. Only one of these futures is acceptable or worth pursuing. The NPT will only be an effective tool in that pursuit if the States Parties commit themselves to the urgent task of revitalizing the Treaty as both a non-proliferation and a disarmament agreement. At its heart, this is a choice between hope and hopelessness. We submit to you that we can no longer put off making this choice."

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For more information on Reaching Critical Will, visit: www.reachingcriticalwill.org

IAEA & NPT

THE VERIFICATION CHALLENGE

Challenging Nuclear Issues Point the Way Forward by Jan Lodding & Tariq Rauf

Five years ago, member States of the global Treaty on the Non-Proliferation of Nuclear Weapons (NPT) agreed on a number of forward-looking elements for non-proliferation and disarmament and for the peaceful uses of nuclear technology. This was widely hailed as a major accomplishment for the global nuclear non-proliferation regime and for multilateral cooperation in this context. The NPT regime — a brainchild of the Cold War era — seemed strengthened and better adapted to meet the challenges of the 21st Century.

The elements were contained in the Final Document adopted by consensus of the 187 States parties at the 2000 NPT Review Conference, the sixth such Conference since the NPT's entry into force in 1970. Among 62 references to IAEA safeguards in the Final Document, the Agency's verification system was acknowledged as a fundamental pillar of the nuclear non-proliferation regime, one that plays an indispensable role in the Treaty's implementation and helps to create an environment conducive to nuclear disarmament and to cooperation in the peaceful uses of nuclear energy. The NPT States recognized that IAEA safeguards provide assurance of compliance and assist States in demonstrating compliance with their relevant undertakings. They recognized the IAEA as the competent authority responsible for verifying and assuring compliance with safeguards agreements, and expressed its conviction that nothing should be done to undermine its authority in this regard. Member States having concerns regarding non-compliance with safeguards agreements were called upon to direct such concerns, along with supporting evidence to the Agency for its consideration. The Final Document also supported steps for strengthening the IAEA's safeguards system and for the possible application of IAEA verification in the context of future nuclear disarmament.

This article deals with new developments over the past five years related to these verification challenges, from the IAEA's policy perspective.

Growing Responsibilities

Following the discovery of a clandestine nuclear-weapon programme in Iraq in the wake of the 1991 Gulf War, the IAEA refocused its work. The Iraq case showed that the Agency needed to verify both the correctness and completeness of States' declarations. States looked to the IAEA to provide credible assurance regarding the absence not only of non-diversion of *declared* nuclear material, but also on the absence of *undeclared* nuclear material and activities in States with Comprehensive safeguards agreements (CSAs, the type concluded by non-nuclear-weapon States pursuant to the NPT) in force.

To accomplish this goal, it was determined that the IAEA required the legal authority to apply a number of safeguards strengthening measures. This authority was provided in part through the IAEA Board of Governors' reinterpretation of provisions of the standard NPT safeguards agreement (INFCIRC/153 (Corr.)), but mainly through the approval of the application of verification measures under a new legal instrument adopted in 1997, the Model Additional Protocol (INFCIRC/540 (Corr.)). Since the 2000 Conference, the number of States for which the Agency implements additional protocols has grown from 9 to 64 at the end of 2004.

These developments — along with an unprecedented intensity of new verification challenges in some States — led to a considerable increase in the IAEA's safeguards responsibilities. In recognition of this, IAEA Member States addressed a long-standing shortfall in the Agency's regular safeguards budget. It reached a new budget agreement in 2004 which will lead to an increase in the annual safeguards budget from approximately US \$89 million in 2003 to US \$108.7 million by 2007 in nominal terms. Some IAEA Member States have proposed that the IAEA Board of Governors consider setting up a special committee on safeguards and verification to consider ways of further improving the Agency's capability to monitor compliance with nuclear non-proliferation obligations.

Verification Challenges

In the past few years, some widely publicized nuclear issues have highlighted the IAEA's vital verification work in the context of the NPT.

Democratic People's Republic of Korea (the DPRK).

Following allegations by the United States in October 2002 that the DPRK had an undeclared uranium enrichment programme, the DPRK announced the termination of the 1994 "Agreed Framework" between the US and DPRK, expelled Agency inspectors in December 2002, and in January 2003 announced its intention to withdraw from the NPT effective the next day. The IAEA tried to convince the DPRK to reverse its course and, when this did not occur, it reported the DPRK's further non-compliance with its NPT safeguards agreement to the UN Security Council, on 12 February 2003. The Council has taken no action on the matter thus far.

The status of the DPRK's NPT membership — and hence its NPT safeguards agreement — remains unclear, as it has still not been clarified to the IAEA by either NPT States, the NPT depositary States or the Security Council. The IAEA has welcomed the "six-party talks" that commenced in August 2003 and voiced its view that any solution to the DPRK nuclear issue should ensure that the Agency is provided the authority to provide credible assurance with regard to the correctness and completeness of the DPRK's nuclear material declarations and the dismantlement of any nuclear-weapon programme.

Iraq. The NPT Final Document in 2000 noted the Agency's inability to perform its Security Council verification mandate in Iraq and called upon Iraq to comply with its obligations. At the time, the IAEA's NPT-related activities in Iraq were limited to a yearly physical inventory verification pursuant to Iraq's NPT safeguards agreement. This situation prevailed until the resumption of the Security Council inspection mandate in September 2002 and NPT inspections continued up to the invasion of Iraq in March 2003.

At that time, the IAEA assessed that Iraq's former nuclear weapon programme, which the IAEA had previously rendered harmless, had not been re-generated and that only a few outstanding issues remained to be addressed. Today, the IAEA continues to have a dual mandate in Iraq — under relevant Security Council resolutions and under Iraq's safeguards agreement — and remains ready to resume verification activities once the security situation in Iraq improves.

Islamic Republic of Iran. In August 2002, following media reports on previously unknown nuclear facilities in the Islamic Republic of Iran, the IAEA requested a visit to the alleged sites of such activities. Iran eventually agreed, and in the related discussions, informed the Agency of a

number of activities that should have been reported earlier under Iran's NPT safeguards agreement. Iran reiterated that it had embarked on a civilian nuclear power programme, and explained that it had refrained from declaring its activities in order to circumvent attempts to deny it technology.

To help restore confidence following these breaches of Iran's obligation to comply with its safeguards agreement, the IAEA Board subsequently called on Iran, as a confidence-building measure, to suspend voluntarily all further reprocessing and uranium enrichment-related activities pending provision of the assurances required by Member States and pending satisfactory application of the provisions of the additional protocol. Iran signed an additional protocol to its NPT safeguards agreement in December 2003 and pledged to apply it pending formal entry into force.

Acknowledged as a fundamental pillar of the nuclear non-proliferation regime, the IAEA's Verification system plays a fundamental role in the NPT's implementation.

Following consultations with France, Germany and the United Kingdom on a "grand bargain", Iran agreed to suspend its enrichment programme, and this pledge was eventually expanded to a full suspension of all enrichment-related activities in Iran. In November 2004, the Agency concluded that there was no indication of diversion of declared nuclear material. However, it also cautioned that, given past concealment efforts, it would take a long time to reach a conclusion on the absence of undeclared nuclear material and activities in Iran. The IAEA is continuing its efforts to reach such a conclusion through Iran's safeguards agreement and additional protocol, and, as requested by Iran and the IAEA Board, is also verifying the suspension of all enrichment activities in Iran.

Libyan Arab Jamahiriya. In December 2003, the Libyan Arab Jamahiriya informed the IAEA that it had been conducting a clandestine nuclear-weapon acquisition programme, and asked the Agency to verify its dismantlement. Later that month, the IAEA Director General, Mohamed ElBaradei, met with President Ghadaffi, and Libya pledged to act as if the additional protocol to its safeguards agreement were already in force.

Strengthening Nuclear Safeguards

The 2000 NPT Review Conference urged all concerned NPT States to bring into force comprehensive safeguards agreements with the IAEA as soon as possible. It endorsed the measures contained in the Model Additional Protocol, and encouraged all NPT States, in particular those with substantial nuclear programmes, to conclude additional protocols and bring them into force or provisionally apply them as soon as possible. It proposed a possible plan of action, to promote and facilitate the conclusion and entry into force of such safeguards agreements and additional protocols.

The same year, the IAEA's General Conference outlined five "elements" of such an Action Plan, including intensified efforts by the Director General to conclude safeguards agreements and additional protocols, assistance by the IAEA and Member States on the implementation of additional protocols, and reinforced coordination of these efforts.

Guided by this mandate and its own outreach plan, the IAEA has been engaged since 2001 in an ambitious programme to inform national decision-makers about the policy, legal and technical aspects of the strengthened safeguards system.

The aim is to conclude, by the end of 2005, safeguards agreements with many of remaining NPT parties, and additional

In February 2004, the Director General reported that Libya, over an extended period of time, had failed to report nuclear material, facilities and activities, including such related to uranium enrichment. He characterized Libya's breach of its safeguards obligations, and its acquisition of nuclear weapon design and fabrication documents, as matters of the utmost concern.

According to Libya, a foreign expert had helped the country gain experience in the design and operation of centrifuge equipment in the 1980s, and in 1995 Libya made a strategic decision to pursue gas centrifuge enrichment technology. Related components were procured from abroad,

protocols with the majority of States and almost all States with significant nuclear activities. A number of States have

although Libya had intended to establish domestic capabilities. Research was also conducted into uranium separation and weaponization.

In March 2004, the IAEA Board requested the Director General to inform the UN Security Council of Libya's past non-compliance. By September 2004, the Director General reported that, with the good cooperation of Libyan authorities, the IAEA had built an understanding of Libya's previously undeclared nuclear programme.

The report pointed out that the IAEA's analysis of Libya's nuclear programme had brought to light a covert network,

IAEA Outreach for Stronger Safeguards

November 2001-December 2004

Events include those related to safeguards agreements, additional protocols, and the strengthened safeguards system

Outreach Event	Venue, time
Interregional Seminars 33 participating States	Vienna, November 2003 (For States without safeguards agreements); Vienna, November 2004 (For States that had not attended a regional seminar)
Regional Seminars More than 120 participating States	Peru, December 2001 (Latin America/Caribbean); Kazakhstan, January 2002 (Central Asia/South Caucasus); South Africa, June 2002 (Africa); Romania, February 2003 (Central and Eastern Europe); Malaysia, April 2003 (Southeast Asia); Uzbekistan, June 2003 (Central Asia/South Caucasus); Burkina Faso, February 2004 (Western Africa); Namibia, March 2004 (Southern Africa); Australia, November 2004 (South Pacific)
National Seminars	Thailand, March 2003; Malaysia, April 2003; Colombia, December 2003; Mexico, January 2004; Switzerland, July 2004; Philippines, November 2004
Seminars for NPT Parties	Geneva, May 2003; New York, May 2004
National and Regional Technical Courses and Workshops More than 100 participating States	Japan, Feb./March 2002 (regional); Ukraine, April 2002 (regional); Switzerland, May 2002 (national); Algeria, June 2002 (national); Japan, Nov./Dec. 2002 (regional); Vienna for Iran, Sept. 2003 (national); South Africa, Oct. 2003 (regional); Kazakhstan, Oct. 2003 (national); Chile, November 2003 (national); Japan, Dec. 2003 (regional); South Africa, October 2003 (regional); Australia, June 2004 (regional); Switzerland, Sept. 2004 (national); Kazakhstan, Nov./Dec. 2004 (regional).
Expanded Negotiations in Vienna	Albania, Belarus, Morocco, Saudi Arabia, Switzerland, Tunisia, Ukraine

assisted in these efforts through extrabudgetary contributions and in-kind support, including Australia, Burkina Faso, China, Finland, France, Japan, Kazakhstan, Malaysia, Namibia, Peru, South Africa, Sweden, the United States and Uzbekistan. Japan has taken a leading role in international outreach efforts.

More than 150 States have been engaged in consultations on the conclusion of safeguards agreements and additional protocols through IAEA regional, interregional and national seminars since December 2001.

In the IAEA Secretariat's estimation, remaining obstacles encountered by States to the conclusion of safeguards agreements and additional protocols can be divided into four groups:

- ① Technical factors, including the need to establish a functioning State System of Accountancy for and Control of Nuclear Material (SSAC).
- ② Legal factors, such as the lack of understanding of the legislative requirements of safeguards agreements and additional protocols.
- ③ Administrative factors, for instance a lack of working relations between the line ministry dealing with International Atomic Energy Agency affairs and Government officials responsible for the conclusion of international agreements.
- ④ Policy factors, such as competing priorities and the expectation of economic or security benefits "in return for" the conclusion of safeguards agreements and additional protocols.

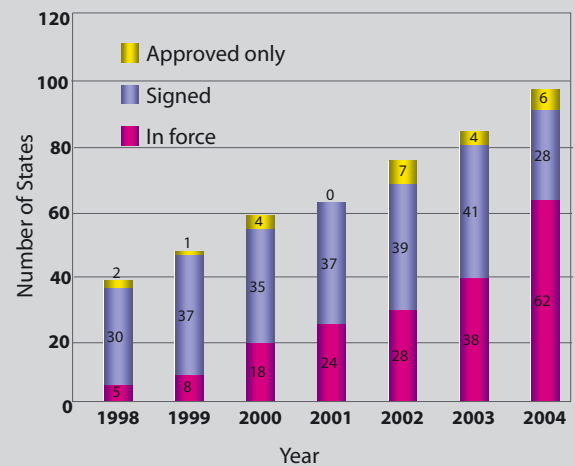
Since the 2000 NPT Review Conference, 14 States have brought into force comprehensive safeguards agreements and 55 States party to the NPT have brought into force additional protocols. At the start of 2005, 40 NPT States had outstanding obligations to bring into force safeguards agreements.

through which Libya and other States gained access to nuclear technology and know-how.

Republic of Korea. In August 2004, in connection with the submission of its initial declaration under the additional protocol, the Republic of Korea announced that in 2000, the Korea Atomic Energy Research Institute had conducted uranium enrichment experiments, without the Government's knowledge, that should have been reported to the Agency. It later emerged that experiments on uranium and plutonium separation had also taken place about 25 years ago. The IAEA Director General reported these findings to the Board, in November 2004, expressing seri-

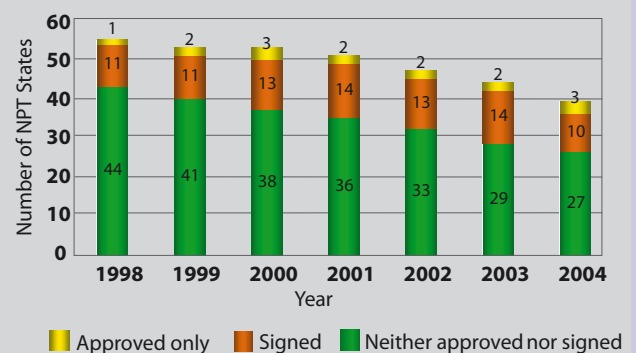
Conclusion of Additional Protocols

1998-2004 (cumulative)



Outstanding NPT Safeguards Agreements

1998-2004 (cumulative)



About half of the NPT States have submitted additional protocols for signature. Though still below expectations in the late 1990s, the accelerated rate of adherence to the strengthened safeguards system is a key area where progress has been achieved since the last Review Conference.

For more information visit www.iaea.org/img/assets/3871/Action_Plan_2004.pdf

ous concern with the failure to report such undeclared activities, but underlining that there were no indications that these experiments had continued. The Board shared the Director General's serious concerns with regard to failures to report information under the Republic of Korea's safeguards agreement with the IAEA.

Disarmament Verification

The NPT Final Document in 2000 included steps toward nuclear disarmament, some of which made reference to verification issues. Specifically cited was the completion and implementation of a "Trilateral Initiative" between the

USA, the Russian Federation and the IAEA and arrangements by all nuclear-weapon States to place excess fissile material under IAEA or other relevant international verification.

Since then, studies and workshops continued within the framework of the Trilateral Initiative, until September 2002, when the three parties declared that the task entrusted to the Trilateral Initiative Working Group in 1996 had been fulfilled. At that stage, the Trilateral Initiative had demonstrated technical approaches for multilateral verification of irreversible removal of excess plutonium from military programmes, developed a legal framework for verification arrangements to be applied to ex-weapon and other excess material, and proposed possible models to finance such arrangements.

Other disarmament steps agreed by NPT States in 2000 might potentially influence the IAEA's work. They include the negotiation of a non-discriminatory, multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices, as well as the agreement to apply the principles of irreversibility and transparency to nuclear disarmament measures.

Although formal negotiations on a Fissile Material (Cut-off) Treaty at the Conference on Disarmament in Geneva have not taken place, the IAEA has continued to participate in — and Agency experts have provided information — to informal discussions in Geneva to consider the technical aspects of an eventual treaty.

The IAEA remains ready to consider any request to undertake verification tasks related to excess fissile material but so far has not received any such requests.

Learning from Experience

The IAEA has extensive experience in verifying nuclear programmes. Recent developments have put its strengthened safeguards system to the test and brought a number of highly topical issues to the forefront:

The Impact of the Additional Protocol. The Model Additional Protocol constitutes the centerpiece of the IAEA's response to the 1991 Iraq crisis, aiming to strengthen the effectiveness and improve the efficiency of the safeguards system as a contribution to global non-proliferation objectives. It is designed to provide additional verification authority needed to derive credible assurance of the absence of *undeclared* nuclear material and activities. Once such conclusions are reached for a State with significant nuclear activities, the implementation of integrated safeguards approaches may lead to a reduction of inspection frequency and savings in the cost of verification for both the State and the Agency. At the time of the 2000 NPT

Review Conference, only nine countries had additional protocols under implementation, and the system was virtually untested.

The case of the Republic of Korea suggests that the implementation of the measures in the additional protocol could lead to the discovery of previously unreported nuclear activities involving small quantities of nuclear material in other States.

The combined application of the measures of CSAs and additional protocols provides the technical basis on which the IAEA can draw expanded conclusions about a State's nuclear material and activities. For the year 2003, on the basis of its verification activities and evaluations, the Agency concluded, with regard to 19 NPT States with CSAs, that all nuclear material had been placed under safeguards and remained in peaceful nuclear activities or was otherwise adequately accounted for. Such conclusions contribute to the strengthening of the NPT by building confidence that participating States are complying fully with their treaty obligations. The IAEA has emphasized that additional protocols are a *sine non qua* for effective verification and that they must become the standard for all NPT States to enable the Agency to fulfill its verification responsibilities in a credible manner. By the end of 2004, 62 States had additional protocols in force.

The legal authority provided by the additional protocols also plays a vital role in the implementation of safeguards in Iran and Libya, where such protocols are applied pending entry into force, and in the Republic of Korea, which provided outstanding information on past research in connection with its initial additional protocol declarations. The case of the Republic of Korea suggests that the implementation of the measures in the additional protocol could lead to the discovery of previously unreported nuclear activities involving small quantities of nuclear material in other States, which might in some cases need to be reported to the IAEA Board of Governors.

Although integrated safeguards approaches are being implemented in a few States with nuclear activities, the IAEA's experience in States with complex nuclear programmes remains limited. The first case of integrated safeguards implementation in such a country, Japan, began in September 2004.

Covert Nuclear Trade. A major new development has been the discovery — in connection with IAEA safeguards implementation in Iran and Libya — that some States had been turning to a covert nuclear supply network in order to construct facilities capable of producing nuclear material. This cast in doubt the effectiveness of States' export control systems and of cooperative arrangements of supplier state governments to control transfers of nuclear items. It further precipitated the adoption of UN Security Council Resolution 1540, which calls for strengthened national export controls related to Weapons of Mass Destruction (WMD) material.

The IAEA, as part of its verification work in Libya and Iran, is investigating, with the support of Member States, the supply routes and the sources of sensitive nuclear technology and related equipment and nuclear and non-nuclear materials. It has discovered that the covert networks comprise dozens of companies in more than 30 countries around the world, whereby actual technological know-how may originate from one source, while the delivery of equipment may take place through intermediaries that play a coordinating role, subcontracting the manufacturing to entities in yet other countries. Sometimes, the original supplier might not know the actual end use, while in other cases the identity of equipment such as serial numbers are removed indicating complicity by the supplier.

The IAEA will continue to work with Libya and other Member States to gain a better understanding of the workings of the covert nuclear trade networks, with a view to ensuring that sensitive nuclear technologies and equipment have not proliferated further.

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Enrichment and Reprocessing. The IAEA's verification experience has brought to the forefront the special difficulties surrounding technologies for enrichment and reprocessing. The Director General has called the acquisition of capabilities covering the full nuclear fuel cycle tantamount to a latent nuclear weapons programme. In its introductory statement to the 3rd session of the Preparatory Committee to the 2005 NPT Review Conference, the IAEA referred

to the wide dissemination of the most proliferation-sensitive parts of the nuclear fuel cycle as the "Achilles heel" of the nuclear non-proliferation regime. The DPRK's attempts to "break out" from the NPT regime after having acquired reprocessing capabilities illustrate the problem.

In view of the sensitive, dual-use nature of technologies for enrichment and reprocessing, it would contribute to peaceful trade and confidence-building if States could agree freely on multilateral approaches to limit the proliferation of such technologies. In October 2004, IAEA Director General ElBaradei appointed an expert group to help the international consideration of multilateral approaches to the sensitive front- and back ends of the nuclear fuel cycle and to report by March 2005, in the hope that the NPT Review Conference in May 2005 might be in a position to make progress on that issue.

The Way Forward

When NPT States meet in May 2005 to review and assess the way forward, they will have to address a number of difficult verification matters. They include the attempt of one NPT State to break out from its safeguards obligations, breaches of safeguards agreements by several NPT States, a lack of progress on verification of excess nuclear material, the discovery of covert nuclear trade networks and the special difficulties associated with the dissemination of enrichment and reprocessing technologies.

Some of these issues will require that States address the delicate balance between different provisions of the NPT, and test their political will to make concessions and find compromises in the common interest of strengthening the Treaty. One of the most important measures before NPT States will be to strengthen verification pursuant to Article III by confirming the role of the IAEA Model Additional Protocol as the NPT verification standard.

The IAEA, for its part, will continue to fulfill its mandate of providing credible assurance to the international community that States are honouring their non-proliferation undertakings, on the basis of the legal authority imparted through IAEA safeguards agreements and additional protocols. The effectiveness and efficiency of the strengthened safeguards system will surely continue to be put to the test, as the IAEA meets new verification challenges in the coming years.

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More information on the IAEA and the NPT and on specific verification issues is available on www.iaea.org.



Upgrading Nuclear Safeguards *in Kazakhstan*

by Maribeth Hunt & Kenji Murakami

When the Soviet Union collapsed in December 1991, Kazakhstan inherited 1,410 nuclear warheads. Within three years, by 1994, Kazakhstan had formally acceded to the Nuclear Non-Proliferation Treaty (NPT) and transferred its last nuclear warhead to Russia in April 1995. Its NPT safeguards agreement with the IAEA came into force in 1994 and all facilities are under safeguards. In February 2004 Kazakhstan signed the Additional Protocol to its IAEA safeguards agreement, though this not yet in force.

Kazakhstan played a key role during the Soviet era as a supplier and processor of uranium. The BN-350 fast reactor at Aktau (formerly Shevchenko), on the shore of the Caspian Sea, successfully produced up to 135 MWe of electricity and 80,000 m³/day of potable water over some 27 years until it was closed down in mid-1999.

The IAEA is involved in upgrading the nuclear material accountancy and control systems of all Member States. At the request of the IAEA, Japan and Sweden conducted independent evaluations at the Kazakhstan Atomic Energy Committee (KAEC), and specifically at the Ulba Metallurgical Plant (UMP) and identified areas that could be improved with respect to nuclear material accountancy and control.

In June 2003 the Agency, with four Member States and the European Union, undertook a programme to upgrade the nuclear accountancy and control systems within Kazakhstan with special emphasis on the UMP in Ust-Kamenogorsk in northeast Kazakhstan.

The UMP is highly complex and is the world's largest fuel fabrication facility. Known as Mailbox 10 until 1967, the Ulba Metallurgy Plant was established in 1949. Ulba produced low-enriched uranium fuel pellets used in half of the fuel fabricated for Soviet-designed reactors. In recent years fuel pellet production has been somewhat reduced and the plant has also been converting uranium hexafluoride to powder for use at Western fuel fabrication facilities. During the Soviet era, UMP produced high-enriched uranium (HEU) fuel for the secret Alfa submarine programme and participated in the development of fuel for nuclear-powered satellites. The plant reportedly halted HEU-related activities in the 1980s. UMP has been working on reaching Western standards of safety and security since signing its Comprehensive Safeguards Agreement with the IAEA in 1994.

The current IAEA programme is focused on upgrading hardware and software systems and the training of personnel in Kazakhstan. Due to the complexity of the facility,

special emphasis is on training personnel and upgrading systems at the UMP. At the UMP the focus is on reducing the uncertainty in the hold-up (material which cannot be cleaned out) in the process lines, better determining the amount of nuclear material that is released from the facility as waste or retained at the facility as waste, increasing the ability of the facility to more accurately account for the nuclear material received, and to generally upgrade the safety, security, and accountancy standards.

While the material that is actually in hold-up may not be of particular concern with respect to nuclear proliferation and nuclear security, a plant's declaration of hold-up may be a way of concealing diversion of nuclear material. Overstating the amount of material in hold-up can allow an operator to divert material. In the past, neither the UMP nor the IAEA has had an accurate estimate of the material designated as hold-up. When the hold-up of a plant can be characterized and verified it assures that this proliferation pathway is protected.

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Since the initiation of the project one and a half years ago, significant progress has been made. Funds to the IAEA from the Japanese government provided through the Japanese Nuclear Security Fund have been made available for both non-destructive analysis (NDA) equipment and training. In the first case the funding provided a specific uranium measurement instrument, the In-situ Object Counting System (ISOCS), to characterize the hold-up. The Agency uses this same system and during the Physical Inventory Verification (PIV) in 2003 the IAEA's system was used to inventory parts of the plant.

The system provided by the Japanese funds was delivered to the plant in mid-2004. Extensive training provided to the plant personnel by the manufacturer and the Agency assured that the UMP would be capable of using the system to characterize both the hold up and the waste streams. UMP personnel concentrated on making the measurements themselves based on the training and made several hundred measurements prior to and during the physical inventory in September 2004. The results of these measurements were

used by UPM personnel to characterize their hold-up for their declaration for the IAEA's 2004 Physical Inventory Verification.

In line with this, the United States provided additional instruments and training. This training, held in conjunction with the Agency, assured that UMP staff understood where each instrument was most effective.

During the PIV in September 2004, the Agency used its ISOCS system to re-measure points that had been measured during the PIV in 2003 and to measure points that the operator had measured with the systems provided by the Japanese and the United States. The result was that at the Physical Inventory Taking in 2004, UMP staff were able to make an effective declaration of hold-up and the Agency was able to verify it.

At the same time, the rest of the work of the donor States was progressing. Sweden's programme advanced with the development of a State-specific safety and security culture programme and will soon host a State-specific training course. Additionally, Sweden provided upgrades to the nuclear material accountancy and control software at the KAEC. The Joint Research Center Ispra provided new nuclear material accountancy tanks to the UMP for the receipt of uranyl nitrate that have been calibrated and, as of the end of 2004, have been in use. The United States, in addition to providing NDA equipment and training for hold-up measurements, has provided additional training and is in the process of providing a highly sophisticated NDA system to allow the UMP to accurately estimate the amount of nuclear material being released as waste.

Finally, the funding from the Japanese government has assured the preparation of three procedures to standardize the nuclear material accountancy and control at the UMP and has sponsored the training of two UMP safeguards officials in Japan.

One of the original goals of this integrated project was to significantly reduce, by 2005, the uncertainty in the measurement of hold-up at the UMP. Through the concerted efforts of the IAEA, donor States, and the European Union, this goal was reached in September 2004. Over the next year, work will concentrate on further training of personnel, the Russian translation and distribution of the procedures funded by the Japanese government, coordinating the delivery and installation of equipment from the United States, and UMP staff training in safeguards and safety culture.

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IAEA Technical Cooperation & the NPT

by Paulo M. C. Barretto & Ana María Cetto

Si vis pacem para pacem
If you want peace prepare for peace.

This restatement of the old Roman dictum on war formed the basis for the agreement on the world's Nuclear Non-Proliferation Treaty (NPT) in 1968. It is as valid now as it was then.

The NPT rests on three interlinked pillars: cooperation in peaceful uses of nuclear energy, verified nuclear non-proliferation, and nuclear disarmament. This article looks specifically at the first pillar and its linkage with the second one.

Rights & Obligations

Non-nuclear weapon States are the vast majority of NPT Parties. For them, the Treaty foresees a system of rewards and benefits in return for foregoing any development or possession of nuclear weapons, binding them, as a consequence, to verification of this commitment. The Treaty thus embodies two twin and mutually reinforcing goals: one of promoting the benefits of nuclear energy and the other, of verifying that materials and facilities involved are under control and used only for peaceful purposes.

The right of NPT Parties to have access to information, exchange of equipment and materials is explicitly recognized in Article IV of the Treaty. This Article stipulates that “*all Parties of the Treaty undertake to facilitate ... and have the right to participate in the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy. Parties to the Treaty in position to do so shall also cooperate in contributing alone or together with other States or inter-regional organizations to the further development of the applications of nuclear energy for peaceful purposes....*” (Emphasis added).

A successful campaign after the 1995 NPT Review Conference increased the NPT membership from 178 to near universality, and today 189 States are Parties to the Treaty. In the same period the IAEA's membership increased from 127 to 138.

Today all IAEA Member States are participating in the Agency's Technical Cooperation Programme (TCP) in var-

ying mixed capacities of donors or recipients. In terms of utilization of nuclear energy and applications, they represent a wide spectrum of interests and needs:

- ❖ Some 28 Member States are developed countries that offer their expertise and knowledge;
- ❖ Twenty-three are among the Least Developed Countries, whose needs relate to the more basic applications in the areas of human health, water management and agriculture;
- ❖ Of the 87 Member States, about 60 have small-to medium-sized infrastructures for nuclear energy;
- ❖ Six to eight are initiating or considering a nuclear power programme and another 17 have operating nuclear power plants.

Hence, the majority of Member States receive support in the form of information, know-how, equipment, materials and assistance in general through this multilateral channel. Further, through the Agency's support, Member States are in a position to cooperate and contribute to the development of peaceful applications of nuclear technology.

Is the System Working?

How well are countries complying with their NPT obligations when it comes to peaceful nuclear uses? An examination covering the last decade would show that some transfer of technology has taken place through bilateral channels, although in a limited fashion and scale. Some of these bilateral cooperation activities are, in reality, related to commercial contracts. Apart from the IAEA, multilateral cooperation has been insignificant.

Indeed the IAEA, although not referred to in Article IV of the NPT, plays a major role in planning and implementing multilateral cooperation stipulated in the Treaty. It encourages and assists research, development and application of atomic energy; it provides technical advice, training, materials, services and equipment; fosters exchange of scientific and technical information; develops standards and guidelines for the appropriate utilization of nuclear technology and materials, and builds strategic partnerships to increase the leverage of the limited resources available. At all times,

the Agency seeks to support the use of nuclear technology in a way that is safe for humans and the environment. All these activities are related to key statutory functions of the IAEA.

Efforts to assist Member States are impressive. Since its inception in 1957, the Agency has provided direct assistance valued at more than \$1.3 billion to participating Member States, of which over \$600 million has been disbursed in the last 10 years.

The assistance has come from voluntary contributions — which constitute the basis of the IAEA Technical Cooperation Fund (TCF) created as the main financing mechanism. An annual target for TCF contributions is set for two years in advance following consultations with Member States, who are asked to pledge contributions against their share of the target.

It should be noted that the IAEA is the only organization in the entire UN system that has its own resources and a programme for direct support to its Member States. In addition to the Agency's own staff, including both technical experts and project managers, thousands of experts recruited among Member States every year are directly involved in the Agency's technical cooperation projects.

The TCF system worked well until the mid-1980s, when pledges and payments started to decrease, attaining a low of 65% of the target in 1992. This alarming situation has improved since then — in the last three years the rate of attainment averaged 80%, still much below the figure set by the Member States themselves, and in 2004 it increased to 87.6%. The target for 2005 has been set at \$77.5 million, with an expected rate of attainment of 90%.

In addition to TCF contributions, countries can donate extrabudgetary resources for projects that have been approved by the IAEA Board, but cannot be covered by the TCF. In this case the donor country has the right to select the project or projects and countries of interest to them.

The recent trend has been an increase in extrabudgetary resources, which rose to \$11.8 million in 2003. Further, the countries receiving support are steadily increasing their own shares in the form of government cost-sharing, which in 2003 accounted for approximately \$4 million. Additionally playing an important role are “in-kind” contributions of experts and facilities provided by project participants.

These trends are an explicit recognition of the fact that, to the extent that resources permit, the IAEA is fulfilling its mandate to extend the benefits of the nuclear technology to all interested Member States. Hence, at the multilateral level we can say that the system supporting peaceful nuclear uses has satisfactorily worked, with an increasing number of countries benefiting from it.



(Pavlicek/IAEA)

Countries increasingly seek IAEA technical assistance for activities related to safety and security of nuclear and radiological materials. The IAEA, for example, supported missions to Georgia to recover and secure radioactive sources.

Barriers & Benefits

When preparing its programme of technical cooperation, the IAEA does not differentiate between NPT and non-NPT Member States. Projects are assessed exclusively in terms of their technical soundness and practical feasibility, the stated government priorities, the country's own commitment to the project, and the potential benefit for the country.

The situation for extrabudgetary funding used to be different as many important donor countries showed a clear preference for States Parties to the NPT. Being party or non-party to the NPT was indeed an important issue during the 1970s, 1980s, and 1990s before the Treaty reached near universality.

Over the last five to ten years, more controls and barriers have been introduced to the transfer of materials, equipment, information and nuclear technology in general, and in particular for the areas related to nuclear power and its fuel cycle. These controls and barriers have arisen from proliferation concerns and also, more recently, a required higher standard for safety and environmental protection.

The IAEA is increasing its engagement in safeguards and security activities. At the same time, the number of Member States requesting support in the form of technical cooperation continues to rise. These changes combined pose a challenge to the Agency's mission to extend the benefits of nuclear technology to all its interested Member States.

While the Agency's technical cooperation activities are open to all Member States, guidelines state that resources

should be allocated primarily to meet the needs of developing countries. (See IAEA document INFCIRC/267).

Over the years, the Agency's technical cooperation programme has been very sensitive to the changing needs and interests of developing countries. For example, over the past decade there has been a continuous decrease in requests in areas of nuclear power; on the other hand there has been an increase in areas of human health, nuclear safety, nuclear security, environmental protection, physical protection of radiation sources and management of radioactive waste. Sustained efforts in developing countries over the past ten years have been directed at improving safety when it comes to nuclear facilities and radiation sources, and strengthening the legal infrastructure and emergency preparedness.

The IAEA's Department of Technical Cooperation is continuously seeking ways and means to enhance the effectiveness and efficiency of the programme, for example, by creating partnerships with donor organizations to multiply the impact of its projects. This effort was duly commended in the final document of the 2000 NPT Review Conference.

Risks & Rewards

Mechanisms are in place to ensure that the Agency's technical cooperation activities are not diverted or used for non-peaceful uses.

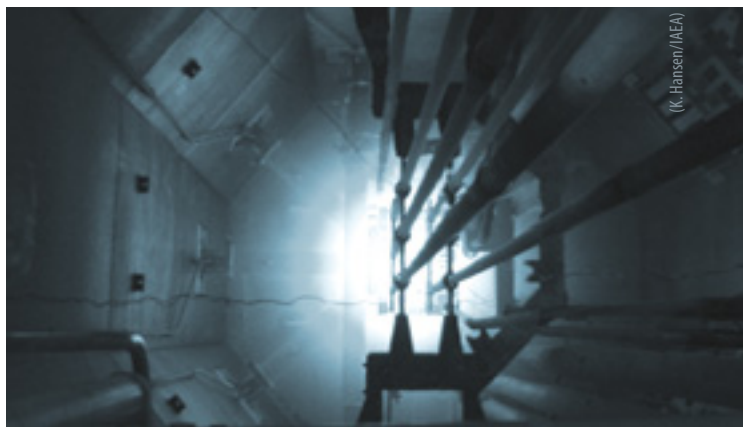
It should not be forgotten that in 1971, just after the NPT entered into force, the IAEA Board of Governors approved a standard agreement regulating the conditions for the provision of technical assistance. This agreement was revisited in the late 1970s and, after much discussion by the Board, a revised text was approved in February 1979 as the "Revised Guiding Principles and General Operating Rules to Govern the Provision of Technical Assistance by the Agency" (INFCIRC/267). These guiding principles are applicable "to any technical assistance provided by the Agency irrespective of the funds or gifts involved...".

The document contains, in the Annex, the provisions established by the Board in September 1977 for the application of safeguards in relation to granting of technical assistance. This revised text (which became known as the Revised Supplementary Agreement, RSA), requires that Member States requesting assistance should, first, conclude an RSA with the IAEA. This agreement is the country's statement that all activities resulting from the assistance are solely for peaceful purposes and that facilities involved are subject to safeguards. The agreement stipulates that technical cooperation projects to be approved by the Board are subject, if needed, to the safeguards provisions.

The IAEA Departments of Safeguards and Technical Cooperation work together to oversee the application of this provision. Their experts take part in a review proc-

ess that monitors and screens any possibility of misuse of nuclear technologies from the time the project is requested to the stage of final implementation. Based on a thorough review of existing and upcoming IAEA projects, for example, the Deputy Director for Technical Cooperation was able to assure the Board in November 2004 that the 2005-2006 Technical Cooperation Programme "contains no elements of proliferation concerns" relevant to sensitive technologies as specified in the principles and rules governing IAEA technical assistance.

In conclusion, we can say that the IAEA's activities related to Article IV of the NPT cover a wide range; they are diverse in scope yet focused on priority needs of countries. These activities continue to enjoy interest and support from all countries, whatever their involvement in the Agency's Technical Cooperation Programme.



Through the IAEA Technical Cooperation Programme among other channels, the world's civil research reactors using high-enriched uranium are being converted to use fuel that poses lower proliferation concerns.

An effective Agency safeguards system remains the cornerstone of a nuclear non-proliferation regime aimed at stemming the spread of nuclear weapons and moving towards disarmament. At the same time, an effective technical cooperation programme is the complement to this cornerstone, and it needs to be preserved and strengthened to keep the balance foreseen by the NPT. This programme is fundamental and unique to the IAEA in that it seeks to extend the benefits of nuclear technology to all. It is desirable that, at the 2005 NPT Review Conference, the Parties renew their commitment towards these twin and mutually reinforcing goals and fulfill them in the coming years.

Ana Maria Cetto is IAEA Deputy Director and Head of the Department of Technical Cooperation. She was named Mexico's Woman of the Year in 2003. Paulo Barretto is a former Director in the Department who among other duties participated in several NPT Review Conferences. He worked at the Brazilian Nuclear Energy Commission and is now posted with the UN in New York.

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NUCLEAR EXPORT CONTROLS

Closing the Gaps

by Fritz W. Schmidt

Concerns over a nuclear “black market” have focused international attention on the effectiveness of nuclear export controls. IAEA Director General Mohamed ElBaradei has stated that the emergence of a multinational illicit network demonstrated the inadequacy of the present export control system, that international cooperation on export controls lay on informal arrangements that were not only not binding but also limited in membership, and that export control information was not systematically shared with the IAEA.

This criticism, often heard on the political level, does not really do justice to the work of export control groups. The emergence of a multinational illicit network does not necessarily prove failures in export control systems. Criminal activities, by definition, try to circumvent existing rules and regulations, or they exploit the absence of such rules on State level. To fight such individual cases is not so much a task of regular export control systems, whose function lies primarily in establishing standards and procedures for export con-

trols on State level, but rather the task for intelligence services and their international cooperation.

How does the export control regime support nuclear non-proliferation?

The basis of the export control regime is the Nuclear Non-Proliferation Treaty (NPT). To define the current export control standards, one has to refer to the provisions of the NPT but at the same time also to the NPT Review Conferences, in which the sovereign of the NPT, the States Parties, have been expressing their understanding of the provisions of the Treaty. These conferences offer the opportunity to recognize developments in the understanding of security standards.

While the findings and conclusions of NPT conferences in the first instance relate to Treaty parties, the NPT strives

for the universality of its security goals and the universal application of its requirements. Export controls can — and do — play an important role in fostering this universality goal by demanding the implementation of internationally agreed security standards in recipient countries before export licenses are granted. From this perspective it should be unacceptable if NPT parties only looked to the letter of the Treaty and not to what the sovereign has declared or decided over the years. It is the purpose of Review Conferences, enforced in 1995 with the decision for an “enhanced review mechanism”, to review and interpret how the provisions of the Treaty should be applied.

Drawn from the deliberations in the NPT conferences, the current standards to be demanded as conditions of supply are the following:

Safeguards

The exporting States require from the recipient State safeguards according to the safeguards system established by the IAEA for NPT purposes. The current standard comprises safeguards agreements with the Agency based on the models INFCIRC/153 and INFCIRC/540 (the Model Additional Protocol).

Physical Protection

The prevention of theft of nuclear material and unauthorized access to nuclear material or facilities received its recognition as an important requirement at the international level only in the early 1970s when the IAEA developed and published its first recommendations and guidelines for the physical protection of nuclear material. As the NPT was drafted and agreed upon already in 1968, it does not contain a reference to this element. All NPT Review Conferences since 1975 on emphasized the need for appropriate physical protection on the systems on national level.

National export control provisions

Whenever nuclear items are transferred outside the country it is important to require from the recipient as a condition of supply that any re-export of those items should demand the same criteria as for the export to the recipient country. In order to implement that standard it is necessary to have appropriate legislation and licensing procedures in place in the recipient country.

How does the export control regime affect the IAEA’s verification?

According to the NPT system, export controls require IAEA verification in the recipient country. In addition, export controls enable States to provide information to the IAEA on exports and imports as required by the Additional Protocol.

Cooperation between the IAEA and Exporting States

In recent years the IAEA has been expressing the wish to receive more information on exports. As the reporting of exports of sensitive nuclear items has become a regular feature of safeguards reporting through the additional protocol, this need for information is more or less satisfactorily covered. (Sensitive nuclear items often are called “trigger list” items because they require, or trigger, safeguards reporting; the list stems from the NPT Exporters Committee, known as the Zangger Committee, and is incorporated as Annex II in the IAEA Additional Protocol to the NPT comprehensive safeguards agreements.)

Regarding “dual use” (DU) items, there is a need to distinguish between information to the IAEA to be given on a regular and systematic basis and information required only in individual cases for particular countries of concern.

Different from trigger list items, DU items do not qualify for regular reporting to the IAEA because of their lower level of significance and their limited scope of controllability. There is no process of “government to government assurance” for DU items, as exists for trigger list items. Governments of recipient countries usually do not take responsibility for such items but limit their responsibility to statements that exports of DU items from their country require a license. This responsibility, disposed of in an “international import certificate”, does not further involve the authorities of the recipient country. Whenever the IAEA gets information of a transfer of a DU item, the Agency would not regularly be able to receive confirmation about its arrival in the recipient country nor on where the item is located and used. This definitely limits the value of information, and the “digestion” of the information might become rather a burden for the IAEA.

In individual cases this concern may be totally different. When the IAEA is reviewing a particular country because of certain doubts or inconsistencies, information on DU items can be of importance. Agency inspectors may have encountered inconsistencies like extraordinary equipment, or may have found equipment from a particular country and want to know if other related equipment has been exported to the same country. In such cases inquiries with particular exporting countries are useful and necessary, as information of transfer of DU items would be an additional means to complete or at least improve the picture for the IAEA. In such cases Member States should provide all information needed by the IAEA on individual goods and on procurement practices of such countries. This is in line with the decision of the 1995 NPT Review Conference, as reaffirmed in 2000, that all support should be given to the IAEA to enhance its capability in safeguards

But this would not take away the fact that the value of DU information would still be minor compared with the level of information the Agency would receive from a good report-

ing system on trigger list items on the basis of Annex II of the Additional Protocol. It is therefore necessary for the Agency to focus on the establishment and continuous improvement of its means for information treatment on Annex II reporting, as well as to consider how to improve the possibilities on import information, in particular on the standardisation of import reporting equal to export reporting. At the same time it is important for the Agency to review and, when necessary, update the list of Annex II.

What is needed to close major gaps in export controls?

Export control regimes set up the security requirements for recipient countries. They harmonize these requirements on a wide international basis, contribute to their universality by demanding them as a condition of supply, promote the knowledge of security requirements through outreach activities and can serve as a basis, together with the IAEA, for co-ordination and co-operation in technology transfer. As the list of items and activities in Annexes I and II of the Additional Protocol are based on the Committee trigger list, the Committee can advise the IAEA on these technologies.

Looking toward internationally agreed standards, current deficiencies are mainly related to State implementation.

● As to the Additional Protocol, some NPT States claim that there is no obligation to conclude such an instrument. This is not in line with the concept of NPT Art. III: The Treaty's non-nuclear-weapon-States (NNWS) have the obligation to negotiate with the IAEA an Additional Protocol, just as they are required to conclude a comprehensive safeguards agreement. NPT Article III.1 stipulates two tasks: (a) the IAEA has to establish and maintain a system for safeguards that meets the purposes of the Treaty; (b) non-nuclear-weapon States have to embark upon negotiations with the IAEA to enable the Agency to fulfill its verification task according to its safeguards system for NPT purposes. This concept clearly shows that there is only one safeguards system for NPT purposes. Any improvement or strengthening of this system requires the Agency to implement the system to its last state-of-the-art. NNWS have to embark upon negotiations with the IAEA whenever there is a need to enable the Agency to fulfill its safeguards task.

● From this logic it is neither understandable nor acceptable why NPT States should have difficulties to accept their Additional Protocols. The IAEA Director General has stressed the fact that for the Agency to be able to fulfill its verification responsibilities in a credible manner, the Additional Protocol must become the standard for all countries that are party to the NPT. Do Member States really want the Agency to be deficient in its capabilities, in particular if we take it that the Additional Protocol was adopted by consensus in the IAEA Board of Governors in 1997 and

— also by consensus — confirmed at the 1995 and 2000 NPT Conferences? Why is this consensus support missing when it comes to implementation?

● In physical protection of nuclear material, the critical question is how this requirement can be verified. Only a few supplier States have appropriate inspection teams to check physical protection systems in recipient States. In strengthening of this export control requirement the IAEA can play an important role through its voluntary International Physical Protection Advisory Service (IPPAS). As a condition of supply the supplier could demand that the recipient State invites an IPPAS mission and provides its findings to the exporter.

In order to observe the necessary confidentiality for national security information, the mission's report should provide an executive summary that describes in general terms whether the national measures are adequate for the nuclear programme according to the IAEA's guidelines and recommendations.

● In the area of national rules and regulations for export controls, States may need assistance in establishing appropriate nuclear legislation. Export control groups such as the Zangger Committee and the Nuclear Suppliers Group stand ready, through their outreach programmes, to assist individual States, directly or through the IAEA, with the establishment and adaptation of rules and regulations on the national level.

The 2005 NPT Review Conference will be an opportunity to review developments in export controls over the last five years, and in particular to address the question of standards and their implementation by Member States. This will be an opportunity for the Zangger Committee to present its report to the Conference and also to seek guidance for its future work. Since 2000, in line with the NPT's "enhanced review mechanism", the Committee has been reviewing its understandings in order to include all standards described above. It will present the status of this review to the Conference.

The Conference should guide the Committee in order to make sure that its understandings comprise the most recent state of the art of export control requirements. As the Committee wishes to meet its function as "faithful interpreter" of the NPT export control provisions, it takes account of such guidance by the NPT States.

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A Race We Can Win

The World Can – and Must – Build a Stronger Security Framework

by Mohamed ElBaradei

Nuclear proliferation and terrorism represent the single most important threat to global security. Yet fundamental differences of opinion remain on how to deal with this ever growing menace to our survival. Should we opt for diplomacy or force? What are the relative merits of collective versus unilateral action? Is it more effective to pursue a policy of containment or one based on inclusiveness?

These are not new questions, by any measure. But they have taken on renewed urgency as nations struggle, both regionally and globally, to cope with an extended array of conflicts, highly sophisticated forms of terrorism, and a growing threat of weapons of mass destruction.

In a real sense, we are in a race against time — but it's a race we can win if we work together.

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) remains the global anchor for humanity's efforts to curb nuclear proliferation and move towards nuclear disarmament. There is no doubt that the implementation of the NPT continues to provide important security benefits — by providing assurance that, in the great majority of non-nuclear-weapon States, nuclear energy is not being misused for weapon purposes. The NPT is also the only binding agreement in which all five of the nuclear-weapon States have committed themselves to move forward towards nuclear disarmament.

Still, it is clear that recent events have placed the NPT and the regime supporting it under unprecedented stress, exposing some of its inherent limitations and pointing to areas that need to be adjusted. The question is how do we best move ahead to achieve the security we seek?

Seizing the Opportunity

Clearly, the world has changed. The key features of the international security landscape have been altered significantly over the past two decades. Whatever value the concept of

nuclear deterrence may have served during the Cold War — as the volatile currency on which the standoff between two superpowers was balanced — they have now become the ultimate “elephant in the parlor”. For the five countries recognized as nuclear-weapon States under the NPT, their nuclear arsenals are increasingly becoming either a focal point for resentment or cynicism among the nuclear “have-nots”, or worse, a model for emulation for States that wish to pursue clandestine WMD programmes, hoping that this will bring them security and status.

It is the height of irony that, in today's security environment, the only actors who presumably would find the world's most powerful weapons useful — and would deploy them without hesitation — would be an extremist group. A nuclear deterrent is absolutely ineffective against such groups; they have no cities that can be bombed in response, nor are they focused on self-preservation. But even as we take urgent measures to protect against nuclear terrorism, we remain sluggish and unconvinced about the need to rapidly rid ourselves of nuclear weapons.

Why? The answer, in my view, is that the international community has not been successful to date in creating a viable alternative to the doctrine of nuclear deterrence as the basis for international security.

Nuclear weapons will not go away until a reliable collective security framework exists to fill the vacuum. The aftermath of the Cold War should have served as the logical lead-in to such an effort. The resulting changes to the international security landscape have been obvious; it is only that we have not acted to adapt to these changes.

If there is any silver lining to this dark cloud, it is that the window of opportunity is still open. The latest efforts to counteract Iraq's phantom weapons of mass destruction, to unveil a clandestine nuclear weapon programmes in Libya, to understand the extent and nature of Iran's undeclared nuclear programme, to bring North Korea back to the NPT regime and dismantle any nuclear programme they may have, and to prevent nuclear terrorism have all brought

worldwide attention to bear on issues of nuclear non-proliferation and nuclear security.

That energy is ours to harness. If we are ever to build a global security culture based on human solidarity and shared human values — a collective security framework that will serve the interests of all countries equally, and make reliance on nuclear weapons obsolete — the time is now.

Building a Collective Security Framework

The question remains, how? Whose responsibility is it to create this collective security framework? Is this an initiative for policy makers? The UN Security Council? The scientific community?

The answer, of course, is that it will take all of us. Progress must be made on all fronts — political, scientific and societal. We must all take the responsibility for action.

Reliance on nuclear weapons is a recipe for self-destruction. I find it encouraging that people from all sectors of society have been coming forward with proposals on how to address the challenges of nuclear proliferation and nuclear arms control. In my view, this could be the beginning of a much needed discussion on security — and we should do all we can to stimulate this dialogue, move it forward, and keep it in public focus.

On the political and policy front, leadership must be focused on restoring and strengthening the credibility of multilateral approaches to resolving conflicts and threats to international security — conflicts and threats ranging from preserving the environment to ensuring respect for human rights, working for sustainable development, and controlling weapons of mass destruction — which, in our globalized world, can only be resolved through a collective and multilateral approach, in which competing interests and powers can be contained and harmonized. The system of collective security hoped for in the United Nations Charter has never been made fully functional and effective. This must be our starting point.

For some years now, efforts to achieve Security Council reform have been mostly focused on the question of whether additional countries should be given a permanent seat. In my view, such a change would be helpful in making the Council more representative of today's global realities, and in removing the current correlation — in that the same five countries recognized under the NPT as nuclear weapon States hold the five permanent seats on the Security Council.

But for the Security Council to take the leadership role for which it was designed, its reform must be focused on

more than issues of membership. The Council must be able and ready to engage swiftly and decisively in both preventive diplomacy and enforcement measures, with the tools and methods in place necessary to cope with existing and emerging threats to international peace and security.

This should include mechanisms for preventive diplomacy to settle emerging disputes within and among nations. The genocide in Rwanda and the appalling situation in Darfur, where 10 000 people are dying every month, are two prime examples of the lack of early and decisive intervention by the Security Council.

If we are ever to build a global security culture based on human solidarity and shared human values — a collective security framework that will serve the interests of all countries equally, and make reliance on nuclear weapons obsolete — the time is now.

The Security Council should also have, at the ready, “smart” sanctions that can target a government without adding misery to its helpless citizens, as we have seen in Iraq. The Council should have adequate forces to intervene in the foreseeable range of situations — from maintaining law and order, to monitoring borders, to combating aggression. And yes — in my view, the Security Council should be able to authorize collective pre-emptive military action when the imminence and gravity of the threat merit such action.

Increasing the effectiveness and relevance of the Security Council is an essential step towards a functional system for collective security. Such a system is the only alternative to the reliance that some nations, including nuclear weapon States and their allies, now place on nuclear deterrence — in a “good guys versus bad guys” approach that inevitably leaves some nations seeking to achieve parity. A functional system for collective security is the only alternative to the current hodge-podge of approaches to addressing security issues — ranging from inaction or late action on the part of the international community, to unilateral and “self-help” solutions on the part of individual States or groups of States.

With a viable system of collective security in place, policy makers and political leaders may find it easier to make progress on the nuclear arms control front, such as bringing into force the Comprehensive Nuclear Test Ban Treaty, and negotiating an internationally verifiable Fissile Material (Cut-Off) Treaty.

Setting Benchmarks for Security

In my view, every effort should be made, starting at the 2005 NPT Review Conference and continuing in other venues, to agree on benchmarks for non-proliferation and disarmament. These benchmarks should include: urging all States to bring the additional protocol to IAEA safeguards agreements into force; tightening and formalizing the controls over the export of nuclear materials and technology; working towards multilateral control over the sensitive parts of the nuclear fuel cycle — enrichment, reprocessing, and the management and disposal of spent fuel; and ensuring that States cannot withdraw from the NPT without clear consequences, including prompt review and appropriate action by the Security Council. The international community should also work rapidly to reduce the stockpiles of high enriched uranium and plutonium around the globe, and to strengthen the protection of existing nuclear material and facilities.

An essential benchmark will be that a concrete roadmap for verified, irreversible nuclear disarmament, complete with a timetable, and involving not only the NPT nuclear weapon States but also India, Pakistan and Israel, is at last put in place.

Not long ago, the foreign ministers of Brazil, Egypt, Ireland, Mexico, New Zealand, South Africa and Sweden spoke out jointly, saying: “Nuclear non-proliferation and disarmament are two sides of the same coin, and both must be energetically pursued.” Thirty years after the enactment of the NPT, with the Cold War ended and over 30 000 nuclear weapons still available for use, it should be understandable that many non-nuclear-weapon States are no longer willing to accept as credible the commitment of nuclear-weapon States to their NPT disarmament obligations.

In my view, we have come to a fork in the road: either there must be a demonstrated commitment to move toward nuclear disarmament, or we should resign ourselves to the fact that other countries will pursue a more dangerous parity through proliferation. The difficulty of achieving our ultimate objective — the elimination of all nuclear weapons — should by no means be underestimated. But at the same time, it should not be used as a pretext for failing to start the process of drastic reductions in existing nuclear arsenals, and simultaneously to explore the development of collective response mechanisms that will be needed against any future clandestine nuclear proliferation efforts.

Joining Forces for Change

I would also like to emphasize the role of scientists in advancing non-proliferation and disarmament objectives, and the responsibility for action that lies with the scientific community. Science brought us the atom bomb. And if we are to rid ourselves of nuclear weapons, we will need an equally intensive effort on the part of scientific research-

ers — to develop innovative tools for nuclear verification and mechanisms for reducing the proliferation potential of nuclear material and technology.

In the area of nuclear verification, for example, advances in environmental sampling and analysis techniques are enabling IAEA inspectors to determine, with far greater precision, the nature and origin of individual particles of uranium — and thereby to help us detect undeclared activities. Satellite imagery technology and advanced information analysis techniques have also broadened the range of inspection capabilities. And in the long run, science may be able to develop additional innovative ways and means to neutralize the impact of nuclear and other weapons of mass destruction.

The proliferation of nuclear weapons is a legacy we all share, and ultimately, every concerned citizen also shares the responsibility for action. In countries ranging from the most powerful to some of the least developed, the voice of the citizen is increasingly a force in the political debate. It is vital that we engage individuals from all sectors of society in a public dialogue on international security — to remind them of the continued danger of nuclear war, to explain to them possible alternatives, and to offer avenues for involvement. We must continue to develop and refine proposals for action, to bring them to the attention of governments and opinion leaders, and to promote public discourse on nuclear non-proliferation and disarmament that will become too forceful to be ignored. Efforts to develop proposals that aim to move us away from a reliance on nuclear weapons and nuclear deterrence have never been more urgent or more relevant.

Rethinking Our Security

For centuries, perhaps for millennia, security strategies have been based on boundaries: city walls, border patrols, and the use of racial and religious groupings or other categories to separate friend from foe. Those strategies no longer work. The global community has become interdependent, with the constant movement of people, ideas and goods. Many aspects of modern life — global warming, Internet communication, the global marketplace, and yes, the war on terrorism — point to the fact that the human race has walked through a door that cannot be re-entered.

Yet with all the strides we have made to connect on many levels, we continue to think disconnectedly on others. We think globally in terms of trade, but we continue to think locally in terms of security. We cherish our connectivity on the Web, but turn away from solidarity in matters of extreme poverty. James Morris, Executive Director of the World Food Programme, recently pointed out, “There are about 800 million hungry people in the world today, about half of them children” — yet the governments of the world spent \$900 billion on armaments last year. Could it be that our priorities are skewed?

7 Steps to Raise Security

In a recent essay published in the *Financial Times*, IAEA Director General Mohamed ElBaradei outlined his proposal for seven steps to raise the world's security. He said that three phenomena — the emergence of a nuclear black market, the determined efforts by additional countries to acquire the technology to produce the fissile material useable in nuclear weapons, and the clearly expressed desire of terrorists to acquire weapons of mass destruction — have radically altered the security landscape.

"The system itself — the regime that implements the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) — clearly needs reinforcement," he said.

He called on States meeting at the NPT Review Conference in May 2005 to pursue seven steps to strengthen world security.

❶ Put a 5-year hold on new facilities for uranium enrichment and plutonium separation. There is no compelling reason for building more of these proliferation-sensitive facilities; the nuclear industry already has more than enough capacity to fuel its power plants and research facilities.

To make this holding period acceptable for everyone, commit the countries that already have these facilities to guarantee an economic supply of nuclear fuel for bona fide uses. Then use the 5-year hiatus to develop better long-term options for managing these technologies (for example, in regional centres under multinational control).

To advance these ideas, Dr. ElBaradei has engaged a group of international nuclear experts, and their proposals will be put forward at the May Conference.

❷ Speed up existing efforts, led by the US Global Threat Reduction Initiative and others, to modify the research reactors worldwide operating with high enriched uranium — particularly those with metal fuel that could be readily employed as bomb material. Convert these reactors to use low enriched uranium,

and accelerate the technical research on how to make high enriched uranium unnecessary for all peaceful nuclear applications.

❸ Raise the bar for inspection standards by establishing the "Additional Protocol" as the norm for verifying compliance with the NPT. Without the expanded authority of this protocol, the IAEA's rights of inspection are fairly limited. It has proven its value recently in Iran, Libya and elsewhere, and it should be brought into force for all countries.

❹ Call on the UN Security Council to act swiftly and decisively on the case of any country that withdraws from the NPT, in terms of the threat the withdrawal poses to international peace and security.

❺ Call on all States to act on the Security Council's recent resolution 1540, to pursue and prosecute any illicit trading in nuclear material and technology.

❻ Call on the five nuclear-weapon States party to the NPT — to accelerate implementation of their "unequivocal commitment" to nuclear disarmament, building on efforts such as the 2002 Moscow Treaty between Russia and the US. Negotiating a treaty to irreversibly ban the production of fissile material for nuclear weapon programmes would be a welcome starting point.

❼ Acknowledge the volatility of longstanding tensions that give rise to proliferation — in regions like the Middle East and the Korean Peninsula — and take action to resolve existing security deficits and, where needed, provide security assurances. In the case of the Middle East, call on all parties to pursue a dialogue on regional security as part of the peace process. One goal of this dialogue would be to make the Middle East a nuclear-weapons-free zone.

"None of the foregoing steps will work in isolation. Each requires a concession from someone. But with leadership from all sides, this package of proposals will create gains for everyone," he said.

This is a mindset we must change. In this century, in this generation, we must develop a new approach to security capable of transcending borders — an inclusive approach that is centred on the value of every human life. The sooner we can make that transition, the sooner we will achieve our goal of a planet with peace and justice as its hallmark.

*Dr. Mohamed ElBaradei is Director General of the International Atomic Energy Agency. This essay is excerpted from his November 2004 address at Stanford University's Center for International Security and Cooperation in Stanford, California, USA.
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Nuclear Fuel Cycle

Which Way Forward For Multilateral Approaches?

An International Expert Group Examines Options
by Bruno Pellaud

For several years now, the debate on the proliferation of nuclear weapons has been dominated by individuals and countries that violate rules of good behaviour - as sellers or acquirers of clandestine nuclear technology. As a result, the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) has been declared to be “inadequate” by some, “full of loopholes” by others.

Two basic approaches have been put forward to tighten up the NPT; both seek to ensure that the nuclear non-proliferation regime maintains its authority and credibility in the face of these very real challenges. One calls for non-nuclear weapon States to accept a partial denial of technology through a reinterpretation of the NPT’s provisions governing the rights of access to nuclear technologies. The unwillingness of most non-nuclear-weapon States to accept additional restrictions under the NPT makes this approach difficult. The other approach would apply multinational alternatives to the national operation of uranium-enrichment and plutonium-separation technologies, and to the disposal of spent nuclear fuel.

In this perspective, IAEA Director General Mohamed ElBaradei proposed in 2003 to revisit the concept of multilateral nuclear approaches (MNA) that was intensively discussed several decades ago. Several such approaches were adopted at that time in Europe, which became the true homeland of MNAs. Nonetheless, MNAs have failed so far to materialise outside Europe due to different political and economic perceptions.

International Expert Group

In June 2004, the Director General appointed an international group of experts to consider possible multilateral approaches to the nuclear fuel cycle. The mandate of the Expert Group was three-fold:

- 1 To identify and provide an analysis of issues and options relevant to multilateral approaches to the front and back ends of the nuclear fuel cycle;
- 2 To provide an overview of the policy, legal, security, economic, institutional and technological incentives and disincentives for cooperation in multilateral arrangements for the front and back ends of the nuclear fuel cycle; and

- 3 To provide a brief review of the historical and current experiences and analyses relating to multilateral fuel cycle arrangements relevant to the work of the Expert Group.

The overall purpose was to assess MNAs in the framework of a double objective: strengthening the international nuclear non-proliferation regime and making the peaceful uses of nuclear energy more economical and attractive.

In the report submitted to the Director General in February 2005, the Group identified a number of options — options in terms of policy, institutional and legal factors — for those parts of the nuclear fuel cycle of greatest sensitivity from the point of view of proliferation risk. In this context, multilateral may mean regional, multinational or international (that is, with the participation of international organisations).

All multilateral arrangements so far have been discretionary, resulting from government-to-government agreements or commercial arrangements across borders. Today again, there could indeed be good reasons for encouraging such schemes on a voluntary basis.

First of all, MNAs are powerful confidence-building endeavours. By applying the general definition of “confidence-and-security-building measures” (CSBM) proposed by UNIDIR (United Nations Institute for Disarmament Research), one could say that a nuclear fuel cycle CSBM would seek to *introduce transparency and thereby predictability in relations between States by clarifying national intentions, reducing uncertainties about national activities, and/or constraining national opportunities for surprise*. Such measures have been traditionally divided into three categories: “information and communication”, “observation and inspection”, and “reciprocally imposed constraints”. In the nuclear fuel cycle, the IAEA has played an important intermediary function in the first two categories. In some cases — e.g. the Argentina-Brazil control arrangements and the Euratom Safeguards Office — regional verification has been put in place in addition to that of the IAEA. An MNA would fall under the category of “reciprocally imposed constraints”, under which the participants would commit to carry out a given technology only within the MNA framework.

The first Indian test of a nuclear explosive device (ostensibly for peaceful purposes) occurred in 1974. The resulting concern led to a number of proposals for regional, multilateral and international arrangements. The proposals were intended, on the one hand, to reinforce the NPT objective of discouraging horizontal proliferation and, on the other hand, to buttress the right of all States to exploit nuclear energy for peaceful purposes.

Among the more visible efforts in the 1970s and 1980s were: the IAEA study on Regional Nuclear Fuel Cycle Centres (1975-77); the International Nuclear Fuel Cycle Evaluation programme (INFCE, 1977-80); the Expert Group on International Plutonium Storage (IPS, 1978-82); and the IAEA Committee on Assurances of Supply (CAS, 1980-87). These studies concluded that most of the proposed arrangements were tech-

nically feasible and that, based on the projections of energy demand, economies of scale rendered them economically attractive. All of these initiatives failed for a variety of political, technical and economic reasons.

A Spectrum of Options

Whether for uranium enrichment, spent fuel reprocessing, or spent fuel disposal and storage, MNA options span the whole spectrum between existing market mechanisms and a co-ownership of fuel cycle facilities. As a framework, the following types have been considered:

Type I: Assurances of services not involving ownership of facilities:

- ◆ Suppliers provide additional assurances of supply.
- ◆ International consortia of governments.
- ◆ IAEA-related arrangements.

Type II: Conversion of existing national facilities to multinational facilities.

Type III: Construction of new joint facilities.

For each of these options and for each of the technologies (enrichment, reprocessing, disposal and storage), the Group has assessed the associated *pros* and *cons* with respect to such factors as “non-proliferation value” (diversion of materials from declared facilities, clandestine parallel programme, breakout, etc.), “assurance of supply” value (guarantees, economics, etc.), choice of host country, access to technology and degree of multilateral involvement.

For enrichment and reprocessing services, a healthy market exists in the world. Therefore, the legitimate objective of assurances of supply can be fulfilled to a large extent by current market mechanisms, possibly improved by some governmental guarantees. Furthermore, the IAEA could become a guarantor of uranium services, through assured access to the resources, in a kind of virtual fuel bank. Should a new facility be required, an MNA would take the form of a jointly owned facility, like the Anglo-Dutch-German Urenco, or provide for drawing rights based on pre-financed arrangements like in the EURODIF model in France.

The final disposal of spent fuel is a prime candidate for multilateral approaches. It offers major economical benefits and substantial non-proliferation benefits as well. The Expert Group recommends that the IAEA should assume a political leadership to encourage such undertakings. For example, the IAEA could launch a “Siteless Pilot Project of a Spent Fuel Repository” that would elaborate in detail all related technical, economical, legal and institutional aspects. Beyond the IAEA, other regional organisations should become active, such as the Organisation for Economic Cooperation and Development, the European Union, the North American Free Trade Agreement and the Mercosur in South America.

The system of “fuel leasing-fuel take back”, as practiced by the former Soviet Union with its customer countries, is a com-

bined option that offers major economical and non-proliferation benefits as well as assurance of supply for the full fuel cycle. The fuel could be leased to the customer and after usage and an intermediate storage time for cooling at the customers’ facility, the fuel could be taken back by the supplier for storage, reprocessing and final disposal. This “fuel leasing-fuel take back” model should ideally become a “standard” product offered by all major nuclear fuel companies.

Towards Consensus

“Are multilateral nuclear approaches: an old idea whose time has come?” Surely so. Much work has been done in the past decades on the institutional, economical and technical aspects of MNAs; the findings remain amazingly relevant for the world of today. Many of the reasons for the failure of previous initiatives on multilateral approaches may still be pertinent today. However, in the light of current challenges to the non-proliferation regime, the time might be right for making progress in achieving international consensus in support of multilateral approaches to the nuclear fuel cycle. How might that be done?

Perhaps one of the most critical steps is to devise effective mechanisms for assurances of supply of material and services, mechanisms which are commercially competitive and free of monopolies. Effective assurances of supply will have to include back-up sources of supply in the event that an MNA supplier is unable to provide the required material or services. In this context, the IAEA could play a central role as a guarantor and end-user free of national consent rights.

Apart from the crosscutting factors related to the implementation of MNAs, such as the technical, legal, institutional and safeguards, there are a number of overarching issues, primarily of a broad political nature, that may have a bearing on perceptions as to the feasibility and desirability of MNAs. These issues may well be decisive in any future endeavour to develop, assess and implement such approaches at the national and international level:

① **Article IV of the NPT.** Specifically relevant are the references contained therein to the “*inalienable right*” of non-nuclear weapon States to develop nuclear energy and the obligations by all to “*facilitate*” and “*cooperate in*” the development of nuclear energy.

② **Safeguards and export controls.** Some have argued that, if the objective of MNAs is merely to strengthen the non-proliferation regime then, rather than focussing on MNAs, it may be better to concentrate instead on the existing elements of the regime itself, for example, by seeking the universality of the Additional Protocol (AP) to IAEA safeguards agreements and by the strengthening of export controls.

③ **Voluntary participation in MNAs versus binding norm.** There is no existing legal norm requiring participation in MNAs. Thus, the establishment of one rests upon voluntary participation. States will enter into such multilateral arrangements on the basis of economic and political incen-

tives and disincentives offered by these arrangements. A verifiable fissile material cut-off treaty is likely to be viewed by non-nuclear weapon States as a precondition for a subsequent universal and binding acceptance of MNAs.

④ **Nuclear-Weapon States.** As long as MNAs remain voluntary, nothing would preclude commercial and government entities in nuclear-weapon States from participating in an MNA with non-nuclear weapon States. In fact, France (in the frame of the EURODIF arrangement) and the United Kingdom (in connection with Urenco) are examples of such participation.

⑤ **Breakout from the NPT.** Whether voluntary or binding, multinational nuclear fuel cycle centres share a potential weakness with their national counterparts, namely the risk of the host country “breaking out” by creating a political emergency, expelling multinational staff, withdrawing from the NPT (and thereby terminating its safeguards agreement), and operating the multilateral facility without international control. For multinational nuclear fuel cycle centres to be acceptable, this risk would need to be addressed, even though MNAs offer in that case a better protection than national facilities, thanks to the intertwining multilateral activities.

A joint facility with multinational staff puts all participants under a greater scrutiny from peers and partners, a fact that strengthens non-proliferation and security. This is the fundamental non-proliferation benefit of MNAs.

The potential benefits of MNAs for the non-proliferation regime are both intangible and tangible. As a confidence-building measure, multilateral approaches have the potential to provide enhanced assurance to the international community that the most sensitive parts of the civilian nuclear fuel cycle are less vulnerable to misuse for weapons purposes. Moreover, multilateral approaches also have the potential to facilitate the continued use of nuclear energy for peaceful purposes and enhance the prospects for the safe and environmentally sound storage and disposal of spent fuel and radioactive waste. Multilateral approaches can also provide the benefits of cost-effectiveness and economies of scale for smaller countries or those with limited resources, while ensuring the benefits of the use of nuclear technology. Similar benefits have been derived in other advanced technologies and high security sectors, such as aviation, aerospace and high-speed computing.

Indeed, non-proliferation and economic considerations can coincide and be mutually reinforcing. The acceptance of restraints in order to achieve a broader based assurance of supply can work to a State’s advantage, both economic and non-proliferation advantage. In the final analysis, the decision will amount to a question of political will: the political will to consider alternatives to the development of independent national fuel cycles.

The lack of political will was the main reason for the failure of previous similar initiatives. Proliferation concerns were perceived as not serious enough. Economic incentives were seldom decisive enough. Concerns about assurances of supply

5 Suggested Multilateral Nuclear Approaches

The objective of increasing non-proliferation assurances concerning the civilian nuclear fuel cycles, while preserving assurances of supply and services around the world, could be achieved through a set of gradually introduced multilateral nuclear approaches (MNA):

- ① Reinforcing **existing commercial market mechanisms** on a case-by-case basis through long-term contracts and transparent suppliers’ arrangements with government backing. Examples would be: commercial fuel banks, fuel leasing and fuel take-back and commercial offers to store and dispose of spent fuel.
- ② Developing and implementing **international supply guarantees** with IAEA participation. Different models should be investigated, notably the **IAEA as guarantor**, e.g. as administrator of a fuel bank.
- ③ Promoting voluntary conversion of **existing facilities to MNAs**, and pursuing them as **confidence-building measures**, with the participation of NPT non-nuclear weapon States and nuclear weapon States, and non-NPT States.
- ④ Creating, through voluntary agreements and contracts, **multinational, and in particular regional, MNAs for new facilities** based on joint ownership, drawing rights or co-management for front-end and back-end nuclear facilities, such as uranium enrichment; fuel reprocessing; disposal and storage of spent fuel (and combinations thereof). Integrated nuclear power parks would also serve this objective.
- ⑤ The scenario of a further expansion of nuclear energy around the world might call for the development of a **nuclear fuel cycle with strong multilateral arrangements** — by region or by continent — **and broader cooperation** involving the IAEA and the international community.

were overriding. National pride also played a role, alongside great expectations about the technological and economic spin-offs to be derived from nuclear activities. Many of those considerations may still be pertinent. Nonetheless, the political environment is possibly more conducive today towards voluntary, confidence-building MNAs.

On the horizon, there is the likely scenario of a strong expansion of nuclear energy around the world. This will ultimately call for a new world system with a more orderly nuclear fuel cycle, with strong multinational and multilateral arrangements — by region or by continent — and a stronger degree of international cooperation, involving the IAEA, the NPT community and even the Security Council.

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Securing Nuclear & Radiological Material

GTRI Moves Ahead

Spencer Abraham, former US Secretary of Energy, reviews the global initiative.

This past September, key partners of a global initiative to upgrade nuclear security met at an international conference in Vienna. Called “The Global Threat Reduction Initiative (GTRI) International Partners Conference,” the meeting launched a US-led initiative to remove and/or secure high-risk nuclear and radiological materials and equipment around the world that posed a threat to the global community. The initiative targets vulnerable nuclear and other radioactive material worldwide, building upon existing and long-standing threat reduction efforts.

The USA, the Russian Federation, and the IAEA are working together on several major programmes that are important components of the GTRI. They include the Russian Research Reactor Fuel Return Programme, the Reduced Enrichment for Research and Test Reactors Programme, and the Tripartite Initiative to secure high-risk radioactive sources.



Former US Secretary of Energy Spencer Abraham and Alexander Rumyantsev Minister of Atomic Energy of the Russian Federation, at a press conference during the GTRI meeting. (Austria Center, Vienna, Austria, September 19, 2004)

Nuclear nonproliferation work will become much more important as we move into the 21st century. Our collective role in preventing the spread of dangerous nuclear materials, providing physical security over these materials, verifying the peaceful uses of nuclear energy, advancing science, and monitoring technology transfer — each of these functions will become more central to international security in the days and years ahead.

The United States of America is more firmly committed than ever to these ideals. We have taken significant steps to demonstrate the seriousness of our commitment, actions which have intensified and accelerated vital nonproliferation efforts.

- To reduce stockpiles and available quantities of nuclear materials, we have worked closely with Russia to irreversibly blend-down at least 500 metric tons of its surplus high enriched uranium (HEU). By the end of June, more than 216 metric tons had been eliminated.

We have accelerated our efforts to secure 600 metric tons of weapons-usable material in Russia. To date, we have upgraded security on over 43% of this material. By accel-

erating the speed at which we are doing this, we are now on track to finish securing Russia’s weapons-usable material two years earlier than previously planned.

- We have accelerated our work with the Russian Navy to secure its fuel and nuclear warhead sites, and all these sites will be secured by the end of 2006. We also began a new program with Russia to upgrade security for its Strategic Rocket Forces sites. We soon will have secured two sites, and are working to secure the remaining 15 by the end of 2008.

- We have worked to further reduce quantities of weapons-usable HEU by converting research reactors in the United States and other nations to use low-enriched uranium (LEU), and we are working to eliminate 174 metric tons of HEU in the United States.

- We have worked proactively and cooperatively with Libya, the IAEA, and international partners to dismantle Libya’s weapons of mass destruction infrastructure.

- We have coordinated with our counterparts in Moscow to return Russian-origin HEU fuel to Russia. In 2003, in cooperation with the IAEA and with Minatom, we removed

IAEA Global Nuclear Security Initiatives

United Nations

Security Council Resolution 1373 adopted in September 2001 obliges all UN Member States to take specific actions to combat terrorism. The Counter-Terrorism Committee (CTC) was established to monitor the performance in building a global capacity against terrorism. Twelve international conventions, including the Convention on the Physical Protection of Nuclear Material, are recognized as constituting the global infrastructure against terrorism. These provide the basis for the work of the CTC. The IAEA participates in the CTC and provides detailed reporting on the implementation of its nuclear security programme.

The G8 & Nuclear Security

The G8 Global Partnership pledged to make \$20 billion available to the Russian Federation and the Newly Independent States over ten years to help manage their nuclear and other radioactive materials. As part of their contributions to the G8 Global Partnership, Canada, Germany and the UK have made contributions to the IAEA Nuclear Security Fund (NSF). At its Evian Summit in 2003, the G8 noted its contributions to the NSF and its cooperation with the Agency within the framework of the programme for protection against nuclear and radiological terrorism. The G8 reaffirmed its support for the actions undertaken by the Agency in favour of, inter alia, the security of radioactive sources, and declared its readiness to cooperate with the Agency.

The G8 stated that it would direct a working group to identify those elements of the Agency Code of Conduct that are of greatest relevance to prevent terrorists from gaining access to radioactive sources in close consultation with the Agency. The group would consider possible measures to safeguard and restrict access to sources; conditioning and/or recycling of sources; and systems to detect the passage of radioactive sources at strategic points such as border crossings.

Nuclear Research Reactor

The security of research reactors and their associated facilities is of increasing international concern. Research reactors have features that raise specific nuclear security challenges. Some of these challenges, especially those concerned with sabotage, are addressed by measures that serve both safety and security objectives. In the context of the IAEA's comprehensive approach to addressing nuclear security issues, the IAEA has developed an integrated plan for enhancing the security of research reactors and their associated facilities.

The plan brings together the existing risk reduction work related to fuel and decommissioning, with measures to enhance physical security, engineering and safety measures to reduce vulnerabilities, material control, training to improve security awareness and culture, legislative and regulatory measures, and enhancement of emergency preparedness measures.

European Union

In December 2003, the European Union adopted a 'Strategy Against the Proliferation of Weapons of Mass Destruction'. It incorporates a range of measures, including export controls; the criminalization of activities that contribute to the proliferation of WMD and related materials; physical protection of nuclear materials and facilities; and better control on the use, storage and disposal of radioactive sources. The Strategy implies closer collaboration between the EU and multilateral institutions, among them, the IAEA. As part of the Strategy, the EU has offered a contribution of 3.3 million Euro to the Agency to support its nuclear security programme.

The European Union/United States Declaration on the Non-Proliferation of Weapons of Mass Destruction, issued after the summit in Ireland in 2004, noted that the risk that terrorists might acquire weapons of mass destruction requires a long-term strategy and a multi-faceted solution involving the participation of international institutions, including those of the United Nations system. The Declaration expressed support for the IAEA's efforts to assist countries in developing effective and sustainable legal and regulatory controls on sources.

Radiological Security Partnership

At the conference on the Security of Radioactive sources held in Vienna in March 2003, the US Secretary of Energy announced a new initiative, the Radiological Security Partnership (RSP) to address “the potential threats from under secured high-risk radioactive sources”. The RSP, in partnership with the IAEA, jointly engages with other countries to mitigate the risk posed by radiological materials that could be used as a radiological dispersal device (RDD).

The US Department of Energy (US DOE) and the Agency are in the process of establishing a Regional Radiological Security Partnership (RRSP) programme intended to complement the RSP, as well as on-going bilateral and IAEA radiological risk reduction activities. The RRSP will allow the IAEA and US DOE to work jointly with a regional partner to promote and support key issues and activities for radiological security in that region. Specific activities will be attuned to the particular needs and competences available amongst participating States. The RRSP will also offer the opportunity for other donors with particular regional interests or competences to join the Partnership.

2005 International Conference on Nuclear Security

Security experts, law enforcement authorities, and other officials meet in London 16-18 March, 2005 at the International Conference on Nuclear Security. Themed "Global Directions for the Future," this conference will provide a forum for the international community to discuss the nature of the threat of malicious acts involving nuclear and other radioactive materials and their associated facilities. It will provide an opportunity to share information on how to most successfully combat sub-State and criminal threats now and in the future. For further information, visit the events calendar at the IAEA website at www.iaea.org.

17 kilograms of Russian-origin fresh HEU from Bulgaria and returned it to Russia for safe storage.

- We also have returned to Russia approximately 14 kilograms of fresh Russian-origin HEU from Romania to be down-blended and used for civil nuclear purposes; 48 kilograms of Russian-origin HEU from a research reactor near Belgrade, Serbia; and 17 kilograms of Russian-origin HEU from Libya's research reactor.

- Under the U.S.-origin spent fuel return program, we have returned 1,179 kilograms of HEU spent fuel to the United States for final disposition.

- And, working with the IAEA, Russia, and many other countries, we have developed a comprehensive international effort to improve the security and controls of high-risk radiological materials that could be used in a radiological dispersal device (RDD), or “dirty bomb.”

These efforts have been highly successful. They have made the world safer. Every instance in which we have worked to secure and remove dangerous materials has meant less opportunity for terrorists to acquire them. But as successful as such efforts have been, over the last several years it became apparent to us that we could — that we must — do even more.

Given the constantly evolving threat environment ... given the resolve of terrorists constantly thinking up new ways to do the unthinkable ... given the need to focus not just on rogue nations but on shadowy, stateless networks ... it is clear that we must find ways to further improve, further enhance, and further accelerate our non-proliferation work.

The Global Threat Reduction Initiative (GTRI) contains new measures to provide international support for countries' national programs to identify, secure, remove and/or facilitate the disposition of vulnerable nuclear and other radiological materials and equipment around the world — *as quickly and expeditiously as possible* — that pose a threat to the international community. We are doing this because we are dedicated to securing dangerous, unsecured materials, and because we are equally dedicated to ensuring the continued peaceful use of nuclear power.

There are four elements that comprise this initiative.

- 1 We will work in partnership to repatriate all Russian-origin fresh HEU fuel by the end of 2005. We will also work with Russia to accelerate and complete the repatriation of all Russian-origin spent fuel by 2010.

- 2 We will likewise take all steps necessary to accelerate and complete the repatriation of all U.S.-origin research reactor spent fuel under our existing program from locations around the world within a decade. Our aim is to undertake these on

a priority basis, with priority given to cases involving the greatest security threats and situations in which diplomatic and cooperative opportunities present themselves.

③ We will work to convert the cores of targeted civilian research reactors that use HEU to use low enriched uranium fuel instead. We will do this not just in the United States, but also throughout the entire world. Indeed, let me stress that we are not urging nations to take up any work — whether securing materials or converting reactor cores — that we are not committed to doing at home in the United States.

④ The fourth and final leg of the GTRI is working to identify and secure other nuclear and radiological materials and related equipment not yet covered by existing threat reduction efforts. The first task we must undertake involves creating an official inventory of high-risk materials worldwide, which includes, but is not limited to, material located at enrichment plants, conversion facilities, reprocessing plants, research reactor sites, fuel fabrication plants, and temporary storage facilities. It also includes the kinds of materials that could be used in an RDD. This fourth element is absolutely critical to this concept of GTRI, because it is, arguably, the most challenging aspect. The challenge of this portion of GTRI lies in the fact it is so open-ended. It requires us to think creatively, to predict the unforeseen, and to stay several steps ahead of a determined and imaginative enemy. And it requires much greater international participation.

For our part, I am pleased to announce that the US Department of Energy will contribute \$3 million to the IAEA to help implement GTRI. This contribution will support important technical cooperation efforts under GTRI.

We are pleased that other Member States are committing resources to enhance security over nuclear and other radioactive materials. The Australian Government recently established a new program to secure radioactive sources in the Asia Pacific Region and committed approximately \$3.1 million to this effort. We welcome this important financial commitment by Australia and encourage other countries to make similar commitments to the extent possible.

Spencer Abraham was the United States' 10th and longest-serving Secretary of Energy. He resigned in November 2004. Abraham said acceleration of nuclear non-proliferation programs aimed at keeping nuclear materials away from terrorists "heads the list of important accomplishments" of the past four years. His article is based on his address to the GTRI Conference. For more information on conference, go to: www.iaea.org/NewsCenter/News/2004/GTRI_conference.html.

Partners for Nuclear Security

Protecting the Olympic Games

Imagine the potential for disaster. Greece has 22 medical clinics that use radioactive sources for cancer treatment and blood irradiation. These clinics are located in 18 hospitals in six major cities. In addition to these radioactive sources one large industrial-scale irradiator in an Athens suburb is using a large radioactive source array to get medical equipment sterilized.

Clearly, the Greeks needed tamper-proof security systems to preclude the possibility of a disaster during the Athens 2004 Summer Olympic Games. Thus, with funding from the US Department of Energy and technical assistance from the Sandia National Laboratories, the IAEA and the Greek Atomic Energy Commission initiated a major security upgrade to all 22 of Greece's medical facilities using radioactive sources. It is part of a far-reaching and comprehensive effort to ensure that nothing but sports would occur during the Athens Olympic ceremonies.

The comprehensive nuclear security action plan was designed to protect facilities and materials, to detect illicit trafficking and malicious use of radioactive materials, and to ensure that emergency response forces are effective and efficient.

Radiation detection equipment was installed at borders and other entry points into Greece, and mobile detection equipment deployed elsewhere. Hand-held radiation monitors were distributed amongst the thousands of security personnel and customs officials who were involved in the security for the Games. The equipment was deployed to detect radioactive materials that might be used as a weapon by terrorists in a radiological dispersal device, a so-called "dirty bomb".

The IAEA takes a lead role in providing international standards and guidance on both security and related safety issues. And it provides advisory services, training, technical assistance and information support. Since it was established, the IAEA nuclear security programme has provided assistance and support to dozens of States across the globe.



US & Russian Academies Forge Ties for Nuclear Security

by Christopher A. Eldridge

In response to the growing threats of nuclear terrorism and proliferation, the US National Academies (NA) and the Russian Academy of Sciences (RAS) initiated a series of joint projects in early 2002 that bring their concerted expertise to bear on the challenges of cooperation between their two countries on nuclear non-proliferation. The IAEA has lent its talent and support to this inter-academy collaboration by hosting workshops that were jointly organized by the NA and RAS with financial support from the US-based Nuclear Threat Initiative.

The two workshops, held at IAEA headquarters in September 2003, shed valuable light on both the obstacles and opportunities being faced. The first workshop explored ways of overcoming impediments to cooperation between the US and Russia on nuclear non-proliferation. Participants included current and former US and Russian government officials with responsibility for cooperative programs as well as experts from non-governmental organizations in the two countries. The second workshop convened a multinational group of experts on nuclear materials protection, control, and accounting (MPC&A) to discuss practices and procedures in light of the evolving threats of nuclear proliferation and terrorism.

Overcoming Impediments

Participants in the first workshop explored ways of strengthening the cooperative programs of the US and Russia that are central to the non-proliferation and counter-terrorism goals of the international community.

The goals of these programs, which began soon after the fall of the Soviet Union in 1991, are to secure, consolidate, and eliminate nuclear weapons and materials that are the legacy of the Soviet Union's enormous nuclear complex. As the IAEA's Tariq Rauf pointed out in his opening remarks, US and Russia have been exemplary in their cooperation with the IAEA in support of its non-proliferation programs, but the two countries have a number of challenges to work through in their own cooperation. In light of the fact that these two nations retain what are by far the world's largest nuclear arsenals, Rauf also argued that achieving significant progress toward nuclear disarmament is necessary if non-proliferation efforts are ultimately to be successful.

The first major theme to emerge from discussion was that the many successes of cooperative nuclear non-proliferation should be recognized as such and held up as positive examples. These include the Highly-Enriched Uranium (HEU) Purchase Agreement, dismantlement of decommissioned Russian nuclear submarines that carried nuclear weapons, and the International Science and Technology Center. Programs such as these epitomize the great potential of international cooperation for building peace and stability.

Despite these successes, however, a number of impediments to cooperation on nuclear non-proliferation between the US and Russia remain. Political hurdles are among the most intractable of these. They include the linking of continued funding for cooperative programs to broader political agendas in the US, refusal of access for US government officials to Russian facilities where US-funded work is underway, and the difficulties faced by Russian non-proliferation experts attempting to obtain visas to enter the US for scientific discussions or even official government business.

Another impediment to cooperation is the issue of liability protection for US contractors working on projects in Russian nuclear facilities. Based on the liability provisions initially negotiated with the Russians when cooperation began, the US government contends that US contractors should have blanket liability protection against any accident. The Russian government, however, argues that this level of protection is unreasonable and exceeds international standards. Political challenges like these reflect not only the differing political systems of the two nations but also the vestiges of mistrust built up over decades of Cold War hostility. Bureaucratic and organizational issues, such as communication gaps and disagreements over areas of responsibility, also create formidable impediments.

Agreeing that there is no single solution to these problems, workshop participants discussed a wide array of tools that officials from both governments might use to address the challenges of cooperative nuclear non-proliferation. Formal and informal interactions at multiple levels of responsibility, both inside and outside of government, for example, are valuable fora for providing decisive leadership, overcoming bureaucratic hurdles, identifying problems and solutions, and building trust through personal relationships. Additional scientific and technical cooperation, especially on the development of proliferation-resistant nuclear energy technologies, would also increase the opportunities for overcoming impediments to cooperation.

Because some of the existing regulatory and legal structures in both countries occasionally create barriers to cooperation, and because needed regulations have not been enacted in other cases, participants also encouraged both governments to update relevant laws and regulations to facilitate cooperation. Finally, some emphasized the need to create mechanisms for disseminating the benefits of experience through training programs so that lessons that are learned in one program do not have to be learned again in another.

Sharing Best Practices

Because they are responsible for the protection, management, and accounting of the materials and components used in a State's nuclear energy or weapons program, the scientists, engineers, and technicians who oversee and operate MPC&A programs around the world are on the front lines of the struggle against nuclear proliferation and terrorism. The workshop on MPC&A therefore convened to broaden the body of professional knowledge upon which these experts can draw in carrying out their duties by exposing them to different approaches and ideas. Participants learned about current MPC&A practice in several countries and explored the role of MPC&A in supporting the international nuclear non-proliferation regime that is based on the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

This workshop benefited from an especially high level of participation by representatives of the IAEA and its Member States. Presentations highlighted not only the differing perspectives of the represented nations but also their common goals of minimizing the risks of nuclear proliferation and nuclear terrorism. IAEA Deputy Director General for Nuclear Safety and Security, Mr. Tomihiro Taniguchi, outlined the IAEA's plan of action for addressing the threats of nuclear terrorism. Mr. Pierre Goldschmidt, Deputy Director General for Safeguards, discussed the challenges facing the international nuclear non-proliferation regime.

The workshop agenda featured three main components: overarching issues, national MPC&A systems, and international safeguards against nuclear proliferation. Presentations on overarching issues covered a vari-

ety of challenges and perspectives, but the need for collective action against the threats of nuclear terrorism and proliferation was a strong theme throughout. During the sessions on national MPC&A systems, participants gave presentations on practices in several specific countries as well as on broader challenges that all such national systems face. It was evident that each nation was striving to create an effective MPC&A system within its own political, economic, and cultural context. Discussions of challenges that all national systems face explored not only the technical but also the human and organizational factors involved in managing nuclear facilities underscoring the need to develop a more complex understanding of the role such non-technical processes play.

The session on international safeguards depicted the global landscape of nuclear non-proliferation efforts and the IAEA's role in them. Papers on technical advances described trends in IAEA inspection and verification technology as well as in MPC&A systems. Presentations on political challenges in Russia, the USA and Japan summarized the non-proliferation programs and treaties supported by each government, offering three different perspectives on the problems and priorities of the international non-proliferation regime.

Working Toward Common Goals

Several important themes emerged during the workshops. First, they underscored the high value of international dialogue among experts who are working toward common goals. Discussions enabled participants to identify problems, consider possible solutions, and strengthen their collaborative efforts by sharing their knowledge. Second, participants benefited from learning about each other's differences. Certainly this was an important factor during discussions of the US-Russian cooperative relationship, but it was also extremely valuable in the MPC&A workshop. During those discussions, it became clear that the US and Russia can learn as much from other nations that are taking a fresh look at the challenges of MPC&A as those nations can benefit from the long and vast nuclear experience of the two former rivals. Third, discussions highlighted the increasingly international nature of nuclear non-proliferation challenges, and put new emphasis on the need to address global problems through global solutions. Finally, the workshops demonstrated that scientific and technical decisions with implications for domestic and international policy are best understood not only as rational choices among scientific options, but also within the political, economic, and cultural contexts in which they are taken.

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Nuclear Technology ***& the Developing World***

by Kathleen Walsh



***In a globalizing world
economy, stronger
proliferation controls are in
everyone's best interests***

Many of today's proliferation concerns are not new phenomena. Rather, they are familiar problems exacerbated by accelerating levels of international trade and investment. For example, controlling sensitive exports has become more complicated as officials, industry leaders, and nonproliferation experts must struggle simultaneously to find ways to ensure the flow of exports to legitimate buyers and supply chain partners who increasingly span the globe.

The early 21st century has magnified the dangers posed by proliferation of weapons of mass destruction (WMD). Nonetheless, cooperative efforts to thwart this trade have grown considerably more difficult and the challenges more complicated. The ubiquitous nature of dual-use technology, the application of terrorist tactics for mass destruction on 9/11, the emergence of a more unilateralist US foreign policy, and the world's ever-expanding economic relations have all made more arduous the task of stemming proliferation of WMD, their precursors, and delivery systems.

All of these challenges have been highlighted in recent years, but it is the last of these—the changing nature of the global economy—that is perhaps least analyzed but also most essential to improving international cooperation on nonproliferation.

Similarly, competitive enterprises today place a premium on rapid delivery and the speed of transactions. This in turn has increased pressures placed on officials around the world to reduce the time they spend evaluating each licensing decision, even as these assessments become more difficult as global investors move deeper into the developing world.

Furthermore, the emergence of developing economies as second-tier suppliers with the potential to transship critically sensitive technologies to third parties is another complicating factor and a consequence of the globalizing economy. Science, technology, and industry research and development activities with dual-use applications are also becoming increasingly international endeavors, facilitated through air travel, industry outsourcing, and intangible channels of communication such as the Internet.

Simply put, as international borders become more porous as a result of free-trade arrangements, opportunities for proliferators multiply as well. Although the collection of information and intelligence to aid nonproliferation has become easier in a more open and transparent trade environment, efforts to stem proliferation have become more difficult as the means of acquiring and transporting nuclear and other WMD-related technologies have also multiplied. The recent uncovering of A.Q. Khan's vast international nuclear proliferation network and the off-the-shelf uranium enrichment technology intercepted on its way to Libya are clear evidence of the challenges that lie ahead.

As these examples suggest, existing nonproliferation tools and export control mechanisms are not up to the task of dealing with new global economic realities. IAEA Director-General Mohamed ElBaradei voiced this concern recently at the Asia-Pacific Conference on Nuclear Safeguards and Security meeting in Sydney, Australia. As he noted, "The relative ease with which a multinational illicit network could be set up and operated demonstrates clearly the inadequacy of the present export control system." Nor is it likely—absent substantial support from authorities in developing countries around the globe—that all of today's new proliferation channels can be effectively plugged.

What is needed, therefore (and has long been recognized as essential by nonproliferation advocates) is a universal norm supporting nonproliferation. But how can this goal be achieved? As with much of today's discussion about globalization, the answer may lie in China.

It is no longer *access* to advanced technology that is of primary concern. Rather, it is increasingly *the result* of such access in a globalizing economy that should concern developing States.

The People's Republic of China (PRC) has in recent years instituted wholesale reform of its export control policies, regulations, and licensing system. What is significant about these reforms is that they are being motivated in large part by economic considerations—and are not merely in response to foreign export controls and sanctions placed on China's import of some sensitive technologies. Rather, leaders in Beijing have realized that in today's new global security and economic environment, China will be unable to achieve its aspiration of becoming a major developer *and* global exporter of advanced technologies unless the PRC

has in place a more effective and comprehensive export control system. In other words, a credible proliferation control system is viewed in Beijing as a prerequisite to China becoming a high-tech economy.

In an age when information technology (IT) is spreading worldwide and driving commercial development, scientific advances, and military modernization, China's situation, though magnified, is hardly unique. Thus, this economic dynamic presents a vital opportunity for the international community to foster a new non-proliferation norm linking the interests of both developed and developing economies. In other words, it is no longer *access* to advanced technology that is of primary concern (as demonstrated by the growing number of nuclear-capable States). Rather, it is increasingly *the result* of such access in a globalizing economy that should concern developing states.

A New "Grand Bargain"

In effect, globalization and the IT revolution have provided the basis for a new, if informal, "grand bargain" that promotes the interests of all States: in exploiting IT as a means toward greater prosperity, rapid economic modernization, and knowledge-based societies, developing countries will likely find, as China has, that they require more effective proliferation controls. The latter will increasingly determine developing States' rate of high-tech development by either facilitating or undermining their export potential, particularly to Western economies (the major destination for high-tech exports).

Developing States will also wish to lessen the economic costs increasingly associated with proliferation, whether inadvertent, illicit, or in some cases State-supported. Economic costs of proliferation-related activities have risen as international counter-proliferation efforts (such as the Proliferation Security Initiative) have expanded in the aftermath of 9/11. Efforts such as these are likely to grow in number and support over time.

As a result, it is increasingly in the interest of both developing countries (seeking to bolster their high-tech development and export potential) and developed economies (seeking new low-cost investment opportunities around the world) to have in place more effective as well as harmonized, worldwide proliferation controls.

Achieving this result will certainly not address all outstanding proliferation concerns nor resolve persistent security dilemmas prompted by nuclear weapons development. But greater effort is clearly needed to study and to highlight these seemingly coinciding economic interests and to accelerate their potentially positive, near-term impact on non-proliferation. Enhanced controls instituted in response to enlightened self interest are far more likely to be enforced,

sustained, and ultimately effective than those implemented merely to meet imposed international mandates.

Looking ahead, China's rising influence in global economic and security affairs may provide an historic opportunity. The PRC could serve as a leading example to the developing world on how to institute more effective, modern export controls. Beijing has recently dealt with many of the logistical, legal, financial, institutional and technological concerns raised in attempting to institute modern export control policies, practices, regulations, and review processes. China's growing cadre of experts could aid and advise other developing countries seeking to improve their trade, border, and licensing systems in ways that also meet the demands of a global economy.

China also could play a more critical role in promoting international cooperative nonproliferation activities. Although China's reform efforts remain a work in progress, the PRC's recent entry into the Nuclear Suppliers Group and revised view of export controls as complementary to national security and sustainable economic development should help assure leaders in other developing countries that their long-term economic and security interests similarly lie in promoting nonproliferation and enhanced export controls. Libya's own recent reversal of its nuclear development efforts also reinforces the growing economic rationale for — rather than against— a nonproliferation norm among developing countries.

It is incumbent even more so, however, on the international community to recognize, promote, and engage efforts by China and other developing States to institute improved trade controls, even though these are made in the countries' own national self interest. In this endeavor, the interests of the international community and the state intersect.

Support for such activities should be given high priority in the IAEA's Technical Cooperation Programme and Nuclear Security Fund, among other international nonproliferation efforts and organizations. Although much training and assistance is available to developing countries on a bilateral and regional basis on ways to improve export controls and nuclear security, far more can be done on an international scale to help offset the costs involved in implementing basic elements of a modern export control system (e.g., computerized tracking of licenses and customs records).

Yet, recognizing the growing economic rationale that underlies the incentives and the need for enhanced, universal export controls will not suffice to effect significant change. The international community historically has been unable to summon the collective political will to act cooperatively to address new proliferation challenges until the threat of non-action has been demonstrated. The recent discoveries of proliferation to and from Iraq, Libya, North Korea and Pakistan, however, should serve this purpose, having dem-

onstrated the ease with which nuclear and other forms of proliferation can occur in today's globalized economy.

It is incumbent on the international community to recognize, promote, and engage efforts by China and other developing States to institute improved trade controls.

These cases also make clear that the threat is only likely to be met through universal support for, and implementation of, nonproliferation controls. United Nations Security Council Resolution 1540 recognizes this fact as do other recent declarations, such as the June 2004 US-European Union *Declaration on the Non-Proliferation of Weapons of Mass Destruction*. But these are only first steps; they must be acted upon forthwith and not be made contingent on developing states gaining formal entry into nonproliferation control regimes.

Much of the attention of the United States and the international community is focused on counter-proliferation, preventive action, and coercive diplomacy. These efforts are intended to thwart the determination of a number of states to develop nuclear capabilities, which is both understandable and necessary given recent events.

Non-proliferation experts and officials, however, should not lose sight of new opportunities to foster a more universal non-proliferation norm, which represents the best means of preventing proliferation over the long run. Nor should economic considerations and positive, development-oriented incentives be overlooked in preparation for the NPT Review Conference, set for May 2005. If the NPT and other non-proliferation mechanisms are to effectively address 21st century security concerns, they must also respond to today's global economic realities.

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Fast Forward by Kofi Annan → **for the United Nations**

Human Security Becomes a Unifying Force

I want to speak about my vision of a safer world and a better United Nations.

The attacks of September 11 were a wake up call. We are living in a dangerous world. We face multiple threats that did not exist when the United Nations was founded. Threats at the hands of non-State actors. Threats that cross borders in an instant. These threats affect us all, and no State acting alone can fully meet them.

Yet in responding to these threats, we are deeply divided on what approach is best to take. And on what our most urgent priorities should be. That is why I have said that the international community stands at a fork in the road.

If States fight among themselves, and do not unite to fight the common enemies of humanity, they will be doing a great disservice to the peoples of the world.

The global threats of our age include terrorism, deadly weapons, genocide, infectious disease, poverty, environmental degradation and organized crime. They will not wait for States to sort out their differences.

That is why we must act now to strengthen our collective defences. We must unite to master today's threats, and not allow them to divide and master us. And I submit that the only universal instrument that can bring States together in such a global effort is the United Nations.

I am the first to acknowledge that the United Nations is not perfect. At times, it shows its age. But our world will not easily find a better instrument for forging a sustained, global response to today's threats. We must use it to unite around common priorities — and act on them. And we must agree on a plan to reform the United Nations — and get on with the job of implementing it.

This message lies at the heart of the recent report, *A More Secure World: Our Shared Responsibility*. It is the work of the Panel of 16 men and women from around the world I appointed last year. The report contains a powerful vision of collective security. Whether the threat is terrorism or AIDS, a threat to one is a threat to all. Our defences are only as strong as their weakest link. We will be safest if we work together.

Tomorrow's United Nations would provide a more muscular framework to prevent a cascade of nuclear proliferation. We need tighter rules for inspections by the International Atomic Energy Agency.

The report puts forward a vision of a radically reformed United Nations. I share that vision. But what, exactly, would the United Nations of tomorrow look like?

Tomorrow's United Nations would unite States in preventing terrorism. The Security Council has already done a lot to curb the flow of arms, funds, and technology to terrorist cells. But we must go further.

The Panel has proposed a definition of terrorism. It makes clear that no cause whatsoever justifies the targeting of civilians and non-combatants. Member States should use

Global Security 101

UN Panel Proposes 101 Ways Forward

The UN High Level Panel on security has cited the IAEA as “an extraordinary bargain” for its work to prevent widespread proliferation of nuclear weapons. The Panel issued its report in late 2004 on security threats facing humanity, and how policies and institutions must change to beat them.

The report *A More Secure World: Our Shared Responsibility* includes 101 recommendations on UN reform and for forging a global response to threats of terrorism, poverty, disease, weapons of mass destruction and civil violence. Its 16 authors comprise former Heads of State, foreign ministers, security, military, diplomatic and development officials.

The Panel singled out the IAEA’s mission. “As the institutional embodiment of the Treaty on the Non-Proliferation of Nuclear Weapons and of considerable long-term success in preventing widespread proliferation of nuclear weapons, the International Atomic Energy Agency (IAEA) — with its regular budget of less than \$275 million — stands out as an extraordinary bargain.”

Responding to the report, UN Secretary General Kofi Annan called for urgent action on its recommendations to strengthen the non-proliferation regime and ward off the possibility of a nuclear attack. Including:

- 1 That the Agency’s Board of Governors recognize the Additional Protocol as today’s standard for Agency safeguards;
- 2 To provide incentives for States to forego the development of uranium enrichment and reprocessing facilities; and
- 3 The negotiation of a verifiable fissile material cut-off treaty that ends production of highly enriched uranium.



As importantly, the Panel emphasized the human dimensions of security, and the need for greater effort for sustainable development.

In regard to climate change, it noted, “modern economies...should undertake a special effort to devise climate-friendly development strategies. Member States should place special attention on the development of low-carbon energy sources, including natural gas, renewable power and nuclear power...”

The Panel recognized that “nuclear energy, in the view of many, is an important source of power for civilian uses and may become even more crucial in the context of a worldwide effort to reduce dependency on fossil fuels and emissions of greenhouse gases.”

The recommendations will help set the agenda for a special UN summit scheduled for world leaders in September 2005.

Members of the panel were Chairman Anand Panyarachun, former Prime Minister of Thailand; Robert Badinter (France), Gro Harlem Brundtland (Norway), Mary Chinery-Hesse (Ghana), Gareth Evans (Australia), David Hannay (Britain), Enrique Iglesias (Uruguay), Amr Moussa (Egypt), Satish Nambiar (India), Sadako Ogata (Japan), Yevgeny M. Primakov (Russia), Qian Qichen (China), Nafis Sadiq (Pakistan), Salim Ahmed Salim (Tanzania), Brent Scowcroft (United States) and Joao Baena Soares (Brazil). Stanford University professor Stephen Stedman guided their research and compiled the report.

For more information about the report, visit the UN web pages at www.un.org/secureworld/

it to enact a full anti-terrorism convention. The United Nations must make clear that it has zero tolerance of terrorism — of any kind, for any reason. We must also take strong multilateral action to keep deadly weapons out of dangerous hands.

Tomorrow’s United Nations would provide a more muscular framework to prevent a cascade of nuclear proliferation. We need tighter rules for inspections by the International Atomic Energy Agency. We need incentives for States to forego domestic uranium enrichment and reprocess-

ing facilities. And we need a verifiable fissile material cut-off treaty.

Tomorrow's United Nations would be an organisation through which all States get much more serious about promoting development.

All States must boost their support for achieving the UN Millennium Development Goals. This will save lives in poor countries. It will reduce violent conflict and the appeal of radicalism. It will help secure good governance and democracy. And it will help build capable States that can deal with threats in their own borders before they harm their own citizens and others.

Biological security also needs more attention. We must fight AIDS with far greater determination. We need a major initiative to build public health capacities in poor nations. And the Security Council and the World Health Organization should work more closely to prepare for any disease outbreaks, and improve our defences against bio-terrorism.

Tomorrow's United Nations would also provide a framework for the use of force in which all States should have confidence. Under Article 51 of the UN Charter, every State has the inherent right of self-defence. This includes the right to take pre-emptive action, if it faces an imminent threat. Beyond that, the report suggests a number of guidelines to make Security Council decisions on the use of force more consistent and more effective.

The Security Council must be proactive to prevent nightmare scenarios, such as a nuclear terrorist attack, from unfolding. The Council must stand ready to authorize the preventive use of force in appropriate circumstances.

The report also recognizes something I have long advocated: State sovereignty is not a license for mass murder. Governments must assume their responsibility to protect their citizens. Where they do not, the Security Council must assume its responsibility to protect. The Council may sometimes have to authorize the use of force to stop mass atrocities inside sovereign States. States must be prepared to back up the Council's decisions — not just with talk, but with troops.

Force should never be used lightly. It should always be a last resort. And if we act early, we are less likely to need it. Otherwise, we can find ourselves facing appalling situations.

We face such a situation today in Darfur. The international community must support the African Union's efforts to deploy troops and achieve a political solution. We must work to finalize the North-South negotiations. And we must build on that momentum, to secure peace throughout Sudan.

One of the most important contributions the United Nations makes to global security is its work in re-building war-torn countries. Our record in Namibia, Mozambique, Tajikistan, Cambodia, El Salvador, Guatemala, and East Timor speaks for itself. And our work continues today in Haiti, Kosovo, Liberia, Sierra Leone, and elsewhere — including Afghanistan and Iraq.

The United Nations achieves important results in peace-building around the world. But our efforts must be more strategic and better resourced. Tomorrow's United Nations must have the capacity to move fast, and see every job through. I warmly welcome the Panel's call for a Peace-building Commission, supported by greater Secretariat capacity.

And I also firmly believe that tomorrow's United Nations must have reformed and revitalized institutions:

- ◆ A Security Council that reflects the 21st century world, not that of 1945.
- ◆ An overhauled Human Rights Commission and a strengthened High Commissioner for Human Rights.
- ◆ And a Secretariat that is more open, more accountable, and better able to recruit and promote the best people.

That is the vision of the United Nations that I believe in. That is the vision I am working to achieve.

Next September, world leaders come together in New York to review progress since the Millennium Declaration. When they do, they must reach consensus on basic principles and clear priorities. And they must take decisions to build tomorrow's United Nations.

I established the Panel to open some windows and let in fresh air and new ideas. The period ahead will determine whether the winds of change will blow through the corridors of the United Nations.

Many of the important recommendations are directed at Member States. They will have to decide.

But I have no doubt that the United Nations must change.

Kofi Annan is Secretary-General of the United Nations. His article is drawn from his address to the Council on Foreign Relations in Washington, D.C., 16 December 2004. Email: mediainfo@un.org



by Michael Douglas

A UN Messenger for Peace Strives to

End the Nuclear Threat

In 1945

the United Nations was founded with one major goal in mind, and I quote, “to save succeeding generations from the scourge of war.” The founders noted that twice in the 20th Century major wars had brought “untold sorrow to mankind.” Since its founding, 191 nations have joined the UN.

We have no other place where all nations can work together for peace, a place where we can use verbal conflict rather than armed conflict to solve problems. And often, the UN, with US support, has provided armed force to help ensure the peace.

The entire planet now faces global challenges including ensuring bio-diversity and ending the destruction of thousands of species; reversing the depletion of fishing stocks; controlling ocean dumping; preventing ozone depletion; halting global warming; controlling and eliminating terrorism and weapons of mass destruction; fighting pandemic diseases; ending the tragedy of crushing poverty and lack of clean drinking water; and addressing crises arising from failed States. No nation or even a small group of nations can succeed in addressing these issues alone.

The United Nations is based on political insights that have led to successful governance principles and enhanced the wealth of nations. These values include market freedoms, religious liberty, an independent judiciary, government transparency and accountability, democracy, and a high level of respect for civil liberties and human rights. They have evolved into nearly universal goals and norms. The countries that have adhered to these principles are the most secure and healthy.

The United Nations is guided by such countries, and simultaneously provides the only viable forum for the expression of the aspirations of the poor and the weak.

The United Nations is guided by such countries, and simultaneously provides the only viable forum for the expression of the aspirations of the poor and the weak.



The establishment of international norms of conduct is where idealism informs realism. We are called to nothing less than moral leadership.

The establishment of international norms of conduct is where idealism informs realism. We are called to nothing less than moral leadership. When moral leadership is coupled with power, it galvanizes the world. Moral leadership requires living up to one's promises and commitments.

Fulfilling our promises in the Nuclear Non-Proliferation Treaty, now with 189 member States, must be a primary aim. This Treaty, essential to our security, will be reviewed formally in 2005 at the UN. The International Atomic Energy Agency (IAEA) performs a vital role under the Treaty — it's the world's nuclear inspectorate to check that countries are not pursuing nuclear weapons. I've had the chance to visit the UN and IAEA at their headquarters in Vienna, Austria, and know how tough the job can be. We need to back the IAEA and make sure it stays strong in our fight against nuclear weapons.

At the 2000 Review of the Treaty, the US along with all other parties to the Treaty made a pledge. Let

me remind you of what was promised, and I quote: “an unequivocal undertaking by the nuclear weapons States to accomplish the total elimination of their nuclear arsenals... leading to nuclear disarmament...”

There are tens of thousands of nuclear weapons in the world, over 90% are possessed by Russia and the US. Most are many times more devastating than those used on Hiroshima.

The arsenals of Russia and the US are armed, targeted and poised, waiting for three short computer signals to fire. These hair trigger devices represent the devastation of approximately 100,000 Hiroshimas and pose a horrific threat to life. The use of a nuclear weapon could take place by accident or design by States, or even terrorists. These weapons pose an unacceptable risk to the planet.

We must demonstrate our unambiguous commitment to fulfill our promises. Otherwise, the prospect of more nuclear weapons States, and the construction of new nuclear weapons, will only increase human peril. The world needs a more effective non-proliferation and disarmament regime and is looking to us for leadership.

Michael Douglas is an award-winning film and television actor and producer who has demonstrated a strong commitment to disarmament, including nuclear non-proliferation and stemming the tide of small arms and light weapons. He was appointed a UN Messenger of Peace in 1998. This essay is based on a keynote address delivered at the US Congress, October 2003, for a presentation on “The Limits of Unilateralism”.

United Nations Messengers of Peace are individuals who possess widely recognized talents in the fields of arts, literature, music and sports and who have agreed to help focus worldwide attention on the work of the United Nations.

Dr. Jane Goodall is best known for her pioneering work with chimpanzees in Tanzania. In recognition of her contribution to the advancement of research, education and advocacy on environmental issues, the UN Secretary-General appointed her a member of an advisory panel to assist in promoting the goals of the World Summit on Sustainable Development. Dr. Goodall has championed the promotion of peace worldwide in the context of the International Day of Peace.



Opera singer Luciano Pavarotti is strongly committed to alleviating the suffering of children affected by war. For more than a decade, he has performed at and organized concerts to benefit children stricken by war in three continents. In recent years, proceeds of the Pavarotti and Friends annual concerts have been donated to education and health projects for Afghan refugee children in Pakistan, Angolan refugees in Zambia and Iraqi refugees.



Three-time World Heavyweight Champion boxer Muhammad Ali is devoted to the pursuit of peace. He brings people from all races together by preaching “healing” to everyone irrespective of race, religion or age. Over the years Mr. Ali has been a relentless advocate for people in need and a significant humanitarian actor in the developing world, supporting relief and development initiatives and hand-delivering food and medical supplies to hospitals, street children and orphanages in Africa and Asia.





The ABCs of Initiatives for Disarmament & Non-Proliferation Education by Masako Toki & William C. Potter

Education and training are among the most important but underutilized tools for promoting disarmament and non-proliferation. Although few national governments or international organizations have invested significantly in such training programs, there is a growing recognition among States of the need to rectify this situation. This positive development is reflected in the broad support for recommendations of a UN study on Disarmament and Non-Proliferation Education and in related initiatives within the review process of the Nuclear Non-Proliferation Treaty (NPT).

In view of the forthcoming 2005 NPT Review Conference, it is useful to take stock of the implementation of the UN study's recommendations. In particular, it is important to observe the progress that has been made within the context of the NPT review process, as well as the obstacles that must be overcome if the full potential for disarmament and non-proliferation education is to be realized.

The UN Study: How to Think About Issues

The UN study was commissioned by Secretary-General Kofi Annan under a General Assembly resolution in 2000 that was sponsored by Mexico and eleven other nations. In August 2002, the convened group of experts from Egypt, Hungary, India, Japan, Mexico, New Zealand, Peru, Poland, Senegal, and Sweden reported the study, presenting Secretary-General Annan with a consensus document that included 34 practical recommendations. The General Assembly endorsed the study in November 2002 and conveyed its recommendations for implementation by Member States, the UN and other international organizations, civil society, non-governmental organizations (NGOs), and the media.

Space does not permit an enumeration—much less an analysis—of the study's 34 recommendations. All are informed, however, by the premise that contemporary disarmament and non-proliferation education must strive to teach “how to think” rather than “what to think” about peace and security issues. The key educational objective, in other words, is developing critical thinking skills. This objective may be facilitated, for example, by promoting participatory learning, introducing disarmament and non-proliferation at all levels of formal and informal education, utilizing new information and communication technologies, providing on-the-job training opportunities as a supplement to classroom education, and improving liaison among relevant UN bodies.

Implementing the Recommendations

In November 2004, UN Secretary-General Annan reported to the General Assembly on the implementation of the study's recommendations. The study—as well as a new General Assembly resolution adopted on the subject—illustrate both the promise of disarmament and non-proliferation education and the difficulty of moving from agreement about broad principles to implementation of concrete and practical measures.

The Secretary-General's report conveyed useful responses from Hungary, Mexico, New Zealand, the Russian Federation, Sweden, and Venezuela on steps they have taken with respect to implementing the UN study. New Zealand's commentary is especially detailed and could serve as model for future reports by other States. The report by the Russian Federation also is significant for its rich content and the fact that it represents the first formal engagement by a nuclear-weapons State in the reporting process. In addition, informative reports were provided by the UN Department for Disarmament Affairs, the UN Department of Public Information, the UN Institute

for Disarmament Research, the International Atomic Energy Agency, UN University, and the University for Peace, as well as five NGOs.

Less encouraging is the very small number of UN Member States that have provided reports to date. Particularly surprising and discouraging is the failure of even half of the Member States that participated on the Group of Experts to submit their responses in a timely fashion. To some extent, the low reporting rate is probably a function of the newness of the reporting mechanism, the lack of obvious points of contact in some government entities, and the fact that many States were unaware of the reporting deadlines.

A more positive sign is the significant increase in the number of sponsors for the latest UN General Assembly resolution in 2004 addressing disarmament and non-proliferation education. Thirty-one States co-sponsored the resolution – including all States that participated in the UN study, as well as two States with demonstrated nuclear-weapons capabilities (France and India). The resolution, among other things, places “Disarmament and Non-Proliferation Education” on the provisional agenda for the 61st session of the General Assembly—an indication of the UN body’s recognition of the need to consider the topic on a regular basis.

The NPT Review Process

The education issue was initially raised in the NPT review process in April 2002 at the first session of the Preparatory Committee (Prep Com) for the 2005 NPT Review Conference. Japan, Kyrgyzstan, New Zealand, and Sweden were among NPT States that made reference to the issue, and the importance of education for “strengthening disarmament and non-proliferation for future generations” was noted in the Chairman’s Factual Summary of the Prep Com. At the 2003 NPT Prep Com many more States spoke positively about the role of education as a disarmament and non-proliferation tool, and Japan, on behalf of itself and seven other States, submitted a working paper. In addition, the Prep Com Chairman’s Factual Summary noted that States welcomed the report of the UN Experts Group and were encouraged to include in their education and training programs information about the Treaty, its Review Conferences, and the work of States to implement the Treaty. An even larger number of States, including three of those possessing nuclear weapons, supported the concept of disarmament and non-proliferation education at the 2004 NPT Prep Com. Despite widespread support for the issue, including a new working paper introduced by Japan on behalf of itself and seven other states, the 2004 Prep Com was unable to agree on any recommendations (on education or any other issues) to the 2005 Review Conference.

Next Steps

It has proved relatively easy in the NPT context to gain near consensus among NPT States for support of the general

concept of disarmament and non-proliferation education. The more difficult but important task now is to translate that support in principle into meaningful action that promotes the NPT objectives and furthers its full and effective implementation.

Because of its recent origin, there is not yet a precedent for where the education issue belongs on the agenda for the NPT Review Conference. Although the topic tended to be discussed primarily with reference to the cluster of disarmament issues in the 2002, 2003, and 2004 Prep Coms, an argument can be made that disarmament and non-proliferation education is equally relevant to the issues of non-proliferation, safeguards, compliance, peaceful use of nuclear energy, export controls, nuclear weapon-free zones, and regional issues.

For example, one might seek support from the NPT States Parties at the 2005 Review conference for the following measures.

Non-proliferation: NPT States should be encouraged to allocate additional financial resources to develop, enhance, and support non-proliferation education activities, including the provision of fellowships to graduate students for advanced, multi-disciplinary training in non-proliferation. States should be encouraged to establish internship programs within relevant governmental agencies, and international organizations with responsibilities for non-proliferation should provide graduate students with on-the-job training. Relevant governmental agencies, in cooperation with NGOs, should be encouraged to develop and disseminate user-friendly non-proliferation educational materials to audiences at all educational levels.

Safeguards: NPT States should be encouraged to hold regional seminars in cooperation with the IAEA to facilitate the conclusion of and enhanced adherence to safeguards agreements and the additional protocol. The IAEA should be encouraged to develop more user-friendly and interactive on-line information materials, and to serve as the information clearinghouse on all issues associated with international safeguards.

Compliance: NPT States should be encouraged to develop educational materials addressing the importance of compliance with all NPT provisions, as well as the consequences on proliferation. States should cooperate with academic and research institutes to organize seminars with a view to promoting full compliance with all NPT provisions.

Peaceful Uses: The nuclear industry and academic institutes should be encouraged to partner with NPT States and relevant international organizations to identify, assess, and disseminate information about new approaches—both technical and political—for promoting peaceful nuclear energy that minimize its potential abuse for military purposes.

Export Controls: NPT States, in cooperation with regional and international organizations, should be encouraged to increase

their support for training courses on non-proliferation export controls for governmental officials and law enforcement officers. Government agencies dealing with export controls should be encouraged to disseminate more public information about export control mechanisms and their contribution to non-proliferation. Academic institutes and non-governmental organizations should be encouraged to organize training courses and seminars with a view to facilitating the implementation of UN Security Council Resolution 1540 on the non-proliferation of weapons of mass destruction.

Disarmament: NPT States should be encouraged to cooperate with academic institutions to develop model university curricula on nuclear disarmament and non-proliferation. States should be encouraged to increase their support for the disarmament and non-proliferation activities of the UN Department for Disarmament Affairs, UNIDIR, and other international organizations in pursuit of their implementation of the recommendations of the UN study.

Nuclear Weapon-Free Zones (NWFZs), and Regional Issues: NPT States and regional organizations such as the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL) should be encouraged to disseminate more information to the general public on the contributions of NWFZs to disarmament, non-proliferation, and regional security. Academic institutes and NGOs should be encouraged to analyze the lessons learned from extant NWFZs with an eye to making recommendations about means to accelerate the entry into force of NWFZs already negotiated and the conclusion of additional NWFZs on the basis of agreements freely arrived at by States in the region.

Forging Active Partnerships

Major strides have been taken in a relatively short period of time to regularize the consideration of disarmament and non-proliferation education at major fora such as the First Committee of the UN General Assembly and the NPT review process. Much more, however, needs to be done if the potential of the practical steps recommended by the UN Group of Experts is to be realized.

Among the obstacles that will have to be overcome are limited finances, bureaucratic inertia, competing priorities, and questionable political will on the part of many national governments. These constraints, however, are always present and should not be insurmountable given the compelling logic of the UN study's recommendations and as long as the natural constituencies for disarmament and non-proliferation education are mobilized.

More than anything, successful implementation of the steps called for by the UN study will require an active partnership among national governments, international organizations, educational institutions, and civil society. Hopefully, such an education-oriented coalition will find expression at the 2005

Resources on the Web

Resources on disarmament and non-proliferation education are increasingly available on the Internet. The UN Department for Disarmament Affairs has launched new features on its web site that include links to academic institutes, governmental centers, NGOs and other bodies engaged in educational efforts. Check the pages at <http://disarmament2.un.org/DNPE.nsf>

As part of its mission to combat the spread of weapons of mass destruction (WMD) by training the next generation of nonproliferation specialists and raising global public awareness on WMD issues, the Center for Nonproliferation Studies (CNS) has developed a series of tutorials for non-proliferation and disarmament education. Among these tutorials, the NPT Tutorial has been designed to educate and provide useful material about the treaty through interactive text and enriched multimedia segments, including timelines, maps, and numerous links to relevant resources. The tutorial is a self-paced learning environment accessible through the web to everyone. In addition to the NPT tutorial, which was created in 2002 and recently updated in response to recent changes in the non-proliferation environment, CNS has developed a Chemical Warfare Tutorial, a Biological Warfare Tutorial and a Radiological Terrorism Tutorial. Please see these tutorials at: http://www.nti.org/h_learnmore/h3_tutorial.html.

Among other resources are teaching guides developed by the Monterey Institute's Center for Nonproliferation Studies through its Critical Issues Forum (CIF). The Forum seeks to increase awareness of disarmament and non-proliferation issues and to engage and recruit the next generation of specialists. CIF is designed to involve high school students and teachers in issues of proliferation and control of weapons of mass destruction. Check the pages at www.criticalissuesforum.org.

More information on the UN Study (UN document A/57/124) and General Assembly resolutions (GA 57/60, Nov. 2002 and GA 59/93, Nov. 2004) on disarmament and non-proliferation education is available on the web pages of the UN Department for Disarmament Affairs at <http://disarmament2.un.org/education>.

NPT Review Conference, which will be an opportunity to demonstrate that even diplomats are susceptible to learning about disarmament and non-proliferation.

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Rethinking A Dangerous Game of Chance

by Faisal Bari

Why does a country, in this day and age, need to gamble on nuclear weapons?

A Pakistani Educator takes a close and personal look at South Asia.

In South Asia, the main arguments fall in the following categories. India says it needs them to show to the world that it is a world power that should have a seat on the Security Council, that should be taken seriously in the world and that should be taken at par with China. Pakistan says that it needs them to protect itself from India and to have some form of parity, in power terms, with the much larger India.

Then there are a host of smaller arguments too. Nuclear capability shows technological capability, it shows advancement in science and technology, and it can have spillovers in other areas of science, technology as well as industry.

But do any of these arguments make any sense? Will India be taken more seriously if it has nuclear capability? But India has had them since 1974, if the world was not taking it seriously even then, what will change now? India is a one billion strong large country with tremendous potential and actual achievements in all areas of human endeavour. Whether it is pure science (the Nobels that Indians have won bear testimony to that), technology (India's IT industry and heavy industry), social science (again look at the number of academics India has produced), commerce and trade, religion or the arts (Indian cinema, sculpture), India has made worthy contributions in all fields. This is more than enough for anyone to take India seriously. A gadget, called the nuclear weapon, and one that has the power to kill millions, can evoke fear in others but not awe or respect. In fact, the immorality of the implicit or explicit threat

involved in keeping this weapon, can only reduce respect, it cannot increase it.

The same is true of Pakistan. The world will not think of us any differently if we have this weapon. Since 1998 we have only added to our isolation by keeping this weapon, it has not endeared us to the world in any way. The bomb also does not convince anyone in the world about our scientific ability or technological advancement.

This is fairly old technology (the bomb has been around since 1940s), and more importantly, the modular nature of technology allows us to do something more advanced in one field without similar progress in a broad spectrum of fields. Our human development indicators show, much better, where we actually stand.

We do not think of these issues in an organised, cool and detached manner. We entangle the issue of nuclear weapons with patriotism. The Prime Ministers have been quoted as saying that "only a traitor of Pakistan will freeze or downsize the nuclear programme." This is, to say the least, a strange thing to say for surely the nuclear programme is not an article of our faith, and the programme is for us and not the other way round.

A good source for all of these arguments, and more, is *Out of the Nuclear Shadow*, edited by Smitu Kothari and Zia Mian (Oxford University Press, 2003). The editors, established names in this area, have brought together a very nice variety of articles on the issue of the nuclearization of South Asia. We hear enough jingoistic talk; this book gives us the other side. And with the likes of Eqbal Ahmed and Amartya Sen colouring its pages, the book is a must read. It also has an excellent article by Arundati Roy

on “The End of Imagination”. Such is truth regarding the nuclearization decision.

I think most people will agree that nuclear weapons, which target civilians by hundreds of thousands, poison the earth and the surroundings, are difficult and costly to build and maintain, have a tendency to have costly accidents and so on, are a weapon that the world can do without. I think that most people will agree that if we can have a nuclear-weapon-free world that would be better for all. If they allow this, then the position of the existing countries that have stockpiles of nuclear weapons, and these include most of the developed countries, comes out in very poor light. They, and here India, Pakistan and even the aspirants have a point, are not in a position to tell the rest of the world that they should not have these weapons. But this does not mean others have a “right” to develop these weapons either. The “rights” based talk does not make sense here. If someone is doing something that is morally objectionable and odious, it neither gives the others the right to do it, nor does it make it a better outcome for the world. So India and Pakistan should not base their decision on “rights”. There are no rights to nuclear weapons.

India and Pakistan can point out the hypocrisy in the position of these other countries, and then say that they are making a “strategic” decision to have nukes because of this. But it is, as mentioned above, a “rights” issue. On strategic grounds let us look at the decision of India and Pakistan to have nuclear weapons. India wanted to be taken seriously in the world, and has justified its weapons on the basis of possible threats from Pakistan and of course China. But none of these reasons seem to be valid. We have already said that countries are not taken seriously due to nuclear weapons; they are taken seriously on the basis of their overall development, economic excellence and overall position in the world order. Look at China and Japan. India’s relations with China have improved tremendously and are not a source of the kind of threat that should have forced India into nuclearization, and Pakistan could never have threatened India to the extent that it would need nuclear weapons.

Pakistan has cited India as the main reason for its 1998 explosions. This position needs more careful consideration. It is true that Pakistan lives in a relatively hostile environment and needs to have reasonable level of protection. But does this mean that we should have the ability to destroy almost all of South Asia? That is the question. By having the capability of destroying Delhi, Bombay and some of the other larger cities, what does Pakistan want to stop India from doing? The general impression is that if Pakistan’s existence comes under question, and our back is against a wall, we might threaten to use these weapons or actually use them. This sort of strategic thinking is very iffy. In game theory, the way to rigourously analyse such situations, such

games are usually characterised by multiple equilibria and these tend to be very sensitive to the assumptions one makes. In this case we seem to be assuming that even in these dire straits we will have the ability to launch a nuclear response, the other side would not have taken out these weapons already, that the world will sit quietly by and watch us die and kill lots of the “enemy” too. Change these assumptions a little and we could have a very different result. What makes us think that we will ever be in that tight a situation, and even in such a situation the rest of the world will just let us drift towards a nuclear holocaust?

Then there are the arguments that nuclear weapons provide deterrence. This too is very iffy. We did not have a war with India for 30 years even though we did not have nuclear weapons and they had exploded a device in 1974. But even after our explosions in 1998 Kargil did happen. So where is the evidence for deterrence? Even the Cold War does not give us any comfort on this count. We cannot say that the USSR and US did not fight due to nuclear weapons. There is no counterfactual possible here.

There is definitely resistance to thinking against doing away with nuclear weapons. Part of it might be genuine, but a lot of it is also drummed up jingoism and misplaced patriotism. Strong interest groups have a stake in keeping these weapons and in trading on the constituency of fear. Needed are clear thinking, and a consensus at the level of the society on this. We should be thinking about what we need to do multilaterally in world fora, bilaterally in talks with India and unilaterally, for ourselves. We should keep in mind that nuclear weapons have a cost too. They are expensive to build, expensive to maintain, and have a certain probability of costly accidents. Should poor and developing nations, like India and Pakistan, be really in this game?

But cost aside, the main argument that India and Pakistan need to flesh out is the reason for these weapons. There is no moral justification for these weapons, for us, or the rest of the world. What we have to think about is if there is a strategic justification for them and if that is really there. The usual discourse says there is, but most authors in the *Out of the Nuclear Shadow* book think there is not. We need to hear them too to make up our mind more dispassionately. Only then will India and Pakistan, together and even unilaterally, move forward on this issue.

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Shared Pledge

Shared Vision

by Ali Boussaha
&
Christian Sina Diatta

The IAEA & Africa's New Partnership

The New Partnership for Africa's Development (NEPAD) is a pledge by African leaders to eradicate poverty and to promote sustainable growth and development. NEPAD is a "new framework of interaction with the rest of the world, including the industrialised countries and multilateral organizations." The agenda is based on regional priorities and development plans and its implementation relies on African ownership and management.

As a UN system organisation, the IAEA strongly supports the priorities identified in the Millennium Declaration and the New Partnership for Africa's Development. As a technical agency, the IAEA shares its recognized core competencies and technical expertise in support of NEPAD goals. Efforts aim at strengthening institutional capacity building in nuclear sciences and technology and promoting the sustainable application of nuclear techniques for social and economic development.

The IAEA has a membership of 34 African countries. The Agency supports them under its technical cooperation programme through provision of expertise, training opportunities and equipment in priority areas identified by the countries themselves.

For many African Member States, meeting basic human needs through the implementation of poverty alleviation strategies remains the top priority on the agenda for

national development plans and international cooperation programmes. In the context of sustainable development, special attention is being paid to enlarging the contribution of isotopes and nuclear techniques in major areas of economic and social significance and to promoting regional cooperation in nuclear science and technology related fields. As a partner in development, the Agency has promoted and undertaken programmes to support African countries' efforts to address priority development issues particularly in the areas of health care, food and agriculture and water resources development.

The IAEA technical cooperation mechanism includes support to the African Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology (AFRA), which today has a membership of 30 African countries. For 2005-2006, the IAEA has allocated over \$37 million to Africa from its Technical Cooperation Fund (TCF), out of which \$12.5 million is earmarked to support regional cooperative projects.

In total, eight AFRA Regional Designated Centres have been empowered by AFRA Member States to help promote peaceful applications of nuclear techniques. They target areas of non-destructive techniques, mutation breeding and biotechnology, radiation oncology and medical physics, radioactive waste management, irradiation processing and maintenance of scientific equipment. Improving national nuclear institutions capability as well as manage-

ment skills of African managers, decision-makers and scientists at all levels of responsibility is one of the highest priorities of the AFRA programme. Particular attention is being paid to service-oriented activities that can generate income and contribute towards the sustainability of scientific and technical institutions. In various areas, regional cooperation is being promoted through networking to increase impact and to further self-reliance and long-term sustainability goals on the continent.

Ridding the Pest: Agriculture and Food Security

The IAEA's work in Africa supporting NEPAD's strategic priorities related to agriculture and market access is aimed at poverty alleviation and food security goals. Assistance deals mainly with the application of radiation and isotopes in pest control, with special emphasis on tsetse eradication, and improving crop production and increasing livestock productivity through better disease control, artificial insemination and feed supplementation. In terms of project funding, 20.8 % of the TCF resources are allotted under the technical cooperation programme for 2005-2006 to food and agriculture.



Among the many projects identified by African countries, the IAEA is actively supporting the initiative of the African Union (AU) to carry out and co-ordinate the Pan African Tsetse and Trypanosomosis Eradication Campaign (PATTEC), which was launched in Ouagadougou, Burkina Faso in October 2001. The objective is to free sub-Saharan Africa from one of the main persisting constraints to sustainable development. The tsetse infests 37 sub-Saharan African countries, 32 of them among the 42 heavily indebted poor countries in the world.

The Agency contributes directly in the field to the implementation of PATTEC's Plan of Action by support-

ing activities in several countries. The Agency support focuses on the transfer of the Sterile Insect Technique (SIT) in the context of area-wide integrated pest management (AW-IPM) in support of creating tsetse-free zones in selected areas in African Member States. Assistance has been provided to establish/upgrade tsetse-rearing facilities in Burkina Faso, Ethiopia and the United Republic of Tanzania; to perform test sterile fly release in Mali; to develop standardized recording, reporting and management system for field operations; to collect entomological and veterinary baseline data in target areas; and to carry out genetic studies of tsetse fly populations. Under the 2005-2006 programme, the Agency will continue providing support through national projects to activities connected to PATTEC in Botswana, Burkina Faso, Ethiopia, Kenya, Mali, Senegal, South Africa, the United Republic of Tanzania and Uganda. Under a regional project, support will be given to the Member States' relevant activities in terms of awareness raising, technical planning, training and institutional capacity building.

The IAEA's work in Africa supporting NEPAD's strategic priorities related to agriculture and market access is aimed at poverty alleviation and food security goals.

Animal health and productivity is one special area with a focus on developing a regional capability for production and distribution of critical diagnostic kits. Playing key roles were the IAEA technical cooperation programme, with the technical backstopping and support from the International Laboratory of Molecular Biology (ILMB) at the University of California, Davis. Collaboration led to the transfer of technology to Africa for the production by means of advanced molecular biology techniques, of the indirect enzyme linked immunosorbent assay (iELISA) for the detection of the presence of rinderpest virus antibodies in livestock. This sensitive kit allows one to distinguish vaccinated from infected animals. This is essential for epidemiological studies and to prevent the spread of rinderpest while allowing the sale and export of vaccinated animals to disease-free regions. The rinderpest iELISA was accepted as a sero-surveillance test by the Office International Epizooties (OIE) in January 2004.

The Agency is also involved in combating desertification. One project covers the West African Sahel (Burkina Faso, Mali, Niger, and Senegal). The principal objective is

to help intensify sustainable food production in rain-fed areas while combating desertification.

Other activities are related to crop production. Several improved crop varieties have been developed and disseminated. IAEA assistance will continue to support efforts to develop high-yielding crops, drought-resistant crops and to rehabilitate saline lands. A substantial part of the programme pertains to the use of biotechnology combined with mutation breeding, notably for the improvement of neglected traditional crops, which usually provide a large part of protein for the rural population.

Healthy Outlook: Better Medical Care

In terms of project funding, over 27% of the TCF resources allocated for Africa for 2005–2006 are allocated to human health. The IAEA human health programme in the region focuses on the use of radiation and isotopes to prevent, diagnose, and treat disease, and also assists counterparts with medical equipment maintenance and networking using the latest information and communication technologies.



The IAEA concentrates on management of cancers, nuclear medicine for in-vivo and in-vitro investigations and human nutrition. Over the past years, more than 30 nuclear medicine and five radiotherapy centres have been established in Africa and at least another 40 radiotherapy hospital facilities have been upgraded.

Recently, special efforts have been made against some major health threats. The IAEA, for example, is assisting several sub-Saharan countries to enhance the capabilities of national referral centres to diagnose drug resistance in malaria and tuberculosis.

Among the most significant issues is the HIV/AIDS pandemic. As with other African development partners and relevant multilateral organizations, the IAEA is strongly committed to contribute to the international effort to fight this ever-expanding scourge. A major regional project focuses on building the necessary technical capacities

and human resources to enable Africa to undertake a programme of vaccine research and trials specific to African needs and requirements. It is expected that the involvement of the IAEA in the global effort towards tackling the HIV/AIDS scourge will bring institutional, operational and technical capabilities that can contribute to UNAIDS and its network.

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HIV/AIDS and malnutrition often operate in tandem, both at the level of the individual and the society. Poor nutritional status increases the risk of infection and progression of the disease. Another IAEA regional project aims to reduce all forms of malnutrition among the most vulnerable groups, including the HIV/AIDS infected, through the use of stable isotopes in evaluation and monitoring of nutrition intervention programmes/projects. Furthermore, a new five-year programme under AFRA will concentrate mainly on the management of the most common cancers, particularly HIV-related cancers.

Water & Energy: Twin Needs

Rational water resources management is a major goal in the context of sustainable development and crucial in a region of pronounced scarcity.

Intensive assistance over the past years has helped the majority of African Member States gain a better understanding and quantifiable estimates of their groundwater and surface water resources. They have helped to design and implement national strategies for exploitation and management of these resources and to enhance the safety of dams and artificial reservoirs.

Greater awareness of isotope hydrology techniques has been promoted amongst national authorities and the IAEA-supported programme has succeeded in developing local capabilities and making a tangible impact in participating countries. The 2005-2006 technical cooperation programme includes over 20 national and regional projects. Special emphasis will continue to be placed on the contribution of isotope hydrology techniques addressing practical problems related to water resource management in shared aquifers.



Energy is essential for sustainable development. NEPAD recognizes that limited access to the services provided by modern energy represent a major obstacle to social development and hinders the fight against poverty. Countries in the region need to strengthen their capacity in managing energy sector development in order to promote sustainable use of national resources, increase access to affordable energy services and thereby foster economic growth and improve living conditions of the population in the long-term.

The IAEA is providing assistance to 14 African countries with the aim to transfer methodologies and tools for energy demand forecasting, integrated energy planning, and least-cost electricity systems. The assistance in the energy sector is relevant to NEPAD short-term programmes. Possibilities exist of establishing linkages with NEPAD energy projects, which include studies for sub-regional interconnections and power systems and support to capacity building. Further integration of IAEA work with NEPAD projects would contribute to capacity building and facilitate regional networking and cooperation among energy system specialists.

Next Steps: IAEA & NEPAD

In these and other areas the IAEA remains committed to supporting NEPAD and endeavours to respond to the major development challenges of the African region. Future IAEA activities will further strengthen the support to government plans and regional initiatives aiming at improving health care, food and agriculture, water resources development, pest control and eradication, combating diseases in livestock and crops, and managing natural resources in the context of sustainable development.

In this regard, support to institutional capacity building through human resources development and Technical Cooperation among Developing Countries (TCDC) will continue to receive special attention to respond to the major development challenges of the African region in line with the priorities identified by NEPAD and Member States. A

new regional project will aim to incorporate and strengthen the teaching of nuclear techniques that address important developmental problems in curricula of institutions of higher learning, especially in Least Developed Countries (LDCs). Furthermore, the IAEA is helping African countries close the digital divide. The emphasis is on expanding access to and use of Information and Communication Technologies (ICT) and setting up “tele-centers”. New ICT “tele-centres” have been established in four countries, about 50 specialists were trained on methodology and pedagogy, and new educational materials were developed.

The promotion and development of nuclear techniques for socio-economic development requires an adequate radiation safety infrastructure to protect ionizing radiation workers, the public at large and the environment from the hazards associated with the misuse of radiation. Significant efforts are being deployed to improve the radiation protection infrastructure in all African Member States. They include the establishment of a regulatory framework and enforcement of legislation and regulations and special assistance for the safe conditioning and disposal of radioactive sources.

The challenges of NEPAD and the Millennium Development Goals call for better coordination, more coherent approaches and increased synergies among UN agencies working in Africa.

The challenges of NEPAD and the Millennium Development Goals call for better coordination, more coherent approaches and increased synergies among UN agencies working in Africa. The IAEA has a special interest in developing active partnerships with other sister agencies especially in areas related to meeting basic human needs such as the control of human communicable diseases (HIV/AIDS, malaria, tuberculosis), water resources development, and land management. The hope is that in the months and years ahead, more support can come to African countries in their work to cut poverty and promote sustainable development.

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Treaty on the Non-Proliferation of Nuclear Weapons

The world's Treaty on the Non-Proliferation of Nuclear Weapons (NPT) opened for signature in London, Moscow and Washington on 1 July 1968. The Treaty entered into force on 5 March 1970. The NPT Depositary Governments are the Russian Federation, United Kingdom, and United States. As of January 2005, the NPT membership stands at 189 States. The text follows:

The States concluding this Treaty, hereinafter referred to as the "Parties to the Treaty",

Considering the devastation that would be visited upon all mankind by a nuclear war and the consequent need to make every effort to avert the danger of such a war and to take measures to safeguard the security of peoples,

Believing that the proliferation of nuclear weapons would seriously enhance the danger of nuclear war,

In conformity with resolutions of the United Nations General Assembly calling for the conclusion of an agreement on the prevention of wider dissemination of nuclear weapons,

Undertaking to co-operate in facilitating the application of International Atomic Energy Agency safeguards on peaceful nuclear activities,

Expressing their support for research, development and other efforts to further the application, within the framework of the International Atomic Energy Agency safeguards system, of the principle of safeguarding effectively the flow of source and special fissionable materials by use of instruments

and other techniques at certain strategic points,

Affirming the principle that the benefits of peaceful applications of nuclear technology, including any technological by-products which may be derived by nuclear-weapon States from the development of nuclear explosive devices, should be available for peaceful purposes to all Parties to the Treaty, whether nuclear-weapon or non-nuclear-weapon States,

Convinced that, in furtherance of this principle, all Parties to the Treaty are entitled to participate in the fullest possible exchange of scientific information for, and to contribute alone or in co-operation with other States to, the further development of the applications of atomic energy for peaceful purposes,

Declaring their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to undertake effective measures in the direction of nuclear disarmament,

Urging the co-operation of all States in the attainment of this objective,

Recalling the determination expressed by the Parties to the 1963 Treaty banning nuclear weapon tests in the atmosphere, in outer space and under water in its Preamble to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time and to continue negotiations to this end,

Desiring to further the easing of international tension and the strengthening of trust between States in order to facilitate the cessa-

Afgghanistan
Albania
Algeria
Andorra, Principality of
Angola
Antigua and Barbuda
Argentina
Armenia
Australia
Austria
Azerbaijan
Bahamas
Bahrain
Bangladesh
Barbados
Belarus
Belgium
Belize
Benin
Bhutan
Bolivia
Bosnia Herzegovina
Botswana
Brazil
Brunei Darussalam
Bulgaria
Burkina Faso
Burundi
Cambodia
Cameroon
Canada
Cape Verde
Central African Republic
Chad
Chile
Colombia
Comoros
Congo, Dem. Rep. of the
Costa Rica
Côte d'Ivoire
Croatia
Cuba
Cyprus
Czech Republic
Democratic People's
Rep. of Korea
Denmark
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt
El Salvador

Equatorial Guinea
 Eritrea
 Estonia
 Ethiopia
 Fiji
 Finland
 Gabon
 Gambia
 Georgia
 Germany
 Ghana
 Greece
 Grenada
 Guatemala
 Guinea Bissau
 Guinea
 Guyana
 Haiti
 Holy See
 Honduras
 Hungary
 Iceland
 Indonesia
 Iran, Islamic Republic of
 Iraq
 Ireland
 Italy
 Jamaica
 Japan
 Jordan
 Kazakhstan
 Kenya
 Kiribati
 Korea, Republic of
 Kuwait
 Kyrgyzstan
 Lao People's Dem. Rep.
 Latvia
 Lebanon
 Lesotho
 Liberia
 Libyan Arab Jamahiriya
 Liechtenstein
 Lithuania
 Luxembourg
 Madagascar
 Malawi
 Malaysia
 Maldives
 Mali, Republic of
 Malta
 Marshall Islands
 Mauritania
 Mauritius
 Mexico
 Micronesia, Federated States of

tion of the manufacture of nuclear weapons, the liquidation of all their existing stockpiles, and the elimination from national arsenals of nuclear weapons and the means of their delivery pursuant to a Treaty on general and complete disarmament under strict and effective international control,

Recalling that, in accordance with the Charter of the United Nations, States must refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the purposes of the United Nations, and that the establishment and maintenance of international peace and security are to be promoted with the least diversion for armaments of the world's human and economic resources,

Have agreed as follows:

.....
ARTICLE I

Each nuclear-weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage, or induce any non-nuclear-weapon State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.

.....
ARTICLE II

Each non-nuclear-weapon State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear explosive devices or of control over such weapons or explosive devices directly, or indirectly; not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices; and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices.

.....
ARTICLE III

① Each non-nuclear-weapon State Party to the Treaty undertakes to accept safe-

guards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. Procedures for the safeguards required by this Article shall be followed with respect to source or special fissionable material whether it is being produced, processed or used in any principal nuclear facility or is outside any such facility. The safeguards required by this Article shall be applied on all source or special fissionable material in all peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere.

② Each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this Article.

③ The safeguards required by this Article shall be implemented in a manner designed to comply with Article IV of this Treaty, and to avoid hampering the economic or technological development of the Parties or international co-operation in the field of peaceful nuclear activities, including the international exchange of nuclear material and equipment for the processing, use or production of nuclear material for peaceful purposes in accordance with the provisions of this Article and the principle of safeguarding set forth in the Preamble of the Treaty.

④ Non-nuclear-weapon States Party to the Treaty shall conclude agreements with the International Atomic Energy Agency to meet the requirements of this Article either individually or together with other States in accordance with the Statute of the International Atomic Energy Agency.

Negotiation of such agreements shall commence within 180 days from the original entry into force of this Treaty. For States depositing their instruments of ratification or accession after the 180-day period, negotiation of such agreements shall commence not later than the date of such deposit. Such agreements shall enter into force not later than eighteen months after the date of initiation of negotiations.

ARTICLE IV

① Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty.

② All the Parties to the Treaty undertake to facilitate, and have the right to participate in the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy. Parties to the Treaty in a position to do so shall also cooperate in contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty, with due consideration for the needs of the developing areas of the world.

ARTICLE V

Each Party to the Treaty undertakes to take appropriate measures to ensure that, in accordance with this Treaty, under appropriate international observation and through appropriate international procedures, potential benefits from any peaceful applications of nuclear explosions will be made available to non-nuclear-weapon States Party to the Treaty on a non-discriminatory basis and that the charge to such Parties for the explosive devices used will be as low as possible and exclude any charge for research and development. Non-nuclear-weapon States Party to the Treaty shall be able to obtain such benefits, pursuant to a special international agreement or agreements, through an appropriate international body with adequate rep-

resentation of non-nuclear-weapon States. Negotiations on this subject shall commence as soon as possible after the Treaty enters into force. Non-nuclear-weapon States Party to the Treaty so desiring may also obtain such benefits pursuant to bilateral agreements.

ARTICLE VI

Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.

ARTICLE VII

Nothing in this Treaty affects the right of any group of States to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories.

ARTICLE VIII

① Any Party to the Treaty may propose amendments to this Treaty. The text of any proposed amendment shall be submitted to the Depositary Governments which shall circulate it to all Parties to the Treaty. Thereupon, if requested to do so by one-third or more of the Parties to the Treaty, the Depositary Governments shall convene a conference, to which they shall invite all the Parties to the Treaty, to consider such an amendment.

② Any amendment to this Treaty must be approved by a majority of the votes of all the Parties to the Treaty, including the votes of all nuclear-weapon States Party to the Treaty and all other Parties which, on the date the amendment is circulated, are members of the Board of Governors of the International Atomic Energy Agency. The amendment shall enter into force for each Party that deposits its instrument of ratification of the amendment upon the deposit of such instruments of ratification by a majority of all the Parties, including the instruments of ratification of all nuclear-weapon States Party

- Moldova, Republic of
- Monaco
- Mongolia
- Morocco
- Mozambique
- Myanmar
- Namibia
- Nauru
- Nepal
- Netherlands
- New Zealand
- Nicaragua
- Niger
- Nigeria
- Norway
- Oman
- Palau, Republic of
- Panama
- Papua New Guinea
- Paraguay
- Peru
- Philippines
- Poland
- Portugal
- Qatar
- Romania
- Rwanda
- Saint Kitts and Nevis
- Saint Lucia
- Saint Vincent and the Grenadines
- San Marino
- Sao Tome and Principe
- Saudi Arabia
- Senegal
- Serbia and Montenegro
- Seychelles
- Sierra Leone
- Singapore
- Slovak Republic
- Slovenia
- Solomon Islands
- Somalia
- South Africa
- Spain
- Sri Lanka
- Sudan
- Suriname
- Swaziland
- Sweden
- Switzerland
- Syrian Arab Republic
- Tajikistan
- Tanzania
- Thailand
- The Former Yugoslav

Republic of Macedonia
 Timor-Leste
 Togo
 Tonga
 Trinidad and Tobago
 Tunisia
 Turkey
 Turkmenistan
 Tuvalu
 Uganda
 Ukraine
 United Arab Emirates
 Uruguay
 Uzbekistan
 Vanuatu
 Venezuela
 Vietnam
 Western Samoa
 Yemen, Republic of
 Zambia
 Zimbabwe

Nuclear Weapon States

United Kingdom of
 Great Britain & Northern Ireland

United States of America

Russian Federation

China

France

Source: UN Department for
 Disarmament Affairs

<http://disarmament2.un.org/TreatyStatus.nsf>

Notes:

1. The NPT was extended indefinitely by Parties meeting at the 1995 Review & Extension Conference.

2. The Democratic People's Republic of Korea (DPRK) announced its withdrawal from the NPT effective 11 January 2003. No agreed statement on the matter has been issued by the NPT States Parties, or by the NPT Depositary States (Russia, UK and USA), or by the UN Security Council. The IAEA is not a party to the NPT and hence is not in the position to determine the status of any State's NPT membership. (The UN Department for Disarmament Affairs maintains the DPRK on its listing of NPT States.)

3. Among NPT Parties, 42 non-nuclear-weapon States as of January 2005 had either not yet concluded or brought into force a comprehensive safeguards agreement with the IAEA as required pursuant to the Treaty. For the latest status on safeguards agreements, visit the IAEA web site at www.iaea.org/OurWork/SV/index.html

to the Treaty and all other Parties which, on the date the amendment is circulated, are members of the Board of Governors of the International Atomic Energy Agency. Thereafter, it shall enter into force for any other Party upon the deposit of its instrument of ratification of the amendment.

③ Five years after the entry into force of this Treaty, a conference of Parties to the Treaty shall be held in Geneva, Switzerland, in order to review the operation of this Treaty with a view to assuring that the purposes of the Preamble and the provisions of the Treaty are being realised.

At intervals of five years thereafter, a majority of the Parties to the Treaty may obtain, by submitting a proposal to this effect to the Depositary Governments, the convening of further conferences with the same objective of reviewing the operation of the Treaty.

ARTICLE IX

① This Treaty shall be open to all States for signature. Any State which does not sign the Treaty before its entry into force in accordance with paragraph 3 of this Article may accede to it at any time.

② This Treaty shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the United Kingdom of Great Britain and Northern Ireland, the Union of Soviet Socialist Republics and the United States of America, which are hereby designated the Depositary Governments.

③ This Treaty shall enter into force after its ratification by the States, the Governments of which are designated Depositaries of the Treaty, and forty other States signatory to this Treaty and the deposit of their instruments of ratification. For the purposes of this Treaty, a nuclear-weapon State is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January, 1967.

④ For States whose instruments of ratification or accession are deposited subse-

quent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.

⑤ The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification or of accession, the date of the entry into force of this Treaty, and the date of receipt of any requests for convening a conference or other notices.

⑥ This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

ARTICLE X

① Each Party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other Parties to the Treaty and to the United Nations Security Council three months in advance.

Such notice shall include a statement of the extraordinary events it regards as having jeopardized its supreme interests.

② Twenty-five years after the entry into force of the Treaty, a conference shall be convened to decide whether the Treaty shall continue in force indefinitely, or shall be extended for an additional fixed period or periods. This decision shall be taken by a majority of the Parties to the Treaty.

ARTICLE XI

This Treaty, the English, Russian, French, Spanish and Chinese texts of which are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

IAEA Member States

- 1957** **Afghanistan**, Albania, Argentina, **Australia**, **Austria**, **Belarus**, **Brazil**, Bulgaria, **Canada**, Cuba, **Denmark**, Dominican Republic, Egypt, El Salvador, Ethiopia, **France**, Germany, Greece, **Guatemala**, Haiti, Holy See, Hungary, Iceland, **India**, Indonesia, **Israel**, Italy, **Japan**, Republic of Korea, Monaco, Morocco, Myanmar, Netherlands, New Zealand, **Norway**, **Pakistan**, Paraguay, Peru, Poland, **Portugal**, **Romania**, **Russian Federation**, Serbia and Montenegro, **South Africa**, Spain, Sri Lanka, **Sweden**, **Switzerland**, Thailand, Tunisia, **Turkey**, Ukraine, **United Kingdom**, **United States**, Venezuela, Vietnam
- 1958** Belgium, Ecuador, Finland, Islamic Republic of Iran, Luxembourg, Mexico, Philippines, Sudan
- 1959** Iraq
- 1960** Chile, Colombia, Ghana, Senegal
- 1961** Lebanon, Mali, Democratic Republic of the Congo
- 1962** Liberia, Saudi Arabia
- 1963** Algeria, Bolivia, Côte d'Ivoire, Libyan Arab Jamahiriya, Syrian Arab Republic, Uruguay
- 1964** Cameroon, Gabon, Kuwait, Nigeria
- 1965** Costa Rica, Cyprus, Jamaica, Kenya, Madagascar
- 1966** Jordan, Panama
- 1967** Sierra Leone, Singapore, Uganda
- 1968** Liechtenstein
- 1969** Malaysia, Niger, Zambia
- 1970** Ireland
- 1972** Bangladesh
- 1973** Mongolia
- 1974** Mauritius
- 1976** Qatar, United Arab Emirates, United Republic of Tanzania
- 1977** Nicaragua
- 1983** Namibia
- 1984** China
- 1986** Zimbabwe
- 1992** Estonia, Slovenia
- 1993** Armenia, Croatia, Czech Republic, Lithuania, Slovakia
- 1994** The Former Yugoslav Republic of Macedonia, Kazakhstan, Marshall Islands, Uzbekistan, Yemen
- 1995** Bosnia and Herzegovina
- 1996** Georgia
- 1997** Latvia, Malta, Republic of Moldova
- 1998** Burkina Faso, Benin
- 1999** Angola
- 2000** Tajikistan
- 2001** Azerbaijan, Central African Republic
- 2002** Eritrea, Botswana
- 2003** Honduras, Seychelles, Kyrgyz Republic
- 2004** *Chad*, Islamic Republic of Mauritania, *Togo*

Total Membership: 138 (as of November 2004)

Eighteen ratifications were required to bring the IAEA's Statute into force. By 29 July 1957, the States in bold — as well as the former Czechoslovakia — had ratified the Statute.

Year denotes year of membership. Names of States are not necessarily their historical designations. For States in *italic*, membership has been approved by the IAEA General Conference and will take effect once the necessary legal instruments are deposited.

Note:

- ◆ The Democratic People's Republic of Korea (DPRK), which joined the IAEA in 1974, withdrew its membership of the Agency 13 June 1994.
- ◆ Cambodia, which joined the IAEA in 1958, withdrew its membership of the Agency 26 March 2003.
- ◆ The former Federal Republic of Yugoslavia was changed to Serbia and Montenegro as of 4 February 2003.

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