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Conference report

**What now after the 2010 NPT Review**

Monday 13 – Friday 17 December 2011 | WP1062



## Conference report

# What now after the 2010 Nuclear NPT

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### Introduction

The December 2010 Wilton Park nuclear non-proliferation meeting took place in the aftermath of three major multilateral diplomatic events: the April Heads of State Nuclear Security Summit in Washington; the May NPT Review Conference in New York; and a High Level meeting in New York in September to discuss the future of the Conference on Disarmament (CD). These events took place against a background of continuing challenges to the future viability of the global nuclear non-proliferation regime. The challenges include allegations of clandestine transfers of nuclear materials and technologies between the DPRK and Pakistan, and between the governments and individuals in these two states and others, such as Iran and Syria. In addition, the probability of a civil “nuclear renaissance” moved closer with contracts for the building of new power reactors in the United Arab Emirates and Vietnam. Moreover, although procedures have been instituted by the NPT nuclear weapon states (NWS) that could generate a collective momentum to drive nuclear disarmament forward the disconnection between the disarmament commitments of these states and the non-disarmament policies of India, Israel and Pakistan (and the DPRK) remained. Indeed the negative reactions to the attempt by the United States to bridge this gap through its civil nuclear agreement with India (and to suggestions of a similar arrangement between China and Pakistan) served to highlight the contradictions and complexities involved in addressing this issue.

### The 2010 Review Conference and its Products

1. The Eighth NPT Review Conference was fortunate in having cleared almost all outstanding procedural issues at its 2009 preparatory session. It also had greatly improved “atmospherics” compared to the 2005 conference with many states viewing a positive outcome as necessary to counter widespread perceptions that the Treaty was in danger of “collapse”. At the same time it confronted a number of major challenges, including the wish of Iran to have no wording in the Conference’s Final Document criticising its uranium enrichment and other nuclear activities; frictions over the tactics to be adopted by the five states attempting to negotiate the disarmament of the DPRK; and differing perceptions of the metrics that should be used to measure progress towards disarmament. Also, almost 20 years after the end of the Cold War, the existing nominal NPT negotiating groupings of East, West and NAM had still to be replaced by arrangements conforming to current and future political realities.

2. The 2010 Conference was fortunate to have a President and Secretariat well briefed on the procedural mechanisms that could be used to facilitate a positive outcome, based in part on experience gained through the attempt by the chair of the 2009 PrepCom to produce draft recommendations for it. Also, the experiences of past “successful” Review Conferences suggested that key areas of disagreement would need to be resolved in small negotiating groups of interested parties, and that as in 2000 initial agreement on a forward looking “action plan” would smooth the way to agreeing a backward looking review of the operations of the Treaty. As a result, outstanding procedural issues were resolved early in the conference; a group of 16 states (including Iran) started negotiations in the Egyptian mission on language on the implementation of the contentious 1995 resolution on a Middle

East Zone Free of Weapons of Mass Destruction (MEZFWMD); and the five NPT NWS produced a joint statement. However, by the end of the third week significant differences over texts remained. Iran had succeeded in its negotiating strategy of preventing any draft text being either agreed in the committees or forwarded to the President, and during the early days of the fourth week sustained this blocking position in a plenary discussion of a Chairman's text, though inclusive discussions were taking place elsewhere on specific texts.

3. A consensus Final Document was then achieved by the President circulating his draft final text on the Thursday, and giving delegations 24 hrs to accept or reject it. Egypt, the chairman of the NAM group, which by then had negotiated a text it regarded as satisfactory on the MEZFWMD, had made it clear that Iran would be alone in blocking agreement on the President's text. The US had reluctantly agreed that no negative mention would be made to Iran in the text though Israel would be named. In these circumstances, Iran allowed the draft text to go forward as a consensus document and the Presidential text was accepted by the conference. The resulting Final Document had two separate components: a consensus action plan and a review of the implementation of the Treaty compiled on the President's authority and "noted" by the states parties. This was a procedural innovation which enhanced the ability of the conference to agree its Final Document (in the past consensus was necessary for both parts), and will serve as a precedent to facilitate agreement on a Final Document in future NPT Review Conferences. The Action plan was divided into four sections: Disarmament, Nuclear Non-proliferation, Peaceful Uses of Nuclear Energy; and the Middle East and other regional issues, with roughly equal attention and recommendations in each part.

4. Although most participants in the final session of the Review Conference lauded the outcome as a success, other observers voiced searching questions in the weeks and months that followed about the significance of the NPT Review Process and the value of its outcome. These included:

- How relevant was this diplomatic process in addressing existing non-proliferation challenges, since the Final Document made scant mention of accusations of non-compliance with the Treaty that had been made against the DPRK, Iran and Syria;
- Was it merely an exercise in "conflict avoidance" designed to create an image of a consensus on the aims, objectives and implementation of the NPT when in practice none existed;
- Did the opaqueness of the rules and norms of the nuclear non-proliferation regime enable its member states to ignore the realities and limitations of military power in implementing it;
- Is the non-proliferation regime still rooted in an obsolete technical premise, namely that a clear scientific distinction can be made between the civil and military explosive uses of nuclear energy;
- Should inspiration for remodelling the regime be sought from the BWC regime, which has accepted that biological knowledge is universal, rather than being confined to a few known technology holders; and
- How might nuclear arms controllers and disarmers focussing on capabilities and committed to a scientific culture of quantification, verification and technology denial engage productively with diplomats and politicians focussing on commitments and declarations and operating in a world of legal duties, public declarations and political commitments?

5. In short, is the future to be more of the same through gap-filling "bolt-ons" to the existing regime structure, or should that regime be remodelled radically around an assumption that dissemination of the materials, technology and knowledge to make nuclear weapons is unstoppable in this internet age of "latent" national ( and sub-national?) nuclear capabilities?

## The NPT Roadmap for Nuclear Disarmament

6. Although some commentators have suggested that there is little that is new in the 2010 Action Plan compared to the 2000 “13 practical steps”, in fact there are several significant differences. For example, Action 2 of the 2010 document significantly expands the scope of step 5 agreed in 2000. It does this by committing “all states”, not just the NWS, to “irreversibility, verifiability and transparency in relation to their treaty obligation”, thus including transparency and verifiability in the commitment, and applying it to all member states. Also, China could be argued to have accepted a commitment to transparency and verifiability and Iran not to withdraw from the Treaty through this action. Action 3 makes specific the types of nuclear weapons that are to be eliminated. Action 4 encourages the Russian federation and the US to continue discussions on follow-on measures to new START, while Action 6 has all the NPT parties agreeing that the CD “should immediately establish a subsidiary body to deal with nuclear disarmament within an... agreed...programme of work”.

7. However, it is Action 5 which displays the most significant and positive changes over the 2000 text. This is because it is based on specific commitments by individual P5 states to **engage** with each other bilaterally or multilaterally on disarmament issues. As these are the only NPT states with nuclear weapons, this approach offers a more practical and realistic chance of success than previous commitments made within the larger inclusive NPT context, which over the last 45 years have encouraged diplomatic game playing but resulted in little practical action. Action 5 commits the NWS to “accelerate concrete progress on the [13] steps leading to nuclear disarmament”. More significantly, after three days of negotiations focussing on existing gaps, it lists an additional 7 practical steps with which they should “promptly engage”. For example, Action 5b commits the NWS to address the issue of nuclear weapons “regardless of their type and location”. This effectively commits the Russian Federation to address (though not negotiate) the issue of non-strategic nuclear weapons as part of a “general nuclear disarmament process” and the United States the weapons it stores in NATO states. Action 5d commits them to discuss policies that could “prevent the use of nuclear weapons and eventually lead to their elimination”; 5e to “consider... reducing the operational status of nuclear weapon systems”; and 5g to “further enhance transparency and increase mutual confidence”. In addition, the NWS are called upon to “report the above undertakings to the Preparatory Committee at (*sic*) 2014”. Each P5 state has taken on an individual obligation to implement the seven actions, in the context of each state needing to go down its own unique road to do so when its analysis of the security situation determines that the conditions are ripe for this to take place.

8. Action 5 therefore involves a marked departure from the situation created in 2000. In that year, all the NPT states agreed a list (para.15.9) of only six practical steps, and that all states parties had to produce regular reports on progress (with “regular” undefined). In 2010 the states parties legitimised and delegated the NWS individually and collectively to address, consider or discuss the 7 enhanced specific steps and report on this activity within a time - bound framework: the 2014 PrepCom session. In effect, they were given authority to discuss these steps among themselves, rather than in a wider multilateral forum, as well as committing themselves to report on them to the much wider NPT forum by a set date. But there is more. Action 23 “encourages” all the NWS to agree as soon as possible a standard reporting form to provide information on nuclear disarmament voluntarily and invites the UNSG to establish a publicly accessible repository for it.

9. These developments give further impetus and international legitimacy to the initiative taken in September 2009 by the UK to host in London a multi-level P5 consultation on verification and confidence building, nuclear stability, responses to nuclear accidents and definitions of nuclear technology. Action 5 creates a dynamic incentive for this group to continue to work individually and collectively on nuclear disarmament in all its aspects, and in the process scope out and seek solutions to the major differences in strategic culture and perceptions that are visible within and between them, and without which practical measures of disarmament are not achievable. The effects of this are already visible in the decision of

France to host a further high-level meeting of this NPT sub-group in Paris in July 2011, driven in part by the need for ongoing consultation to agree on both a framework for reporting, and a substantive report, on progress on the 7 steps by April 2014.

#### The Conference on Disarmament and Nuclear Non-Proliferation

10. In any contemporary discussion of the NPT and its related regime(s), the “elephants in the room” are the states outside the Treaty believed to be in possession of nuclear weapons. Without a forum where the two groups of NWS can engage with each other, nuclear disarmament will be impossible. Equally impossible is the ability for this engagement to take place within the NPT context, due to the definition of a nuclear weapon state in Article X.3 as one which has exploded a nuclear device prior to 1 January 1967. This leaves the Conference on Disarmament (CD) as the obvious alternative venue for such activities. However, a non-NPT state, Pakistan has been overtly blocking the adoption of its programme of work since 1997, and thus no progress has been made with a number of negotiations relevant to the nuclear non-proliferation regime. Indeed these non-NPT states can be seen to be the grit in the wheels of a number of diplomatic attempts to reinforce that regime.

11. India, Israel, Pakistan and the DPRK have not ratified the CTBT and thus moved it closer to being in force, which in turn would have given the CTBTO a major new role in assessing non-compliance with the NPT. Also none of them have made commitments to sustain the existing P-5 testing moratorium; Pakistan is preventing negotiations taking place on a Fissile Material Cut- Off Treaty (FMCT); Pakistan and the DPRK have been engaged in clandestine nuclear supply activities both with each other and third parties; Israel is a major obstacle in the way of progress in negotiating a MEZFW in the Middle East; and the presence of Pakistan and India within the NAM is a “hidden hand” in the context of NPT and UN disarmament and non-proliferation discussions. In parallel, the attempt by the US to cross the barrier between the two groups by negotiating a nuclear trade agreement with India has generated major tensions, and possible future negative consequences, among the Nuclear Suppliers Group (NSG). The inability of the CD to agree a programme of work because of the actions of a state outside the Treaty has also impacted directly and negatively on two actions which the NPT states agreed to pursue at the Review Conference. One was to create a subsidiary body within the CD “to deal with nuclear disarmament”. The second was to “immediately begin” discussions on negative security assurances for NNWS. In this latter context, it should be noted that not only did the UK and US make significant changes in 2010 to their existing negative security assurances, but the Review Conference also moved the forum for further negotiations towards the CD rather than, as in the past, seeking to have it negotiated as a legal instrument in an NPT forum. It is ironic that it is a member of the NAM which is now blocking negotiations on the provision of enhanced nuclear security assurances to the NNWS from the NWS.

12. This major barrier to progress on disarmament and non-proliferation led the 2010 Review Conference to take an unusual move by overcome it. This was Action 7, where the conference invited the UNSG to convene a High Level meeting “in support of the work of the [CD]”. This duly took place in September 2010. A number of proposals were made on methods of escaping from the CD’s procedural impasse, including amending or reinterpreting the consensus rule when making decisions; separating substantive from procedural decisions; and removing the need for consensus on the latter. Others proposed that if the CD was still incapable of work at the end of 2011, its activities should be suspended and a new venue should be found for the FMCT negotiations, as had happened with the negotiation of the Landmines Treaty and the Arms Trade Treaty. For unless some way can be found to either remove the barriers to its work programme or move outstanding issues to alternative fora, it is difficult to see how progress is possible to meet the wishes of the NPT parties in both the disarmament and non-proliferation areas. This suggests that some states may now treat the 2011 sessions of the CD as its “last chance saloon”, and seek urgently methods of overcoming the blockage.

## Regional Challenges to the NPT Regime

13. One of the main drivers of nuclear proliferation is undoubtedly national security concerns. As a consequence NPT states have traditionally undertaken unilateral, bilateral and multilateral diplomatic and military actions to persuade individual states not to proliferate by offering them security assurances, security guarantees and conventional arms transfers. Regional states have also negotiated nuclear weapon free zone treaties (NWFZ) in order to ensure that the presence of nuclear weapons does not enhance local frictions and conflicts. In that context it is to be noted that the African NWFZ treaty came into force in July 2009, thus expanding the area of the world which is legally nuclear free. Outside these areas, there are situations where perceptions that states inside and outside the NPT possess or are seeking nuclear weapons threaten regional security and stability, and increasingly that these challenges should be addressed at the regional rather than the global level.

### *External Threats*

14. States non-party to the NPT are neither committed to implement its norms and rules, nor those of the export control regimes. Thus the threats these states pose to NPT parties are both from their threat and use of nuclear weapons in regional conflicts (i.e. in the Middle East and South and East Asia) or from clandestine transfers of nuclear materials and technology. There are two main documented sources of such clandestine transfers. One is Pakistan, the other the DPRK. The Pakistan situation stems from its nuclear weapon programme involving state-to-state exchanges with the DPRK, and movement of materials and technology by the A.Q. Khan network to Iran and Libya. In the DPRK case there exist accusations of collaboration with Syria to build an unsafeguarded nuclear reactor. Financial investigations suggest that states other than Pakistan may also have acquired nuclear materials, technology and delivery systems from the DPRK. It remains unclear how the NPT states collectively could put a stop to such trading, even though it threatens to undermine existing elements of the NPT regime.

15. The DPRK has also had an additional disruptive influence upon the NPT, as its behaviour in announcing its withdrawal from the Treaty and then conducting two nuclear tests without an unacceptably costly response from the international community has provided a positive template for other states contemplating similar acts. The only effective path to ameliorating and possibly reversing this situation appears to be a regional one negotiated through the Group of six (China, DPRK, Japan, Russian Federation, South Korea and the US), but the talks between them show little indication of arriving at a successful conclusion in the near future. Equally, the group's existence and the disagreements within it on the tactics the five NPT negotiating states should follow served to minimise the Review Conference's response to this action. Also, its actions have undermined belief in the ability of the NPT community's to address cases of proliferation.

16. Israel's effect is of a rather different nature, as it both poses a nuclear threat to the Arab states if another Middle East war were to occur and its nuclear capabilities serve to consolidate political opposition to its existence and complicate the Palestine and the Middle East peace processes. As a result, membership of the NPT serves at least three purposes in this context for the Arab states and Iran: to put direct pressure on Israel to accede to the NPT as a non-nuclear weapon state; to pressurise Israel's main external security guarantor, the US, to support this aim by threatening to leave the NPT if there is no progress was made towards Israeli nuclear disarmament; and to provide a forum to create a path towards that objective through the creation of a (MEZFWMD). However, despite this objective becoming an integrated element in the 1995 NPT extension decision documentation via the "Middle East Resolution", no practical steps were taken towards this objective in 2000 and 2005. However, agreement was reached in 2010 by all the States Parties that the UNSG (through his Department for Disarmament Affairs) and the three NPT depositary states (the Russian Federation, the UK and the US) should share responsibility for both engineering a regional conference to discuss such a zone, and a follow-on process aimed at creating it.

17. This process will involve the UNSG appointing a facilitator and a host government for a conference to be held before May 2012 (it was to be 2013 but was presumably changed to take place within Obama's first term in office), in consultation with the depositaries and the states of the region. Organisation such as the IAEA and OPCW will be asked to provide background papers for the event. This will likely be held in either Geneva or Vienna in order to both make use of the existing UN conference infrastructure and be a venue close to the region geographically. The Agenda will be provided by the 1995 resolution. How this nuclear inspired forum will engage with the necessary parallel processes in other areas of WMD has yet to be clarified. What is clear, however, is this is not intended to be a "one-off" event, but the start of an ongoing process which the facilitator will manage, and on which he will report to the 2015 Review Conference. Implementation of this process seems likely to have a major impact on the dynamics of that Review Conference. An additional driver may be decisions by additional Arab states to follow the UAE's lead in ordering nuclear power plants, thus giving states in the region an enhanced interest in both strengthening the non-proliferation regime and engaging in negotiations to agree a ban on attacks on nuclear facilities on a regional basis.

#### *Internal Threats*

18. Although the initiative to progress a MEZFWMD is supported by all the Arab states and Iran, recent leaks of US diplomatic correspondence in the British press suggest that the latter is seen by its regional neighbours as the most likely state (and party to the NPT) to both proliferate and trigger further proliferation. This is a consequence of regarding the threat as one based on technical capabilities rather than political declarations. Iran's "indigenous" development of a safeguarded centrifuge enrichment capability without any immediate civil use for the LEU produced has highlighted a major limitation in the NPT text. This arises in part from the tensions between technical and political solutions to the nuclear dual-use technology problem, something recognised soon after the entry into force of the Treaty. The solution instituted in 1974 was the creation of the Nuclear Suppliers Group (NSG) and its guidelines to regulate (and actively prohibit?) transfers of enrichment and reprocessing technology beyond existing technology holders. This achieved its purpose until the 1990s, when the clandestine Iraqi nuclear weapon programme and the activities of A.Q. Khan in enriching uranium for Pakistan's nuclear weapons programme revealed its limitations. Khan then started to provide clandestinely technology, material, components and weapon blueprints to potential proliferators in the Middle East such as Libya and Iran. Although the "smoking gun" of Chinese-origin weapon blueprints annotated by Pakistan's weapon designers surfaced in Libya, it has yet to be uncovered in Iran.

19. The interim solution proposed for the Iran situation was a global, rather than regional, one. This was to reinstate the effectiveness of the NSG guidelines by proposing that states without operational enrichment plants should "voluntarily" refrain from acquiring them. This accepted the universal application of Article IV of the NPT, but solved its inherent "dual-use" problem by national agreements to desist from exploiting it. While this later proved successful in the UAE purchase of reactors from South Korea, the freeze in Iran was for a limited period only, after which enrichment restarted. The concern now is that either further non-declared enrichment plants exist in Iran, or that it is positioning itself to re-enrich its existing stockpile of material to weapons grade in the 90 days notice it has to give to withdraw from the Treaty. It will then declare itself to be a nuclear weapon state, thus triggering a potential nuclear arms race in the region. In short, the fear is that it is engaged in what has been termed "dysfunctional multilateralism" by using the NPT and IAEA safeguards language to facilitate its development of the necessary technology to move it to nuclear weapon status at some point in the near future. At the same time it would avoid criticism in the written output from NPT meetings by threatening to block their formal outcomes.

## Peaceful Uses and Fissile Materials

20. Fissile materials are at the core of both proliferation and nuclear non-proliferation policies, as without them the construction of a nuclear explosive device is not possible. Both disarmament and non-proliferation activities have therefore revolved around methods of international and domestic control over these materials and the operation of the facilities to produce them. In the current context, this revolves around four main issue areas: nuclear fuel cycles; IAEA safeguards; an FMCT; and nuclear security activities, including 2010 Nuclear Security Summit (NSS).

### The Nuclear Fuel Cycle

21. Over the next two decades, the civil nuclear fuel cycle will remain focussed on thermal nuclear power reactors (light water reactors); the need for low enriched uranium to fuel them; and the disposal of their spent fuel. The enrichment issue is intertwined with the Iran question, as while an active global market exists for uranium, its enrichment and fuel fabrication services to convert it into reactor fuel, the NPT allows states to retain the “inalienable” right to indigenously manufacture these materials and provide their own fuel cycle services. However, much effort has been expended in moving the international community to accept and adhere to a norm of multilateral facility ownership, financing and operation, and to facilitate this by providing political and other guarantees of a continuous supply of fuel for a state’s power reactors.

22. Much less attention has been focussed on the issue of the disposal of spent fuel, even though the consequences of the global increase in the amount of this fuel stored in ponds, and the lack of operational geological disposal facilities, has the potential in countries operating power reactors to create “plutonium mines” as the spent fuel ages and becomes less radioactive. However, this potential can only be realised if a fuel processing plant exists capable of extracting plutonium from the spent fuel. Such a plant can be justified in energy terms if the spent fuel is regarded as an energy asset and placed in a closed cycle rather than a waste disposal liability to be disposed of permanently in an open cycle Geological Disposal Facility (GDF). Closed cycles involve burning in a thermal reactor the separated uranium and plutonium as Mixed Uranium/Plutonium (MOX) fuel, leaving relatively small quantities of high level radiological waste to be disposed of in a GDF. Such a cycle poses a potential proliferation threat through the separation of plutonium from other materials as part of the process. Open cycles involve secure storage with continuous monitoring and maintenance, as well as indefinite expense, for indeterminate decades, until the waste is conditioned and packaged for insertion into an expensively constructed GDF. This proliferation channel has been largely overlooked in recent years as the enrichment channels favoured by AQ Khan and his network and by Iran have taken centre stage. However, renewed global interest in nuclear power as an energy security option (the “Nuclear Renaissance”) and the emergence of additional states wishing to invest in nuclear power programmes has threatened to restart the inconclusive international INFCE geological disposal v recycling / open v closed cycle debates over spent fuel disposition which climaxed in the late 1970s in Vienna.

23. At the moment, most of the new-build reactors planned for construction are to be situated in Asia or, if elsewhere, as replacements for existing reactors. While considerable initial planning activity is taking place for national GDFs, very few have moved to the implementation stage and none are operational. At the same time, debates persist over the extent of proven supplies of natural uranium; how many nuclear power reactors will be built over the next decades and their locations; and when global demand for natural uranium will drive its price upwards to a point where less accessible and expensive sources will have to be exploited and / or MOX fuel will become a commercially attractive alternative to uranium (or thorium) fuel.

24. Currently, the proliferation resistance of open cycles is largely provided by the technical



difficulties of removing heavy, bulky and radioactive spent fuel rods clandestinely from storage ponds and operating a facility to extract plutonium from them. Moreover the isotopic composition of the plutonium may make it more suitable for making improvised explosive devices (i.e. terrorist devices) or “emergency” weapons than stockpiled state-owned nuclear warheads. What international standards of non-accessibility should be used in the design of GDFs, and whether they should be built on a national, regional or international basis, has yet to be a serious subject for extensive international debate.

25. In the case of the closed cycle, the technology is relatively mature and MOX fuel is being recycled into thermal reactors in France, Japan and other states, but the commercial economics remain debatable, particularly when up-front costs are compared to those of continued storage. Much will depend on what carbon pricing regime is adopted nationally and internationally to combat climate change. Few industrial scale reprocessing and MOX fuel plants exist, mainly in NWS. Current experience suggests that for them the most effective proliferation resistance strategy is to keep the gaps in time between exit from a reprocessing plant and insertion into a reactor as short as possible, and ideally measured in days rather than weeks.

26. The current debates over spent fuel disposition are in practice more about possibilities of proliferation from the civil fuel cycle a decade ahead, and probably much longer, than threats from current facilities (with the possible exception of non-state nuclear terrorism). They are also about whether current generations should pass on looming spent fuel disposal and energy security challenges to future generations rather than seek to address them now. Also involved is whether such solutions to spent fuel disposal issues should be sought on a national or multinational basis, and what non-proliferation measures should be built into them. Underpinning all of these questions, however, is whether and under what circumstances spent nuclear fuel and its methods of storage and (non-) disposal pose a major future proliferation risk, especially in the case of countries which have just started to invest in this energy technology.

## **IAEA Safeguards**

27. An increase in the numbers of reactors under construction as part of a “Nuclear Renaissance” will generate additional pressures upon IAEA safeguards resources, and may cause the Agency to rethink its safeguards and security operations. Although the Eminent Persons Group report of 2008 made many proposals for updating the IAEA to meet the challenges it anticipated through to 2028, little has been done to implement them. In particular, although significant additional finance is needed to upgrade and rebuild the Agency’s scientific infrastructure, and re-equip it in technical areas such as nuclear forensics, electronic measuring instruments and remote surveillance equipment, funding for this is still being provided by states on a short term basis. As the renaissance starts to move from aspiration to reality, the demands made upon the safeguards department and its inspectorate will increase, while budgetary issues will likely generate calls for a reduction in inspections and their replacement by remotely operated systems. The ability of the Safeguards department to meet these conflicting demands will be determined by the IAEA’s ability to finance advanced technical methods of implementing safeguards commitments, especially by further investment in the IT area.

28. One core future problem will be that as nuclear knowledge disseminates to more states, groups and individuals, the intrinsic technical barriers to proliferation will inevitably be lowered, and the scientific challenges facing the IAEA safeguards department increase. This will occur in a cyber environment where knowledge can be transferred in new ways, and an expanding volume of knowledge will be available in cyberspace on nuclear weapon designs, as well as methods of accessing materials and components. A.Q. Khan and his dealings with Iran and Libya, for example, are the type of new challenge that will be ongoing. Meeting this will require new tools and methods of investigating claims of breaches of safeguards agreements and the NPT. In addition, further nuclear disarmament and an FMCT could place additional demands on the Agency, especially if it is to be

responsible for verifying these commitments. Unfortunately, no member of the Board of Governors has yet shown a willingness to ask the Secretariat for a comprehensive range of proposals to meet such challenges, including developing and implementing methods of assessing whether weaponisation is occurring in a state.

29. At the same time, the politicisation of the Board of Governors, as a by-product of Iran's enrichment and other activities, has enhanced the need for the Secretariat's policies will be fully supported by the Board, and by the UNSC. It also means the Agency needs continued effective leadership based on technical findings if it is not to become a political battleground. In particular, attempts to deny inspectors access to facilities on political grounds (and threatening behaviour towards them), should be resisted and condemned by the Board, as they will set a bad precedent for the future. A similar bad precedent is the failure of Syria to assist the Agency in clarifying what happened three years ago by refusing to provide further information on both the alleged nuclear reactor site destroyed by Israel and the presence of unaccounted isotopes of uranium found in a research facility. Forensic footprints from all these activities are fading, and early access to such sites is essential if scientific methods are to succeed where political ones have failed. And although the Director General and the Board can ask for a special inspection to take place under such circumstances, both have proved reluctant to do so. One reason for this is that the Iran case suggests that the result would be to reduce Agency access to the nuclear activities of the state concerned, rather than enhance it.

### **A Fissile Material Cut-Off (FMCT)**

30. Since the late 1950s, the work of the CD and its predecessors has been structured around the list of disarmament priorities known as the Decalogue. This started with a CTBT to halt further weapons development: an FMCT to prevent further weapon production; and then agreements to reduce stockpiles to Zero. Once the CTBT had been signed in 1996 an FMCT was the logical next step. For a variety of reasons this did not happen. Nominally, the only remaining blockage is being generated by Pakistan's unwillingness to join a consensus on the CD's programme of work. Its motives for doing this are uncertain, as is whether others would emerge to block movement if its position changed. Pakistan's immediate motivation appears to be a belief that India has much greater fissile material stocks than its own as a result of the production of plutonium from spent fuel arising from the operations of its fleet of its unsafeguarded reactors. Recent reports have suggested that Pakistan has intensified its production of HEU over the last two years, and it is possible that this could soon place it in a position to cease blocking agreement on the CD agenda, if it chose to do so.

31. Should this be the case and negotiations start in 2011 or 2012 on an FMCT, it is unclear what benefits its entry into force would provide to NPT parties in current circumstances, in comparison to a CTBT, and how its verification provisions would operate. The entry into force of the CTBT would provide NPT parties with scientific instruments for determining unequivocally whether a state was proliferating. An FMCT would have to draw a clear line between fissile material intended for military use, and that for non-military use. How this line would be drawn is undecided, as is whether it is production of weapon grade plutonium that would be verified or the non-increase of military stocks of plutonium. In the case of HEU, this would be relatively easy (if the issue of naval fuel was ignored) as all HEU production could be banned. LEU would then need further enriching in centrifuges before it could be used in a weapon. In the case of plutonium produced in a reprocessing plant, such a clear science-based distinction would be difficult to arrive at as, among other things, most isotopic mixtures of plutonium resulting from reactors can in theory be used in weapons. It would also require the nuclear weapon states to not only place all their civil activities under IAEA safeguards, with consequent knock-on effects on the IAEA budget and safeguarding capabilities, and might also require them to implement transparent accountancy of their military holdings. While this might be a useful confidence building measure on the path to Zero, it seems likely to offer little if no direct non-proliferation benefits, as all those directly affected by an FMCT would have already proliferated.

Moreover, any lines drawn between what is limited by the Treaty and what is not could serve to push states towards an agreed interpretation of the NPT as only restricting nuclear explosions. In short this is now a pure arms limitation and disarmament measure, and only indirectly a non-proliferation one.

## **Nuclear Security Activities**

32. The 2010 NPT Review Conference was preceded by a new US initiative to fill gaps and add to the network of activities which constitute the NPT regime. This was President Obama's Nuclear Security Summit (NSS) meeting of 47 invited Heads of Government convened in Washington in April 2010. Its origins lay in actions the US had been taking independently since the mid-1990s to persuade states with research and other reactors fuelled by HEU to replace this with LEU. The aim was to remove a possible terrorist and proliferation threat arising from this fuel being usable in a nuclear explosive device. The uniqueness of the meeting arose from the participation of Heads of State. This raised the prominence of the issue to all states, and made for rapid agreement on a time-bound period of four years for the total removal and repatriation of this fissile material. It also had the effect of somewhat simplifying the verification situation if FMCT negotiations were to start, and also provided a precedent for other specific disarmament steps to be implemented within a time-bound framework.

33. The NPT states have never met at Heads of State Level. The NSS also had a related summit for high-level nuclear industrialists with 170 participants, something absent from NPT meetings. A consequence was agreement for a follow-on meeting to be held in South Korea in April 2012. One open question is whether this meeting will be followed by others. A flexible Heads of State forum on Nuclear Security broadly defined with limited membership could emerge from this networking process, with a capability of by-passing existing structures such as the CD and with a remit to re-energise international nuclear security commitments at two yearly intervals. It could also have more effective and high level decision-making powers than any other components of the nuclear non-proliferation regime. Are precedents from climate change and other negotiations in the process of migrating into the nuclear non-proliferation arena?

34. Such a forum would offer many advantages over existing international bodies. It could cover three specific nuclear threats: terrorism, existing nuclear capabilities and nuclear proliferation. It would also cover three sets of artefacts: nuclear weapons; fissile materials; and radiological weapons. It would demand good coordination and communication between national Foreign Ministries, Technical ministries and Industries within the states invited to attend. It could expand its remit to assisting with ratification of existing treaties and agreements on nuclear security and terrorism. It would also operate in an informal manner, along the lines of the G8/20 and NSG. A number of states not invited to the Washington meeting, such as Belarus, are already indicating a wish to attend in 2012 due in part to its unique nature, representation and associated prestige. What impact it will have upon the operation of the NPT review process is uncertain, however, given the NAM's aversion to exclusive grouping.

## **Some final thoughts**

35. 2010 saw a number of major new developments in the nuclear non-proliferation area. Of these the following stand out.

- the adoption at the Review Conference of a reporting process that prioritises and gives equal status to negotiating future steps in disarmament, non-proliferation and peaceful uses, as against reviewing past implementation;
- the recognition that NPT review conferences will only achieve consensus on those steps if contested issues of non-compliance are left for bodies other than themselves to resolve;
- the legitimisation within the NPT context of a time-bound NWS body tasked with

driving towards agreement on a framework for assessing movement towards disarmament;

- the creation of a negotiating process driven by the UNSG and the three NPT depositaries aimed at creating a Middle East Zone Free of Weapons of Mass Destruction;
- the convening of the nuclear security summit at heads of government level to drive forward the removal of HEU fuel from non-power reactors, which could evolve into a forum for addressing in a flexible way all nuclear material security issues;
- the recognition that the CD was now close to the “last chance saloon”, and that if it does not start negotiations in 2011, its allotted tasks would have to be undertaken by other, more innovative, methods; and
- the increasing acceptance that the challenges posed by the global accumulation of spent reactor fuel require urgent action at national, regional and international policy levels, in order not to leave this legacy for future generations to resolve.

## Conclusion

36. All of these movements are being driven by a desire to rejuvenate the NPT and allow groups of states directly involved to drive actions forward in ways that the four decade old structure to prevent proliferation appears incapable of handling. Whether these initiatives will succeed is uncertain, but they do represent paths towards new ways in which the non-proliferation regime could re-energise itself in the emerging nuclear age of near-universal nuclear knowledge. That regime has not yet arrived at the point some argue has been reached by the biological regime where universality of knowledge has to underpin forward development. But events in 2010 and the anticipated expansion in the number of states with “latent” nuclear weapon capabilities as a consequence of their “peaceful” nuclear energy activities suggests that the nuclear non-proliferation regime’s tectonic plates are on the move. Whether this movement will eventually obliterate the dual-use civil/military divide that underpins the NPT remains to be seen, as does the nature of the radical restructuring and re-orientation of national and international policies that may follow-or drive- it.

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