THE 2010 NPT ACTION PLAN MONITORING REPORT

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Reaching Critical Will

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Introduction: Monitoring the Action Plan

Beatrice Fihn, Reaching Critical Will

The multilateral field of arms control, disarmament, and non-proliferation of nuclear weapons has been marked by important developments in recent years; one of the most significant was the 2010 nuclear Non-Proliferation Treaty (NPT) Review Conference. After four weeks of negotiations in May 2010, states parties to the NPT adopted a final document for the first time since 2000. In that final document, states agreed on 64 actions in order to implement the obligations contained in the three "pillars" of the NPT: nuclear disarmament, nuclear non-proliferation, and the peaceful uses of nuclear energy. In addition, the final document contained a decision to endorse the convening of a conference for the establishment of a zone free of weapons of mass destruction in the Middle East and the appointment a Special Coordinator for that conference.

In light of the context described above, Reaching Critical Will and the Geneva Centre for Security Policy (GCSP) cooperated in a project aimed at providing a platform for examining the degree of implementation and operationalization of the Action Plan. The research was made possible with a generous contribution by the Swiss Federal Department of Foreign Affairs. The project aimed to provide factual and clear information on the status of the implementation of the three pillars of the NPT Action Plan. The research has been done through review of open source information. The research is not a full technical investigation of all related facts, but is an attempt to provide an overview of states' compliance with the NPT Action Plan and to capture the most significant developments since May 2010. The research has been carried out within the limits of available resources, such as time, publicly available information, and limited responses from states to our requests for information.

It is important to note that the Action Plan is a political document and the language is a carefully crafted compromise. Because the plan includes deliberately vague commitments such as "encouraging," "facilitate," and "continue efforts," it has been difficult to measure and quantify progress. In addition, the discrepancies in interpretation of the NPT remain unsolved in this Action Plan, opening it up for significant difference of opinion on what the actions specifically call for. It has been beyond the scope of this project to make a legal analysis of such interpretation, which left us to focus on facts and general trends in order to make our assessment.

In order to assess implementation, we have used a system of "traffic lights", signalling red, yellow, and green. The red traffic light indicates that to date, no concrete progress has been made in order to implement the action. The yellow light indicates that while some efforts have been detected, additional progress needs to be made in order to fully implement the action. The green light shows that states are making progress and are currently implementing the action.

We would like to thank the other partners in this project, the Geneva Centre for Security Policy (GCSP), the Swiss Federal Department of Foreign Affairs, United Nations Institute for Disarmament Research, and the Geneva Branch of the United Nations Office for Disarmament Affairs, for supporting this work. In addition, we are particularly grateful for the support of Ambassador Benno Laggner, Head of the Task Force on Nuclear Disarmament and Non-Proliferation and his predecessor, Ambassador Christian Schoenenberger, Ambassador Fred Tanner and Marc Finaud at GCSP and Ray Acheson at Reaching Critical Will.

Overview: Challenges and Prospects of Monitoring

W. Pal Sidhu, Geneva Centre for Security Policy

Introduction

The successful conclusion of the 2010 nuclear Non-Proliferation Treaty Review Conference (NPT RevCon) can be attributed to at least three factors: first a collective and shared concern among the 190 members that the Treaty would be irrevocably damaged if there was another debacle like the one in 2005 when the seventh NPT RevCon concluded in disarray and without an outcome document.[1] Indeed, in the run up to the May 2010 NPT RevCon, "failure is not an option" became the common rallying cry.[2] While failure was variously defined, there was a common consensus that 'success' would have to have at least two elements—a final outcome document and at the very least a reaffirmation of previous commitments if not forward-looking steps.[3]

Second, the international scenario in the run up to and through the 2010 RevCon was relatively more conducive for various countries to work together, despite their serious differences. It was not so much a case of more propitious circumstances that brought countries together but the fact that the relations did not deteriorate further despite potentially provocative actions. Prominent among the relations that had the potential to derail the NPT were the US-Russian disagreements, particularly over arms control, and the US-led Western tensions with Iran. The Medvedev-Obama meeting in April 2009 followed by their July 2009 summit and the conclusion of the new START agreement in April 2010 placated the former set of concerns. The absence of additional United Nations Security Council (UNSC) resolutions since 2008 singling out Iran's nuclear actions, coupled with the joint Brazil-Turkey initiative, which led to the Tehran Joint Declaration of 17 May 2010 (during the NPT RevCon), certainly contributed to keeping Iran on board. Indeed, the decision of the permanent members of the UNSC to hold off passing a new resolution and imposing additional sanctions against Iran until after the NPT RevCon allowed for a successful conclusion of the conference. Had the resolution been passed earlier, it would most likely have wrecked the conference. However, the fact that the UNSC resolution was passed soon after the conclusion of the RevCon, clearly, posed challenges for the implementation of the agreed mandate.

Third, leadership—within and without the RevCon setting—played an important role in steering the conference to a fruitful conclusion. In the conference the presidency of Ambassador Libran Cabatculan, particularly his establishment of the informal "focus group" of 16 to 24 countries to deliberate over contentious issues, proved decisive in facilitating the final agreed text.[4] Outside the conference the leadership of the United States, particularly president Barack Obama, in recommitting Washington to the institutional underpinnings of non-proliferation and disarmament was vital. Starting with the April 2009 Prague speech, through the July summit meeting in Moscow, followed by the special UNSC session in September, which unanimously passed resolution 1887, to the first-ever nuclear security summit in Washington in April 2010, Obama and the US helped set the stage for a successful

[1] Harald Mueller, "The 2005 NPT Review Conference: Reasons and Consequences of Failure and Options for Repair", *Weapons of Mass Destruction Commission*, paper n°31, August 2005, available at http://www.blixassociates.com/wp-content/uploads/2011/03/No31.pdf.
[2] For instance, the remarks of the Bulgarian Foreign Minister, Nickolay Mladenov, at the start of the NPT RevCon on 3 May 2010. Similar sentiments were echoed by several other delegations.
[3] Deepti Choubey, "Restoring the NPT: Essential Steps for 2010", Carnegie Endowment for International Peace, 2009, p. 16.
[4] William Potter, et al., "The 2010 NPT Review Conference: Deconstructing Consensus", *CNS Special Report*, 17 June 2010, p. 6.

eighth NPT RevCon.[5] During the RevCon, the US took the unprecedented step of revealing the total number of its operational nuclear weapons (5,113)[6], followed by the UK, which separately revealed the size of its nuclear arsenal (not to exceed 225 weapons).[7] While France had announced a ceiling of 300 nuclear warheads in March 2008, it did not reveal the actual number of nuclear weapons nor did it mention this during the 2010 NPT RevCon.[8]

Consequently, these three factors are also likely to play a crucial role in the effective implementation of the ambitious 64-point Action Plan detailed in the final document of the 2010 NPT RevCon.[9] However, as was evident soon after the 2010 NPT RevCon, these factors are unlikely to sustain. Within days of the conclusion of the meeting the US qualified its support for the Middle East zone free of weapons of mass destruction (WMD).[10] Similarly, UNSC resolution 1929 imposing additional sanctions against Iran, coupled with increasingly shrill rhetoric from Israel on the need to take military action against Iran's nuclear capabilities, and the International Atomic Energy Agency (IAEA) reports accusing Iran of pursuing a nuclear weapon programme, though inevitable, certainly vitiated the constructive atmosphere that had prevailed during the 2010 NPT RevCon. Moreover, the leadership evident in the run up to the conference and through the proceedings was replaced by more predictable, if uninspiring, postures. Indeed, while initiative, creativity and leadership had been obvious in crafting the impressive recommendations for follow-on actions, there were neither benchmarks to monitor progress nor the will to actually follow through with the implementation and operationalization of the Action Plan. The exception were the basic benchmarks for the proposed 2012 conference on the Middle East as a zone free of nuclear weapons and other weapons of mass destruction.

Against this evolving backdrop, the publication of the *2010 NPT Action Plan Monitoring Report* is an effort to measure the progress made towards implementing the Action Plan under three pillars: nuclear disarmament; nuclear non-proliferation; and peaceful uses of nuclear energy. In addition, the publication also notes the key developments in implementing the 1995 resolution on the Middle East in general and the proposed 2012 conference on the Middle East zone free of nuclear weapons and other weapons of mass destruction.

Nuclear disarmament

Progress on the 22 Action Plan items dealing with nuclear disarmament was the most eagerly anticipated but has, perhaps, been the most disappointing for a number of reasons. First, in the lead up to the 2010 RevCon there were several developments that raised expectations of a dramatic breakthrough. These included Obama's Prague Agenda, especially his vision of a world free of nuclear weapons; the first-ever P5 (China, France, Russia, UK and US) conference on confidence-building measures towards disarmament and non-proliferation issues in London in September 2009; and UNSC resolution 1887, where for the first time the NPT nuclear-weapon states (NWS) undertook to uphold their article VI commitments.

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[5] This was in stark contrast to the spoiler role that the US played in 2005 under president G.W. Bush. See J. Dhanapala, "Evaluating the 2010 NPT Review Conference", *United States Institute of Peace Special Report*, October 2010, p.3

[6] Fact Sheet, "Increasing Transparency in the U.S. Nuclear Weapons Stockpile", 3 May 2010.

[7] Queen's Speech: Hague reveals size of Trident stockpile, 26 May, 2010, *BBC News*, http://news.bbc.co.uk/democracylive/hi/house_of_commons/newsid_8707000/8707285.stm.

[8] Presentation of SSBM "Le Terrible", Speech by M. Nicolas Sarkozy, President of the Republic, Cherbourg, 21 March 2008, http://www.ambafrance-uk.org/President-Sarkozy-s-speech-at,10430.html.

[9] 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, Volume I, particularly "Conclusions and recommendations for follow-on actions", pp. 19-31.

[10] Statement by President Barack Obama on the Non-Proliferation Treaty Review Conference, 28 May 2010, http://www.whitehouse.gov/the-press-office/statement-president-non-proliferation-treaty-review-conference.

However, the NPT RevCon final document proved to be a rude awakening.
Many felt that the items dealing with disarmament did not go far enough, especially given that there has been virtually no progress in this area for a decade since the formulation of the so-called "13 Practical Steps" for nuclear disarmament in the 2000 NPT RevCon final document. Indeed, many of the NPT nuclear weapon states actually "walked back" from these commitments.[11] Moreover, as in the case of the 13 Practical Steps, while some of the Action Plan items in the 2010 final document "are very specific (e.g. entry into force of the CTBT, a testing moratorium, and FMCT negotiations), others are vague and do not easily lend themselves to measurement."[12] This is particularly the case with Action 5, which merely calls for "moving towards an overall reduction in the global stockpile of all types of nuclear weapons", without providing any benchmarks to measure progress. Consequently, the P5 could justifiably claim progress and pat themselves on the back, even though there is no way to prove their assertion.

Although the P5 did meet in Paris in June-July 2011—a year after the NPT RevCon—the meeting did not go beyond declarations of "unconditional support" and "reaffirmation" for the Action Plan.[13] While these declarations, coupled with the "discussions on the issues of transparency and mutual confidence, including nuclear doctrine and capabilities, and of verification," are crucial especially in emphasizing and "recognizing such measures are important for establishing a firm foundation for further disarmament efforts" they fall short of practical steps and are difficult to evaluate.[14]

Instead, the differences between the P5, particularly on the issue of transparency are worrying. Even though both the US (with one of the biggest arsenals) and the UK (with one of the smallest arsenals) revealed the actual sizes of their arsenals without any apparent adverse implications either for their security or deterrence stability, the other two NPT NWS continued to, inexplicably, argue that such transparency was detrimental to their security. While there is a possibility that these differences might be narrowed in the next P5 meeting in this series, scheduled to be held in the US in 2012, there is no certainty. Indeed, the ambulatory nature of the P5 dialogue is only matched by the excruciatingly slow progress on the Iranian and North Korean nuclear files and both are equally frustrating for the majority adherent members of the NPT.

Even more troubling, reports suggested that the P5 and other nuclear weapon states were continuing with the modernization of their arsenals and are expected to spend around one trillion US dollars on nuclear weapons over the next decade.[15] According to another recent study "smaller but still potentially world-destroying nuclear arsenals have been normalized, and are an integral part of the political and economic architecture of the global system as it now exists"[16] with very little prospects for significant reductions, let alone complete elimination.

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[11] Sharon Squassoni, "Grading Progress on 13 Steps Towards Disarmament", *Policy Outlook*, Carnegie Endowment for International Peace, April 2009, p. 2.
[12] *Ibid*.
[13] "Nuclear weapon states discuss nuclear disarmament obligations", 6 July 2011, http://www.fco.gov.uk/en/news/latest-news/?view=PressS&id=627529382.
[14] *Ibid*.
[15] Bruce Blair, "World Nuke Spending to Top $1 Trillion Per Decade," *Time*, 4 June 2011, battleland.blogs.time.com/2011/06/04/world- nuke-spending-to-top-1-trillion-per-decade/.
[16] Ray Acheson (ed.), "Executive Summary", *Assuring Destruction Forever: nuclear weapon modernization around the world*, (Reaching Critical Will, 2012), p.10.

Consequently, while three of the five NWS have made some moves to reduce their arsenals, overall progress on disarmament has been dismal.[17] Thus, as per this report's 'traffic light' monitoring method, on the 22 action points dealing with disarmament, there are ten red lights (no progress); seven yellow lights (limited movement); and only five green lights (forward movement).

Nuclear non-proliferation

Although 23 Action Plan items (from 23 to 46) deal with nuclear non-proliferation they are "neither strong nor very innovative and tend to provide incentives for states parties to keep doing what they already do".[18] Nonetheless, the items suggest three significant trends: first, "they reflect a bargain between increased commitment to non-proliferation measures and actual progress on the nuclear disarmament front".[19] This is particularly noteworthy in item 30, which stresses that "comprehensive safeguards and additional protocols should be universally applied once the complete elimination of nuclear weapons has been achieved", thus implying that the objective of universal compliance with the additional protocols and comprehensive safeguards is only likely following the elimination of all nuclear weapons. This in turn indicates that there might be little incentive for NPT non-nuclear weapon states to sign up to additional protocols unless they see substantive progress towards disarmament on the part of the NPT NWS.

Similarly, given the lethargic pace of disarmament and the acknowledged linkage between disarmament and non-proliferation, is it realistic to expect that efforts to reverse or prevent proliferation should move at a faster pace than disarmament? The argument that the key NPT proliferation cases relate to regional dimensions and have nothing to do with the pace of P5 disarmament and, therefore, should be relatively easy to resolve at the regional level is also untenable. The presence of P5 nuclear weapons in the regions of proliferation concern, particularly the Middle East and Northeast Asia, is clearly one of the crucial elements behind the nuclear weapons quest by some non-nuclear weapon NPT states. To that extent, the prospects of reversing or preventing proliferation is directly related to the removal of P5 nuclear weapons from these regions as well as the pace of nuclear disarmament at the global level.

Second, none of the member states that are considered to be in violation of their "non-proliferation obligations" and pose the biggest non-proliferation challenge to the NPT have been named in the Action Plan. In fact, the only state that does find mention is the Democratic People's Republic of Korea (DPRK), which was not present at the 2010 RevCon and has not only built nuclear weapons and left the NPT for all practical purposes but has also shown no indications of returning to the NPT fold. Nonetheless, the NPT fraternity continues to pretend that DPRK is a member and still beholden to the norms of the Treaty. For instance, the "Conference reaffirms its firm support for the Six-Party Talks" and urges DPRK "to fulfil the commitments under the Six-Party Talks, including the complete and verifiable abandonment of all nuclear weapons and existing nuclear programmes".

In contrast neither Iran nor Syria, both of which attended the 2010 RevCon and are also considered to be in violation of their non-proliferation obligations, have been mentioned.

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[17] See section in this report on disarmament and arms reduction efforts and section on irreversibility, verifiability, and transparency of recent reductions, pp. 25-45.
[18] Benoit Pelopidas, "Assessment Paper on Non-Proliferation" prepared for the second international research seminar on the 2010 NPT Review Conference Action Plan: Implementation and Operationalization on 29 September 2011 at the Geneva Centre for Security Policy, pp. 5-6.
[19] *Ibid*.

Only two Action Plan points (26 and 27) make oblique references to them when they note the "importance in complying with the non-proliferation obligations" and the "importance of resolving all cases of non-compliance with safeguards obligations in full conformity with the IAEA statute". While the IAEA Board of Governors has separately reported that Iran, Syria, and the DPRK are currently not complying with certain obligations, a clear and comprehensive definition of what constitutes mandatory obligations and compliance for each of these cases would still be desirable.

Third, all of the ad-hoc initiatives to address the hardest proliferation cases – Iran and DPRK – are taking place outside the NPT process. In the case of the DPRK this is the stalled Six Party Talks, the last round of which was held way back in December 2008. Similarly, while two rounds of the P5+1 talks with Iran were held in 2010 after the RevCon, they have not led to any significant progress. The prospect for the upcoming talks is equally dismal. The same fate appears to have befallen the so-called Tehran Joint Declaration between Brazil, Iran and Turkey for a fuel swap. Worse, even these ad-hoc approaches, which might provide a breakthrough in the right circumstances, have not been linked to the NPT process. For instance, there is no formal reporting back by the parties involved to the progress (or lack of it) in these ad-hoc initiatives. Consequently, there is a serious disconnect between the NPT process and these initiative, with the NPT being increasingly rendered inconsequential.

As a result, this report adjudges the 23 action points related to non-proliferation as follows: three red lights related to the lack of universalization and export controls; nine yellow lights reflecting some progress even on the most difficult cases and twelve green lights on most of the other non-proliferation aspects.[20] Based on this assessment it could be argued that since 2010 there has been more progress in the area of non-proliferation than disarmament.

Peaceful uses of nuclear energy

The 18 Action Plan items dealing with the peaceful uses of nuclear energy were, perhaps, the least contentious and reflect three broad trends. First, that nuclear energy will continue its march forward – despite opposition from a few European States. Second, although proposals put forward in recent years to multinationalise the nuclear fuel cycle now have the green light to become the norm, they have not gained traction; even though their opertionalization would enhance non-proliferation, benefit from economics of scale and ensure the safety of sensitive technologies. Third, "the technical design flaws observed at Fukushima call for a higher international awareness of safety and for adequate corrections wherever needed, like it has been the case after the accidents of Three-Mile Island in the United States of America and Chernobyl in the former Soviet Union." [21]

The Fifth Review Meeting of the Convention on Nuclear Safety, held in April 2011 in the wake of the Fukushima nuclear disaster, put the issue of safety up front and centre. While acknowledging the crucial role to ensure safety even while stressing the peaceful uses of nuclear energy, some states have been wary about allowing a greater role for international institutions and mechanisms to ensure nuclear safety. These states have emphasized the responsibility and role of national agencies to ensure nuclear safety. In light of this caveat on the part of some states, it is improbable that the convention on nuclear safety and other related international conventions will achieve universal adherence before the 2015 NPT RevCon. Instead, it might be more conducive to create model regulatory boards and establish the

[20] See sections on Universalization, Non-proliferation obligations and Other non-proliferation instruments, pp. 59-71.
[21] Bruno Pellaud, "Assessment Paper on the Peaceful Uses of Nuclear Energy" prepared for the first international research seminar on the 2010 NPT Review Conference Action Plan: Implementation and Operationalization on 30 June 2011 at the Geneva Centre for Security Policy, p. 2.

principle of peer reviews, similar to the ones operating in the civil aviation industry. This approach found greater resonance at the Fifth Review Meeting on Nuclear Safety.[22]

Thus, according to this report, while the right to develop nuclear energy for peaceful purposes and to have the ability to participate in nuclear technology exchange programmes has been well established and reinforced, its implementation among NPT members remains uneven. In addition, the issue of safeguards, safety and security have become critical elements in the peaceful use of nuclear energy. Consequently, the Action Plan items related to peaceful uses have achieved the most progress with one red light, six yellow lights and 11 green lights.[23]

The 1995 Middle East resolution

The consensus decision reached at the 2010 NPT RevCon to convene a conference in 2012 on the establishment of a zone free of nuclear weapons and other weapons of mass destruction in the Middle East was, perhaps, the most salient outcome of the quinquennium gathering.[24]

It is also one of the most challenging undertakings for at least three reasons. First, in the case of all other nuclear weapon free zones (NWFZ) the decision not to build or to give up possession of nuclear weapons preceded the establishment of the zone.[25] This is not the case in the Middle East, where no such decision has been made and the process of establishing the zone will have to be coupled with moves to either not build or to give up existing nuclear weapons. In addition, unlike other zones, the proposed zone in the Middle East will also have to create instruments and procedures to dismantle not only nuclear weapons but also other WMD and verify the process.

Second, all the existing zones are designed to be free of only nuclear weapons, not biological and chemical weapons, as is being proposed for the Middle East weapons of mass destruction free zone (MEWMDFZ).[26] Here, in addition to nuclear and chemical weapons, biological weapons programmes, for which no verification protocol exists at the moment either at the international or regional level, poses a particular quandary.

Third, the enmities in the region combined with the lack of recognition of states and borders have accentuated perceived existential threats in the Middle East. Coupled with the absence of any regional security architecture or even a common regional platform to discuss differences, the prospect of establishing a MEWMDFZ without addressing at least some of the causes of insecurity is daunting to say the very least.[27] The region faces several mutually reinforcing insecurity dilemmas: between Iran and Israel; between Iran and the Gulf states; and, perhaps to a lesser degree, between Israel and the Levant Arab states. All of these will have to be taken into consideration if the proposed Zone has to be established and sustained for an unlimited duration.

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[22] *Ibid*.
[23] See sections on Nuclear Cooperation, Nuclear Safety and Security and Nuclear Fuel Cycle, pp. 85-98
[24] This section is drawn from W.P.S. Sidhu and Bruce Jones with Colette Jaycox, Preparing for a Constructive 2012 Conference on the Middle East Weapons of Mass Destruction Free Zone, New York University's Center on International Cooperation, March 2012.
[25] See Fact Sheet: Nuclear-Weapon-Free Zones (NWFZ) At a Glance, *Arms Control Association*, available at: http://www.armscontrol.org/factsheets/nwfz and Jozef Goldblat, "Nuclear-Weapon-Free Zones: A History and Assessment, *The Nonproliferation Review*, Spring-Summer 1997, pp. 18-32.
[26] Fact Sheet: WMD-Free Middle East Proposal At a Glance, *Arms Control Association*, available at: http://www.armscontrol.org/factsheets/mewmdfz.
[27] Indeed, in the case of at least the Treaty of Bangkok (establishing the Southeast Asian NWFZ), the Treaty of Pelindaba (establishing the African NWFZ) and the Semipalatinsk Treaty (establishing the Central Asian NWFZ) regional and sub-regional organizations played a critical role in creating the political and security conditions conducive for the establishment of these NWFZs.

Despite the bleak odds significant progress has been made towards the 2012 conference following the appointment of Ambassador Jaako Laajava of Finland and detailed consultations with the key potential participants to the conference – the Arab states, Iran and Israel. Despite the present tensions and serious differences between the key actors, three areas of convergence have emerged. First, all the principal actors, notably the Arab states, Iran, and Israel have at one time or another endorsed, in principle, the concept of the Zone. Second, none of the key actors have declined to attend the proposed conference this year, and all the indications are that they will participate in the proceedings, even though the motives behind their participation may vary considerably. Third, and perhaps most importantly, security is a preeminent factor among the many reasons that states in the Middle East seek WMD in general, and nuclear weapons in particular.

Finally, there are two ways of measuring success of the 2012 conference process. The first and more conventional measure is, of course, achieving the objective of the process, which in this case would be the successful conclusion of the conference in 2012 and the eventual establishment of the proposed Zone. The second and more pragmatic measure would be to recognize and evaluate progress on security relations within the region, and efforts to reduce both insecurity and the risk of war – even if these do not necessarily immediately advance the broader objective. Any forward movement, including reduction in tensions, improved relations and the establishment of an institutional process to work towards the ultimate goal of the Zone would be the obvious benchmarks. The former measure is unlikely to be attained in the foreseeable future. The latter, though far from ideal, is not only more achievable but would also be a vast improvement over the present scenario. And that would be a realistic measure of success.

Conclusion

The biggest challenge to monitoring the bulk of the ambitious 64-point Action Plan is both the lack of clear benchmarks against which to measure progress and the absence of any formal institutional mechanism to carry out the monitoring and to report back to the next PrepCom and RevCon in an organised way.

In addition, as noted above, the prospects of monitoring the implementation of the Action Plan are dependent on three factors: first, the collective desire of the NPT members to achieve success, however defined. Second, creative leadership capable of directing that collective desire. Third, the ability to establish an external environment conducive for cooperation not only among the NPT members but also increasingly with non-NPT members. The import of the external environment was evident in the passing objection that Tehran made to Istanbul being the venue for the latest round of the P5+1 negotiations because of Turkey's attitude towards Syria – an Iranian ally. Similarly, the role of non-NPT members is evident in the case of Israel, especially the need for its active participation in the proposed 2012 conference, but also in the case of Pakistan, which has single-handedly block progress on some crucial elements of the Action Plan, as well as India, whose bilateral deal with the US has cast a shadow over other aspects of the Action Plan. Managing all of these disparate elements is vital and likely to have a direct impact on the success of the Action Plan. Otherwise, failure might again become an inadvertent option.

Summary of Implementation of Actions

Action 1: All States parties commit to pursue policies that are fully compatible with the Treaty and the objective of achieving a world without nuclear weapons.

The continued reliance on nuclear weapons in security doctrines and policies, together with the nuclear weapon modernization plans of all nuclear weapon states, are not compatible with the Treaty and its goals, nor with the letter and spirit of the NPT.

Action 2: All States parties commit to apply the principles of irreversibility, verifiability and transparency in relation to the implementation of their treaty obligations.

For the reductions of nuclear arsenals that are taking place today, some NWS are failing to adequately apply the principles of irreversibility, verifiability, and transparency in relation to their treaty obligations. For example, the recent lowering of figures by the United Kingdom's stockpile of nuclear weapons does not come with any verification mechanism. The inspection scheme under New START between Russia and the United States is making progress on transparency and verification but does not adequately address the principle of irreversibility. China and France have not reported any reductions at all.

Action 3: In implementing the unequivocal undertaking by the nuclear-weapon States to accomplish the total elimination of their nuclear arsenal, the nuclear-weapon States commit to undertake further efforts to reduce and ultimately eliminate all types of nuclear weapons, deployed and non-deployed, including through unilateral, bilateral, regional and multilateral measures.

Qualitative and quantitative disarmament are both equally important to achieve a world without nuclear weapons. The research shows that recent efforts have focused mainly on quantitative disarmament, though only to a minimal degree. Meanwhile, qualitative disarmament has as of yet not been addressed adequately and the modernization plans of the nuclear weapon states undermine the minimal reductions undertaken. Therefore, this action cannot be considered implemented.

Action 4: The Russian Federation and the United States of America commit to seek the early entry into force and full implementation of the Treaty on Measures for the Further reduction and Limitation of Strategic Offensive Arms and are encouraged to continue discussions on follow-on measures in order to achieve deeper reductions in their nuclear arsenals.

The ratification and implementation of New START by both the United States and Russia means that the first part of action 4 is being implemented, but until official talks and follow-on measures for further reduction are progressing, this action cannot be viewed as fully implemented.

Action 5: The nuclear-weapon States commit to accelerate concrete progress on the steps leading to nuclear disarmament, contained in the Final Document of the 2000 Review Conference, in a way that promotes international stability, peace and undiminished and increased security. To that end, they are called upon to promptly engage with a view to, inter alia:

(a) Rapidly moving towards an overall reduction in the global stockpile of all types of nuclear weapons, as identified in action 3;

(b) Address the question of all nuclear weapons regardless of their type or their location as an integral part of the general nuclear disarmament process;
(c) To further diminish the role and significance of nuclear weapons in all military and security concepts, doctrines and policies;
(d) Discuss policies that could prevent the use of nuclear weapons and eventually lead to their elimination, lessen the danger of nuclear war and contribute to the non-proliferation and disarmament of nuclear weapons;
(e) Consider the legitimate interest of non-nuclear-weapon States in further reducing the operational status of nuclear weapons systems in ways that promote international stability and security;
(f) Reduce the risk of accidental use of nuclear weapons; and
(g) Further enhance transparency and increase mutual confidence.

The research has shown that modernization and qualitative improvement of nuclear arsenals, reluctance by NWS and others to endorse progressive UN General Assembly (UNGA) resolutions on the topic of nuclear disarmament, lack of progress on removing or reducing non-strategic nuclear weapons, the outspoken intention to continue to rely on nuclear weapons for security for decades to come, the reluctance to decrease operational readiness, the opposition to begin preparatory discussions on a nuclear weapons convention or a framework of mutually reinforcing instruments and the lack of progress within the Conference on Disarmament mean that the obligations in this action cannot be considered to be implemented. While the NWS met in Paris in 2011, the nature and scope of their discussions as indicated to the public did not meet the expectations of many NPT states parties.

Action 6: All States agree that the Conference on Disarmament should immediately establish a subsidiary body to deal with nuclear disarmament, within the context of an agreed, comprehensive and balanced programme of work.

The attempts to establish a subsidiary body to deal with nuclear disarmament through a programme of work in the Conference on Disarmament have failed. While the opposition to the most recent proposal came from a non-NPT state, the reluctance from some states parties to the NPT to come up with new and creative solutions results in this action not being implemented.

Action 7: All States agree that the Conference on Disarmament should, within the context of an agreed, comprehensive and balanced programme of work, immediately begin discussion of effective international arrangements to assure non-nuclear-weapon States against the use or threat of use of nuclear weapons, to discuss substantively, without limitation, with a view to elaborating recommendations dealing with all aspects of this issue, not excluding an internationally legally binding instrument. The Review Conference invites the Secretary-General of the United Nations to convene a high-level meeting in September 2010 in support of the work of the Conference on Disarmament.

No progress has been made on a global instrument pertaining to negative security assurances (NSAs) as mandated by action 7. While the most recent proposal for a programme of work in the Conference on Disarmament was opposed only by a non-NPT state, NPT states parties have not made adequate efforts to come up with alternative and creative solutions. While the high-level meeting did take place in September 2010, it has so far not had any concrete results on starting discussions on negative security assurances or any other topic on the CD's agenda.

Action 8: All nuclear-weapon States commit to fully respect their existing commitment with regard to security assurances. Those nuclear-weapon States that have not yet done so are encouraged to extend security assurances to non-nuclear-weapons States parties to the Treaty.

There has not been much progress on the issue of NSAs since the adoption of the 2010 NPT Action Plan. Both the US and UK have made recent changes in the language of their defence policies concerning this issue, but China is still the only nuclear weapon state that has made a pledge to not use nuclear weapons against a NNWS without any conditions or reservations. While the US and UK have a policy not to target NPT NNWS that are in compliance with "non-proliferation obligations", which is an undefined concept. France, UK, US, and Russia still abstain from the annual UNGA resolution "Conclusion of effective international arrangements to assure non-nuclear-weapon States against the use or threat of use of nuclear weapons".

Action 9: The establishment of further nuclear-weapon-free-zones, where appropriate, on the basis of arrangements freely arrived at among States of the region concerned, and in accordance with the 1999 Guidelines of the United Nations Disarmament Commission, is encouraged. All concerned States are encouraged to ratify the nuclear-weapon-free zone treaties and their relevant protocols, and to constructively consult and cooperate to bring about the entry into force of the relevant legally binding protocols of all such nuclear-weapon-free zones treaties, which include negative security assurances. The concerned States are encouraged to review any related reservation.

Since the adoption of the 2010 NPT Action Plan, Russia has ratified the Pelindaba Treaty. The US has made some minor progress on the ratification process for the Pelindaba and Rarotonga treaties by submitting the issue for approval to its Senate. The Pelindaba Treaty has also seen two new member states. Consultations between the members of the Bangkok Treaty and the NWS is another encouraging development but has so far not been able to produce any concrete results. While the UK and US have indicated that they would be willing to discuss outstanding difficulties with the Central Asian zone, no consultations have yet taken place. There has also been progress on the discussions of establishing a WMDFZ in the Middle East, when Finland was appointed as host state and facilitator of a conference on this topic in 2012. Finally, no modifications of any reservations by NWS to any of the protocols of NWFZ treaties have taken place. Despite positive steps, states parties need to make additional efforts in order to fully implement this action.

Action 10: All nuclear-weapon States undertake to ratify the Comprehensive Nuclear-Test-Ban Treaty with all expediency, noting that positive decisions by nuclear-weapon States would have the beneficial impact towards the ratification of that Treaty, and that nuclear-weapon States have the special responsibility to encourage Annex 2 countries, in particular those which have not acceded to the Treaty on the Non-Proliferation of Nuclear Weapons and continue to operate unsafeguarded nuclear facilities, to sign and ratify.

There are still four member states of the NPT that need to ratify the CTBT for the Treaty to enter into force: China, Egypt, Iran, and the United States. These four countries are not complying with this action. In addition, there are 31 other members of the NPT that also have not yet signed or ratified the CTBT. China and the United States have a special responsibility since they are the only NWS under the NPT that have not yet ratified the treaty. Both states have made clear their intention to ratify the CTBT since the NPT Review Conference in 2010, but have no concrete timetable for when this will happen.

Action 11: Pending the entry into force of the Comprehensive Nuclear-test-Ban treaty, all States commit to refrain from nuclear-weapon test explosions or any other nuclear explosions, the use of new nuclear weapons technologies and from any action that would defeat the object and purpose of that Treaty, and all existing moratoriums on nuclear-weapon test explosions should be maintained.

Action 12: All States that have ratified the Comprehensive Nuclear-Test-Ban Treaty recognize the contribution of the conference on facilitating the entry into force of that Treaty and of the measures adopted by consensus at the Sixty Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-test-Ban Treaty, held in September 2009, and commit to report at the 2011 Conference on progress made towards the urgent entry into force of that Treaty.

Action 13 All States that have ratified the Comprehensive Nuclear-Test-Ban Treaty undertake to promote the entry into force and implementation of that Treaty at the national, regional and global levels.

Action 14: The Preparatory Commission for the Comprehensive Nuclear-Test- Ban Treaty Organization is to be encouraged to fully develop the verification regime for the Comprehensive Nuclear-Test-Ban Treaty, including early completion and provisional operationalization of the international monitoring system in accordance with the mandate of the Preparatory Commission, which should, upon entry into force of that Treaty, serve as an effective, reliable, participatory and non-discriminatory verification system with global reach, and provide assurance of compliance with that Treaty.

Many member states participated in the Ministerial Meeting in September 2010 and the Article XIV Conference in September 2011 and repeatedly call for the entry into force of the CTBT. However, it is not clear to what extent these states promote entry into force in bilateral relations with the remaining annex II states, though official statements and documents indicate that states are currently complying with these actions. The verification scheme of the CTBT is continuing to be developed by the Preparatory Commission to the CTBTO and therefore action 14 is also complied with.

Action 15: All States agree that the Conference on Disarmament should, within the context of an agreed, comprehensive and balanced programme of work, immediately begin negotiation of a treaty banning the production of fissile material for use in nuclear weapons or other nuclear explosive devices in accordance with the report of the Special Coordinator of 1995 (CD/1299) and the mandate contained therein. Also in this respect, the Review Conference invites the Secretary-General of the United Nations to convene a high-level meeting in September 2010 in support of the work of the Conference on Disarmament.

No progress has been made on negotiations of a treaty banning fissile materials for use in nuclear weapons. While the most recent proposal for a programme of work in the Conference on Disarmament was opposed only by a non-NPT state, NPT states parties have not made adequate efforts to come up with alternative and creative solutions. The high-level meeting did take place in September 2010, and there have been attempts to create momentum in the General Assembly but so far nothing has had any concrete results on starting negotiations on fissile materials.

Action 16: The nuclear-weapon States are encouraged to commit to declare, as appropriate, to the International Atomic Energy Agency (IAEA) all fissile material designated by each of them as no longer required for military purposes and to place such material as soon as practicable 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.

Action 17: In the context of action 16, all States are encouraged to support the development of appropriate legally binding verification arrangements, within the context of IAEA, to ensure the irreversible removal of fissile material designated by each nuclear-weapon State as no longer required for military purposes.

No significant changes after the adoption of the 2010 NPT Action Plan have taken place. Three out of the five NWS have declared excess fissile material for military use, although IAEA involvement has been limited. The remaining stock of HEU in both Russia and the US exceeds their military requirements and both countries could declare more HEU as excess to national security requirements. No developments of any legally-binding verification arrangements as described in action 17 have taken place, and therefore states are not considered to comply with this.

Action 18: All States that have not yet done so are encouraged to initiate a process towards the dismantling or conversion for peaceful uses of facilities for the production of fissile material for use in nuclear weapons or other nuclear explosive devices.

Since a moratorium on production of fissile material for weapons purposes has been announced by four of the five NWS, most production facilities have been dismantled. While not publicly declaring such a moratorium, China is also believed to have stopped production of fissile material for weapons purposes and have closed or converted such facilities, but should announce this publicly.

Action 19: All States agree on the importance of supporting cooperation among Governments, the United Nations, other international and regional organizations and civil society aimed at increasing confidence, improving transparency and developing efficient verification capabilities related to nuclear disarmament.

The UK-Norway-VERTIC initiative is the only significant project related to cooperation on these issues although some countries are reportedly constructing new projects on similar issues. More efforts are needed to fully implement this action.

Action 20: States parties should submit regular reports, within the framework of the strengthened review process for the Treaty, on the implementation of the present action plan, as well as of article VI, paragraph 4 (c), of the 1995 decision entitled “Principles and objectives for nuclear non-proliferation and disarmament”, and the practical steps agreed to in the Final Document of the 2000 Review Conference, and recalling the advisory opinion of the International Court of Justice of 8 July 1996.

The national reporting system under the NPT had a low level of participation in the lead up to the 2010 NPT Review Conference. Significant progress needs to be made during the upcoming preparatory process for the 2015 Review Conference if this action is to be fully implemented.

Action 21: As a confidence-building measure, all the nuclear-weapon States are encouraged to agree as soon as possible on a standard reporting form and to determine appropriate reporting intervals for the purpose of voluntarily providing standard information without prejudice to national security. The Secretary-General of the United Nations is invited to establish a publicly accessible repository, which shall include the information provided by the nuclear-weapon States.

The NWS are reported to have discussed a standard reporting form in meetings among the P5, and the states of the Non-Proliferation and Disarmament Initiative (NPDI) attempted to facilitate this process by creating a concrete proposal. However, there have been no official comments from the NWS on the NPDI proposal, and no similar proposal has been put forward by the NWS. The NWS should agree on and present a standard reporting form in order to fulfil this action.

Action 22: All States are encouraged to implement the recommendations contained in the report of the Secretary-General of the United Nations (A/57/124) regarding the United Nations study on disarmament and non-proliferation education, in order to advance the goals of the Treaty in support of achieving a world without nuclear weapons.

The reporting of implementation of the UNSG recommendations on disarmament education has proven to be poor, with only five states submitting information as of 2010. In order for this action to be implemented, NPT states parties must undertake significant improvements of their disarmament education efforts.

Action 23: The Conference calls upon all States parties to exert all efforts to promote universal adherence to the Treaty, and not to undertake any actions that can negatively affect prospects for the universality of the Treaty.

By examining the concrete events that have taken place since the adoption of the 2010 NPT Action Plan, it is possible to conclude that states parties are not exerting all efforts in order to reach this goal. While some have made statements on the topic, many consistently avoid calling out the names of the non-members of the NPT. Furthermore, the increased nuclear cooperation with India and Pakistan show that such rhetoric is not matched by corresponding actions. In fact, any calls for universalization are undermined by the reality of the international community's relations with these three states. Also, the voting results in the UN General Assembly concerning resolutions calling for universalization of the NPT have not significantly changed since the conclusion of the Action Plan.

Action 24: The Conference re-endorses the call by previous review conferences for the application of IAEA comprehensive safeguards to all source or special fissionable material in all peaceful nuclear activities in the States parties in accordance with the provisions of article III of the Treaty.

Action 24 calls for the application of Comprehensive Safeguards Agreements (CSA) on peaceful nuclear activities in all member states. Only 13 countries have not yet implemented a CSA, and most of those countries do not carry out any significant civilian nuclear activities. Therefore, the call in this action seems to be complied with.

Action 25: The Conference, noting that 18 States parties to the Treaty have yet to bring into force comprehensive safeguards agreements, urges them to do so as soon as possible and without further delay.

This action calls specifically on the states parties that had not brought into force a CSA by May 2010 to do so. Since that date, five countries have done so and a sixth has had its CSA approved by the IAEA Board of Governors on 8 June 2011. No other progress by the remaining 12 countries has been noted. It is therefore appropriate to conclude that this action is not fully complied with and it will require additional efforts by the countries that still have not brought the CSA into force.

Action 26: The Conference underscores the importance in complying with the non-proliferation obligations, addressing all compliance matters in order to uphold the Treaty's integrity and the authority of the safeguards system.

Action 27: The Conference underscores the importance of resolving all cases of non-compliance with safeguards obligations in full conformity with the IAEA statute and the respective legal obligations of Member States. In this regard, the Conference calls upon Member States to extend their cooperation to the Agency.

These two actions are complicated to evaluate since the phrases "non-proliferation obligations" and "non-compliance" are open for interpretation. The IAEA Board of Governors has reported that Iran, Syria, and the DPRK are currently not complying with certain obligations. However, the view on what constitutes mandatory obligations and thereby compliance with such obligations differs quite significantly. "Non-proliferation obligations" is not a legally-defined term, whereas the safeguards agreements of each country are very specific. All parties need to implement these agreements to the fullest extent. However, the states in question do not agree that they are in violation of any of their legal obligations; therefore, reciprocal efforts in good faith must be made to reach an understanding. Due to the gravity of these situations, it is imperative that the concerned states implement their legal obligations in good faith and exercise flexibility, transparency, and cooperation to that end.

Action 28: The Conference encourages all States parties which have not yet done so to conclude and to bring into force additional protocols as soon as possible and to implement them provisionally pending their entry into force.

Currently, 115 states have Additional Protocols in force, an increase of 14 states since May 2010. However, 71 member states of the NPT have still not brought into force an Additional Protocol, and therefore this action need more progress.

Action 29: The Conference encourages IAEA to further facilitate and assist the States parties in the conclusion and entry into force of comprehensive safeguards agreements and additional protocols. The Conference calls on States parties to consider specific measures that would promote the universalization of the comprehensive safeguards agreements.

Several initiatives to further facilitate the entry into force and universalization of CSAs and Additional Protocols by the IAEA have taken place and the progress on adherence to such instruments shows that this action is currently being complied with.

Action 30: The Conference calls for the wider application of safeguards to peaceful nuclear facilities in the nuclear-weapon States, under the relevant voluntary offer safeguards agreements, in the most economic and practical way possible, taking into account the availability of IAEA resources, and stresses that comprehensive safeguards and additional protocols should be universally applied once the complete elimination of nuclear weapons has been achieved.

There have been no reported changes in the application of the Voluntary Offer Agreement in the nuclear weapon states since May 2010 and therefore this action cannot be considered implemented.

Action 31: The Conference encourages all States parties with small quantities protocols which have not yet done so to amend or rescind them, as appropriate, as soon as possible.

Since the adoption of the Action Plan, nine states parties have amended their small quantities protocols (SQP). In addition, three new SQPs have entered into force, one new has been signed and the IAEA Board of Governors has approved one. However, a large number of SQPs from before 2005 remains and therefore this action will require further efforts by these states in order to be implemented fully.

Action 32: The Conference recommends that IAEA safeguards should be assessed and evaluated regularly. Decisions adopted by the IAEA policy bodies aimed at further strengthening the effectiveness and improving the efficiency of IAEA safeguards should be supported and implemented.

There has been some significant progress in this area, through new IAEA, multilateral, and national initiatives such as the Swiss study on optimizing the IAEA safeguards system. While it remains to be seen if any of these activities will have any concrete results on improving effectiveness and efficiency of safeguards, the action is currently being complied with.

Action 33: The Conference calls upon all States parties to ensure that IAEA continues to have all political, technical and financial support so that it is able to effectively meet its responsibility to apply safeguards as required by article III of the Treaty.

Action 34: The Conference encourages States parties, within the framework of the IAEA statute, to further develop a robust, flexible, adaptive and cost effective international technology base for advanced safeguards through cooperation among Member States and with IAEA.

There has been modest progress reported on actions 33 and 34 dealing with the IAEA and safeguards. However, the actions do not call for a specific increase of activities, but rather for continued support and to "further develop". The work of the IAEA in this area appears to be moving forward and to be of a predictable nature, and therefore these actions seem to be complied with.

Action 35: The Conference urges all States parties to ensure that their nuclear related exports do not directly or indirectly assist the development of nuclear weapons or other nuclear explosive devices and that such exports are in full conformity with the objectives and purposes of the Treaty as stipulated, particularly, in articles I, II and III of the Treaty, as well as the decision on principles and objectives of nuclear non-proliferation and disarmament adopted in 1995 by the Review and Extension Conference.

This action does not add any additional obligations aside from what is already in the NPT and previous decisions, but it does serve as a reminder that states are obliged to ensure that their nuclear-related exports do not directly or indirectly assist the development of nuclear weapons and that the 1995 decision on objectives and purposes of the Treaty requires states parties to promote transparency in nuclear-related export controls. In order to fully comply with this action, all states with nuclear cooperation agreements with non-parties to the NPT need to provide transparent information on how their nuclear exports do not directly or indirectly assist the development of nuclear weapons in these countries. As this is not the case, in particular in nuclear energy cooperation agreements with India, this action cannot be considered complied with.

Action 36: The Conference encourages States parties to make use of multilaterally negotiated and agreed guidelines and understandings in developing their own national export controls.

Action 36 is simply an encouragement and will be dependent on the state involved. The research in this study has shown that many countries have developed national export controls based on multilaterally negotiated guidelines.

Action 37: The Conference encourages States parties to consider whether a recipient State has brought into force IAEA safeguards obligations in making nuclear export decisions.

The implementation of this action depends on how one interprets safeguards obligations. While the requirement of a CSA was fulfilled for all nuclear cooperation agreements between parties to the NPT since May 2010, this limited interpretation means that it would not apply to exports to non-NPT states. However, as the action only refers to "IAEA safeguards obligations", it could be interpreted as meaning that the limited safeguards agreement on certain specified nuclear facilities in non-NPT states would be enough to implement this action.

Action 38: The Conference calls upon all States parties, in acting in pursuance of the objectives of the Treaty, to observe the legitimate right of all States parties, in particular developing States, to full access to nuclear material, equipment and technological information for peaceful purposes.

Action 39: States parties are encouraged to facilitate transfers of nuclear technology and materials and international cooperation among States parties, in conformity with articles I, II, III and IV of the Treaty, and to eliminate in this regard any undue constraints inconsistent with the Treaty.

Many states continue to highlight the importance of having the right to develop nuclear energy for peaceful purposes and to have the ability to participate in nuclear technology exchange programmes. At the same time, there are few examples of states parties making additional and publicly visible efforts to make sure that all states parties can participate in nuclear energy exchanges. The statement by the G8 shows that countries continue to support the notion of exchange of technology for development of nuclear energy, but it remains difficult to assess what this actually means in practice. It is therefore appropriate to conclude that states parties are currently complying with the obligations under action 38 and 39 of the 2010 NPT Action Plan, but that disagreement on the implementation of these commitments are based on the interpretation of certain wording in the Action Plan and the NPT itself.

Action 40: The Conference encourages all States to maintain the highest possible standards of security and physical protection of nuclear materials and facilities.

The term "highest possible standards" is not defined in the Action Plan. The IAEA provides a list of instruments that are "fundamental for nuclear security" but does not indicate if these are considered to be a general interpretation of the "highest possible standards". If such an interpretation is made, a clear majority of states parties are complying with this action. Since it was launched in April 2010, the Nuclear Security Summit process has reinforced Action 40.

Action 41: The Conference encourages all States parties to apply, as appropriate, the IAEA recommendations on the physical protection of nuclear material and nuclear facilities (INFCIRC/225/Rev.4 (Corrected)) and other relevant international instruments at the earliest possible date.

As the IAEA recommendation does not entail a legal commitment and does not require signature and ratification of member states, it is difficult to assess compliance levels. However, nothing indicates that states parties are not continuing to promote and work on physical protection of nuclear materials so therefore the action is considered complied with.

Action 42: The Conference calls on all States parties to the Convention on the Physical Protection of Nuclear Material to ratify the amendment to the Convention as soon as possible and encourages them to act in accordance with the objectives and the purpose of the amendment until such time as it enters into force. The Conference also encourages all States that have not yet done so to adhere to the Convention and adopt the amendment as soon as possible.

Adherence to this convention and its amendments is improving but a significant number of countries still remain outside. Therefore, additional progress by those states remaining outside is needed in order to fully implement this action.

Action 43: The Conference urges all States parties to implement the principles of the revised IAEA Code of Conduct on the Safety and Security of Radioactive Sources, as well as the Guidance on the Import and Export of Radioactive Sources approved by the IAEA Board of Governors in 2004.

A clear majority of NPT states parties have expressed support for the Code and many of those have explicitly supported all aspects of the supplementary Guidance on the Import and Export of Radioactive Sources. At the same time, some countries have withdrawn their political support to the Code and adherence has not increased significantly since May 2010. Therefore, additional efforts are needed to fully implement this action.

Action 44: The Conference calls upon all States parties to improve their national capabilities to detect, deter and disrupt illicit trafficking in nuclear materials throughout their territories, in accordance with their relevant international legal obligations, and calls upon those States parties in a position to do so to work to enhance international partnerships and capacity-building in this regard. The Conference also calls upon States parties to establish and enforce effective domestic controls to prevent the proliferation of nuclear weapons in accordance with their relevant international legal obligations.

The amount of activities dedicated to prevention of nuclear terrorism and the illicit trafficking of nuclear materials is significant. It has continued to grow after the conclusion of the 2010 NPT Action Plan. However, most initiatives are multilateral and not national. The action requires states to improve their national capabilities to detect illicit trafficking. While the multilateral initiatives are important for assisting states in improving their national capabilities, their direct effects are difficult to assess.

Aside from the difficulties to assess the impact of multilateral activities on national capacities, preventing nuclear terrorism and illicit trafficking of nuclear materials is one of the most fast-paced areas of implementation of the NPT Action Plan. The cooperation between governments, organizations, and some non-governmental actors is significant and therefore states parties are currently implementing this action.

Action 45: The Conference encourages all States parties that have not yet done so to become party to the International Convention for the Suppression of Acts of Nuclear Terrorism as soon as possible.

Since May 2010, the Convention has 13 new parties. While this is a positive step, there are still 60 states that have signed but not yet ratified the Convention. Further progress on adherence to this convention is needed.

Action 46: The Conference encourages IAEA to continue to assist the States parties in strengthening their national regulatory controls of nuclear material, including the establishment and maintenance of the State systems of accounting for and control of nuclear material, as well as systems on regional level. The Conference calls upon IAEA Member States to broaden their support for the relevant IAEA programmes.

There has been modest progress reported on action 46, dealing with the activities of the IAEA. As the action does not call for specific increases of activities, but rather for member states to assist and broaden support for the IAEA. The work of the IAEA in this appears to be moving forward predictably and it seems to be complied with.

Action 47: Respect each country's choices and decisions in the field of peaceful uses of nuclear energy without jeopardizing its policies or international cooperation agreements and arrangements for peaceful uses of nuclear energy and its fuel cycle policies.

Action 48: Undertake to facilitate, and reaffirm the right of States parties to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy.

The research shows that states continue to highlight the importance of having the right to develop nuclear energy for peaceful purposes and to have the ability to participate in nuclear technology exchange programmes. At the same time, there are few examples of states parties making additional and publicly visible efforts to make sure that all states can participate in nuclear energy exchanges. Despite the Fukushima accident, most states continue to support the notion of exchange of technology for development of nuclear energy, but it remains difficult to assess what this actually means in practice.

It is therefore concluded that states parties are currently complying with the obligations under these actions, but it is essential to note that disagreement on the implementation of these commitments can exist due to differences in interpretation of certain wording of the Action Plan and the NPT itself.

Action 49: Cooperate with other States parties or international organizations in the further development of nuclear energy for peaceful purposes, with due consideration for the needs of the developing areas of the world.

Nuclear energy continues to be a source of extensive international cooperation. The number of technical cooperation initiatives through the IAEA continues to rise and so does bilateral cooperation among states. Immediate connection to the NPT Action Plan, however, is difficult to ascertain, since no significant increase in training or cooperation activities since May 2010 can be detected. IAEA Technical Cooperation Programmes (TCP) and regional cooperation under the umbrella of the respective regional division of the TCP mostly focus on the training of personnel and the education of experts. Bilateral cooperation among states also includes the training of personnel but mainly focus on the exchange of nuclear technology and expertise.

Nuclear energy agreements amongst NPT states parties are numerous and continue to be concluded. The earthquake and tsunami in Japan and the following disaster at the Fukushima nuclear power plant have given pause to some negotiations and some states are reconsidering

their continued use or development of nuclear power, but most states continue to expand their nuclear options. States are therefore considered to be in compliance with action 49.

Action 50: Give preferential treatment to the non-nuclear-weapon States parties to the Treaty, taking the needs of developing countries, in particular, into account.

When comparing the amount and scope of cooperation of NPT states parties with nuclear weapon-possessors not party to the NPT, especially the increased cooperation with India since the Nuclear Suppliers Group (NSG) exception was granted, shows that the line between non-NPT states and NNWS of the NPT is diminishing. This is a cause for concern especially since the NSG has never been given the authority to reinterpret the existing international standards based on the NPT. Such a development has inevitably raised concerns about the compliance with this action and will continue be a source of significant disagreement at future NPT conferences, especially since the United States has formally introduced the issue of the India's membership in the NSG.

Action 51: Facilitate transfers of nuclear technology and international cooperation among States parties in conformity with articles I, II, III, and IV of the Treaty, and eliminate in this regard any undue constraints inconsistent with the Treaty.

Nuclear energy cooperation amongst NPT states parties is significant and continues to expand. The earthquake and tsunami in Japan and the following disaster at the Fukushima nuclear power plant have given pause to some negotiations and some states are reconsidering their continued use or development of nuclear power, but most states continue to expand their nuclear options. Differences in interpretation of the NPT and its articles can lead to different conclusions on the implementation of this action, but our research has not found anything concrete that would indicate that this action is not currently being implemented.

Action 52: Continue efforts, within IAEA, to enhance the effectiveness and efficiency of its technical cooperation programme.

Action 53: Strengthen the IAEA technical cooperation programme in assisting developing States parties in the peaceful uses of nuclear energy.

The technical cooperation programmes between states parties and the IAEA are continuing to develop and being implemented and new ones are initiated constantly. There is nothing that indicates that states parties are not complying with action 52 and 53.

Action 54: Make every effort and to take practical steps to ensure that IAEA resources for technical cooperation activities are sufficient, assured and predictable.

Between 2010 and 2012, the IAEA Board of Governors increased the estimated target figure for the Technical Cooperation Fund with over three million dollars. If states parties continue to pledge and pay at the same rate as they did in 2009, the funding for the technical cooperation programme should increase from its 2009 levels. Based on the target figures, action 54 is considered complied with by the IAEA member states as a group.

Action 55: Encourage all States in a position to do so to make additional contributions to the initiative designed to raise 100 million dollars over the next five years as extra budgetary contributions to IAEA activities, while welcoming the contributions already pledged by countries and groups of countries in support of IAEA activities.

Action 55 encourages states to make additional contributions to the initiative designed to raise 100 million dollars. So far, the United States and Japan have publicly announced figures for this, 50 million dollars respectively 3.5 million dollars. Other countries have announced that they either will or are considering contributing to this initiative, but no figures have been made public. In order to fully implement action 55, states would need to increase their publicly pledged donations and deliver what was pledged. Since the technical cooperation is a statutory task of the Agency, the debate on diminishing the importance of extrabudgetary funding by introducing the Technical Cooperation Fund in the IAEA regular budget has become more intense since 2010.

Action 56: Encourage national, bilateral and international efforts to train the necessary skilled workforce needed to develop peaceful uses of nuclear energy.

The action does not require any increase; it mainly calls upon states to encourage training programmes. No decrease of training programmes has been found, and therefore this action is considered implemented.

Action 57: Ensure that, when developing nuclear energy, including nuclear power, the use of nuclear energy must be accompanied by commitments to and ongoing implementation of safeguards as well as appropriate and effective levels of safety and security, consistent with States' national legislation and respective international obligations.

The Fukushima accident has raised significant concerns around the world about the safety of nuclear energy and highlighted that existing nuclear power plants are not always accompanied by "appropriate and effective" levels of safety. The significance of this action is evolving and therefore needs to be implemented more strictly. Fukushima has led to renewed focus on nuclear safety, and states must make additional efforts to implement this action. The adopted IAEA action plan on nuclear safety is a positive step, but not without criticism. Additional efforts are needed in order to fully implement this action.

Action 58: Continue to discuss further, in a non-discriminatory and transparent manner under the auspices of IAEA or regional forums, the development of multilateral approaches to the nuclear fuel cycle, including the possibilities of creating mechanisms for assurance of nuclear fuel supply, as well as possible schemes dealing with the back-end of the fuel cycle without affecting rights under the Treaty and without prejudice to national fuel cycle policies, while tackling the technical, legal and economic complexities surrounding these issues, including, in this regard, the requirement of IAEA full scope safeguards.

The decision to establish a new nuclear fuel bank under the auspices of the IAEA is one of the most significant developments since the Action Plan was adopted in May 2010. The decision was made in the IAEA, and therefore complies with the requirement of the action. The financial and rhetorical support several states show a continued commitment to this action. The Fukushima accident does not appear to have had any significant impact on the debate on multilateral approaches to the nuclear fuel cycle.

Action 59: Consider becoming party, if they have not yet done so, to the Convention on Nuclear Safety, the Convention on Early Notification of a Nuclear Accident, the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the International Convention for the Suppression of Acts of Nuclear Terrorism, the Convention on the Physical Protection of Nuclear Material, and to ratify its amendment so that it may enter into force at an early date.

The conventions on nuclear safety and security, as well as civil liability in case of nuclear accident, are growing in importance since the Fukushima disaster. The conventions in action 59 have seen some modest progress in signatures and ratifications, but it is far from any significant achievement to increase adherence. Even though the action only obliges states to "consider" becoming parties to these conventions, states need to make further efforts in order to implement action 59.

Action 60: Promote the sharing of best practices in the area of nuclear safety and security, including through dialogue with the nuclear industry and the private sector, as appropriate.

This action does not require any increase; it mainly calls upon states to promote sharing of best practices. However, new initiatives for sharing of best practices have taken place and therefore it is considered being implemented.

Action 61: Encourage States concerned, on a voluntary basis, to further minimize highly enriched uranium in civilian stocks and use, where technically and economically feasible.

The global amount of highly-enriched uranium (HEU) has decreased from 2009 to 2011, indicating that some progress has been made. In particular, Serbia and Ukraine have since May 2010 made significant progress in removing their entire stockpiles of HEU. Despite the voluntary nature of this action, more efforts to reduce HEU should be made in order to fully implement this action. States should also consider measures to increase transparency in the field of fissile material, in order to facilitate additional reductions in the future. Unfortunately, there has been no significant discussion on whether the security and transparency concerning such material really is best served by transferring it to an NWS or whether other mechanisms, such as within the framework of the IAEA.

Action 62: Transport radioactive materials consistent with relevant international standards of safety, security and environmental protection, and to continue communication between shipping and coastal States for the purpose of confidence-building and addressing concerns regarding transport safety, security and emergency preparedness.

No significant changes can be mentioned in connection with the transport of radioactive material. Several IAEA initiatives continue to take place and international standards for the transport and communications seem to be complied with. The concerns expressed by the Caribbean Community (CARICOM) show that more communication and confidence-building measures are needed to address this issue, but the action is considered to be implemented.

Action 63: Put in force a civil nuclear liability regime by becoming party to relevant international instruments or adopting suitable national legislation, based upon the principles established by the main pertinent international instruments.

With regards to international civil liability regimes, only limited progress has been achieved. As the action includes a concrete commitment that states parties "shall" put such civil liability regimes in place, it cannot be considered fully implemented.

Action 64: The Conference calls upon all States to abide by the decision adopted by consensus at the IAEA General Conference on 18 September 2009 on prohibition of armed attack or threat of attack against nuclear installations, during operation or under construction.

No attack against a nuclear installation has been reported since the adoption of the NPT Action Plan, but threats of attacks on Iranian nuclear facilities have been made by Israel, a non-party to the NPT. The current US administration has publicly stated that "all options are on the table", which could raise concerns about the implementation of this action.

Disarmament and Arms Reduction Efforts

Action 1: All States parties commit to pursue policies that are fully compatible with the Treaty and the objective of achieving a world without nuclear weapons.

Action 3: In implementing the unequivocal undertaking by the nuclear-weapon States to accomplish the total elimination of their nuclear arsenal, the nuclear-weapon States commit to undertake further efforts to reduce and ultimately eliminate all types of nuclear weapons, deployed and non-deployed, including through unilateral, bilateral, regional and multilateral measures.

Action 4: The Russian Federation and the United States of America commit to seek the early entry into force and full implementation of the Treaty on Measures for the Further reduction and Limitation of Strategic Offensive Arms and are encouraged to continue discussions on follow-on measures in order to achieve deeper reductions in their nuclear arsenals.

Action 5: The nuclear-weapon States commit to accelerate concrete progress on the steps leading to nuclear disarmament, contained in the Final Document of the 2000 Review Conference, in a way that promotes international stability, peace and undiminished and increased security. To that end, they are called upon to promptly engage with a view to, inter alia:

(a) Rapidly moving towards an overall reduction in the global stockpile of all types of nuclear weapons, as identified in action 3;
(b) Address the question of all nuclear weapons regardless of their type or their location as an integral part of the general nuclear disarmament process;
(c) To further diminish the role and significance of nuclear weapons in all military and security concepts, doctrines and policies;
(d) Discuss policies that could prevent the use of nuclear weapons and eventually lead to their elimination, lessen the danger of nuclear war and contribute to the non-proliferation and disarmament of nuclear weapons;
(e) Consider the legitimate interest of non-nuclear-weapon States in further reducing the operational status of nuclear weapons systems in ways that promote international stability and security;
(f) Reduce the risk of accidental use of nuclear weapons; and

Action 6: All States agree that the Conference on Disarmament should immediately establish a subsidiary body to deal with nuclear disarmament, within the context of an agreed, comprehensive and balanced programme of work.

Status of world nuclear forces

The Federation of American Scientists (FAS) regularly publishes a global nuclear weapon inventory based on available information. According to these figures, the total numbers of nuclear weapons are slowly decreasing due to Russian and US reductions of Cold War arsenals. However, all NWS, together with other non-NPT states[28], continue to either produce new or modernize current nuclear weapons. In addition, all NWS insist that nuclear weapons are essential for their national security.

[28] India, Israel and Pakistan

Inventory of nuclear warheads between 2009-2012[29]

	Russia	United States	United Kingdom	France	China
2009	13,000	10,500	225	300	240
2010	12,000	9,000	225	300	240
2011	11,000	9,000	225	300	240
2012	10,000	8,500	225	300	240

The numbers in this table also includes intact warheads that are awaiting dismantlement. In March 2012, FAS estimated that warheads awaiting dismantlement were around 4,500 for Russia, 3,500 for the US and at least 65 for the UK.

China

China is reported to have a total stockpile of around 240 nuclear warheads, most of them in storage and not operational. Under the guideline of China's no first use doctrine and the principle of a "lean and effective" ('*jinggan youxiao'*) nuclear force, the main goal of China's nuclear modernization, initiated in the 1980s, is reported to aim at securing a limited and reliable second-strike nuclear force to deter a nuclear attack.[30] To have a small arsenal capable of counterattack, China's nuclear modernization has been focusing on the quality over the quantity of its nuclear arsenal during the past three decades. Specifically, China's nuclear modernization has been focusing on increasing the survivability of its nuclear force by replacing older, liquid-fuelled missiles with solid-fuelled, mobile ballistic missiles, expanding the sea-based deterrent and constructing underground tunnels that can act as missile bases.[31]

Quantitative

On 30 March 2011, China published a new white paper that gives an overview of China's military strategy and arms control policies. In line with the prior defence papers and other official documents the white paper does not reveal any basic information on how big China's current nuclear capability or nuclear arsenal is, neither does it provide information on the scope of its plans for modernization of its arsenal.[32]

Based on information provided by the British American Security Information Council (BASIC), currently China is phasing out its old missiles, DF-3A and the DF-4, and is replacing them[33] with new DF-21 medium range missile, approximately 55–60 of which are nuclear capable.[34] In addition, China has deployed three other nuclear-capable ballistic missiles, the DF-31, DF-31A, and JL-2.[35] These developments in missile capacity will both increase the range and sophistication of land-based systems and nuclear-powered ballistic missile submarines.[36] In November 2011, the *Bulletin of Atomic Scientists* published an article estimating that China has about 140 land-based nuclear ballistic missiles that can carry one warhead each. The warheads are reported to be kept separated from the missiles. China also has additional warheads meant for their submarine launched ballistic missiles (SLBMs) as

[29] Status of World Nuclear Forces, and Global Nuclear Weapons Inventory 1945-2010, Federation of American Scientists, 2010
[30] Zhang. H. "China", *Assuring destruction forever: nuclear weapon modernization around the world*, Reaching Critical Will of WILPF, 2012, p. 17
[31] ibid
[32] Kristensen. H & Norris. R, "Chinese nuclear forces, 2011," *Bulletin of the Atomic Scientists*, November 2011, p. 81
[33] Kearns, I, "Beyond the United Kingdom: Trends in the Other Nuclear Armed States", British American Security Information Council (BASIC), November 2011
[34] ibid. p. 18
[35] Kristensen. H & Norris. R, "Chinese nuclear forces, 2011," *Bulletin of the Atomic Scientists*, November 2011, p. 81
[36] Kearns. I, "Beyond the United Kingdom: Trends in the Other Nuclear Armed States", British American Security Information Council (BASIC), November 2011, p. 1

well as bombs for air delivery; the estimation is that China has around 240 nuclear warheads.[37] While still operational, these warheads are thought to be stored in another location than the missiles and many of the strategic nuclear warheads are intended only for regional use.[38]

China is also reported to have increased its nuclear weapons system by about 25% in the last five years. According to the US Department of Defense's annual report to Congress on China, China has the leading land-based ballistic and cruise missile programme in the world.[39] The report also states that China is thought to be developing new intercontinental ballistic missiles (ICBM) with multiple independently targetable re-entry vehicles (MIRV) capability "as well as anti-satellite weapons, decoys, and jamming and thermal shielding technologies[.]"[40]

China has also been reported to be replacing its first generation ballistic nuclear missile-carrying submarines. In March 2011 two SSBNs were seen at Xiaopingdao submarine base and satellite pictures taken by the Pentagon indicated that China has already launched 3 Jin-class SSBNs and have more under construction. In actual numbers the current 3 Jin-classed SSBNs could carry 36 missiles (12 each), which is an increase from the maximum of 12 SLBMs that the old Xia-class submarine could carry.[41]

Qualitative:
China's white paper from March 2011 states, "Following the principle of building a lean and effective force, the PLA Second Artillery Force (PLASAF) strives to push forward its modernization and improves its capabilities in rapid reaction, penetration, precision strike, damage infliction, protection, and survivability, while steadily enhancing its capabilities in strategic deterrence and defensive operations."[42]

Some analysts have argued that China is speeding up the modernization of its sea-based strategic force to secure a second-strike force in the coming years. The 2011 Defense White Paper states, "the PLA Navy (PLAN) endeavours to accelerate the modernization of its integrated combat forces, enhances its capabilities in strategic deterrence and counterattack, and develops its capabilities in conducting operations in distant waters and in countering non-traditional security threats."[43]

Security doctrines and policies
China reaffirmed its no first use policy in the 2011 white paper. The new white paper does not indicate any change of China's security doctrine and the role of nuclear weapons has not been reduced.

France
France has both sea and air based nuclear capability and has announced a total nuclear stockpile of about 300 weapons.[44] 240 of the 300 warheads are for deployment on the four French nuclear submarines.

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[37] Kristensen. H & Norris. R, "Chinese nuclear forces, 2011", *Bulletin of the Atomic Scientists*, November 2011, p. 81
[38] Status of World Nuclear Forces, Federation of American Scientists (FAS), June 2011
[39] "Military & security development's Involving the People's Republic of China 2011", Department of Defense United States of America, 2011, pp. 2–3
[40] ibid
[41] Kristensen. H & Norris. R, "Chinese nuclear forces, 2011", *Bulletin of the Atomic Scientists*, November 2011, p. 84
[42] "China's National Defense in 2010," *English.news.cn*, 21 March 2011
[43] ibid
[44] See http://www.ambafrance-uk.org/President-Sarkozy-s-speech-at,10430.html

Quantitative:
In 2010 the second generation of the Le Triomphant-class SSBNs submarines was completed. As a result France has reduced its nuclear fleet from five to four boats.

From the last estimates made on France's nuclear capacity, 80% of France's 300 nuclear warheads are for delivery on three ballistic missiles submarines and the remaining warheads are on cruise missiles for delivery by land- and sea-based strike aircraft. The French stockpile is expected to decrease to around 290 warheads within the next few years.[45] France has stated that it has no additional nuclear reserves, although the FAS estimated that it does have a small inventory of spare warheads.[46]

Qualitative:
The new Le Triomphant submarines are a step toward modernization of France's sea-based nuclear deterrent and will ensure that it can maintain its capability until the 2030s.[47] The submarines are reportedly superior to the ones being replaced. The new submarines are quieter and the M45 missiles are gradually being replaced with newer and longer-range M-51 missiles. The M-51s will be modified, starting in 2015, to the Tête nucléaire océanique.[48] In addition to modernization of the French ballistic missile submarines, France is also introducing a new and more capable delivery platform to its nuclear air force while at the same time reducing actual aircrafts. France is also introducing a new and more advanced nuclear warhead to its air-based nuclear deterrent (Tête nucléaire aéroportée) as it is to its sea-launched ballistic missiles.[49]

Security doctrines and policies
France relies on its nuclear capacity to protect the country's "independent and strategic autonomy," and its commitment to the idea of "nuclear deterrence" is very strong. It is clear that the French government counts on nuclear weapons to protect its territory from a potential attack. President Sarkozy has stressed that this is particularly true in an attack from other states rather than terrorist groups.[50]

France has not released any new nuclear policy since the adoption of the 2010 NPT Action Plan and therefore has not reduced the role of nuclear weapons in its security doctrine.

Russia
Russia is estimated to have a total stockpile of 10,000 nuclear warheads, with about 4,500 awaiting dismantlement. Russia is also engaging in an extensive modernization of its strategic forces, as a part a broader rearmament programme on various military systems in 2011–2020. About 10 % of the total funds allocated for rearmament, around 1.9 trillion rubles, will be spent on the modernization of the strategic forces.[51]

Quantitative:
Russia has been retiring its delivery systems, including its old ICBMs, even before New Strategic Arms Reduction Treaty (START) entered into force. The main reason for the

[45] Kristensen. H, "French Nuclear Forces", *FAS Strategic Security Blog*, 5 September 2011
[46] Status of World Nuclear Forces, Federation of American Scientists (FAS), June 2011
[47] Kearns. I, "Beyond the United Kingdom: Trends in the Other Nuclear Armed States", British American Security Information Council (BASIC), November 2011
[48] ibid
[49] ibid, p. 1
[50] ibid, p. 21
[51] Podvig. P, "Russia," In *Assuring destruction forever: nuclear weapon modernization around the world*, Reaching Critical Will, 2012, pp. 63-64

retirement is that their life expectancy has been reached, since the systems dates back to the Soviet Union. It has retired about 30 SS-25s in 2009 and plans to have retired all SS-25s by the year 2015. It also retired 10 SS-19s in 2009, and is planned to have them all dismantled, except for 20 of the newest, by 2012. Similar dismantlement is taking place of Russia's SS-18s. The total amounts of Russia delivery system reported by the BASIC report are 170 deployed SS-25s, 70 SS-19s and around 58 SS-18.[52]

The retirement of older categories of ICBMs over the last years means that Russia is already below some of the limits of New START.[53] As can be seen in the numbers provided by the exchange of data required by the START, Russia has, as of September 2011, 1,566 warheads deployed on 516 strategic delivery vehicles and 871 deployed and non-deployed launchers of ICBMs, SLBMs, and heavy bombers. This means that in the period between 5 February 2011 and 1 September 2011, Russia has increased its nuclear deployed delivery vehicles by five, and its warhead stockpile with 20 warheads and finally its deployed and non-deployed launchers by six.[54] Russia is still under the allowed 700 deployed missiles and bombers, which is the limit of New START.[55]

Counting all of Russia's warheads, including those not covered by New START, the FAS has estimated that Russia has about 10,000 nuclear warheads. Russia's ballistic missiles can deliver multiple warheads. Bombers are normally not equipped with nuclear weapons and only a couple of hundred weapons are at the base and the rest in storage. The estimation of Russia having 5,500 warheads in reserve may be higher if the strategic bomber weapons are included. In addition to the reported military stockpiles, 4,500 retired warheads are estimated to be waiting to be dismantled. A vague estimation has been made that Russia is dismantling 1,000 retired warheads per year.[56]

Qualitative:
Prime Minister Putin announced as late as February 2012, that Russia must replace its Soviet-built arsenals with modern weapons to counter new evolving threats. One of the reasons given for the military modernization is to be able to respond to the planned US missile shield.[57] Russia will under this process allocate $772 billion to replace its armed forces, include 400 new ICBMs and eight SSBN.[58]

Rearmament of the ICBMs concentrates on deployment of multiple-warhead RS-24 Yars missiles. These ICBMs will replace the currently deployed Topol (SS-25) and UR-100NUTTH (SS-19) missiles. Being a multiple-warhead missile, RS-24 allows Russia to keep the number of deployed warheads at the relatively high level without the need to produce a large number of missiles.[59] At the same time, Russia is also working on another ICBM projects. For example, in 2011, the government made a decision to begin development of a

[52] Kearns. I, "Beyond the United Kingdom: Trends in the Other Nuclear Armed States", British American Security Information Council (BASIC), November 2011, p. 15
[53] ibid
[54] Kristensen. H, "New START Aggregate Numbers Released: First Round Slim Pickings", *FAS Strategic Security Blog*, 1 June 2011
[55] Thielmann. G, "Op-ed: GOP candidates, what do you say about savings in military budget?" *Arms Control Today*, August 2011
[56] Status of World Nuclear Forces, Federation of American Scientists (FAS), June 2011
[57] "Putin says Russia must replace nuclear weapons", *the Independent*, 20 February 2012
[58] "Putin Vows to Pursue Enormous Military Rearmament Campaign", *the Nuclear Threat Initiative*, 12 February 2012
[59] Podvig. P, "Russia," In *Assuring destruction forever: nuclear weapon modernization around the world*, Reaching Critical Will, 2012, p. 64

new multiple-warhead liquid-fuel ICBM. This new missile is supposed to be ready for deployment in 2016.[60]

Russia is also upgrading its SSBN fleet with a planned construction of eight Project 955 submarines (Borei class), and is working on an overhaul of its current strategic bomber fleet. Russia is also reported to have started preliminary work on a new-generation strategic bomber.[61]

Russia's strategic modernization plans demonstrate that it is determined to maintain its strategic nuclear forces and to preserve the parity with the United States in the number of warheads and delivery systems. Arms control and disarmament efforts could change these plans and result in a smaller force, but it is likely that most of the reductions would be done by reducing the number of deployed warheads rather than by eliminating strategic launchers.

Security doctrines and policies
The Russian Federation's nuclear policy is designed to ensure that Russia's nuclear capacity is "credibly and directly" linked to Russia's weakness in conventional military capacity.[62] The last published Russian military doctrine, released in February 2010, states "The Russian Federation reserves the right to utilize nuclear weapons in response to the utilization of nuclear and other types of weapons of mass destruction against it and (or) its allies, and also in the event of aggression against the Russian Federation involving the use of conventional weapons when the very existence of the state is under threat."[63] At the same time as the 2010 military doctrine was released the Russian president approved the "Principles of State Nuclear deterrence Policy to 2020", but this document has not been released to the public.[64] In February 2012 the Chief of the Russian General Staff, Nikolai Makarov, said that Russia would use nuclear weapons in response to any imminent threat to its national security. Furthermore, Russia's nuclear "deterrent" is the cornerstone of strategic stability and Russia is in serious efforts to modernize the country's nuclear triad.[65]

United Kingdom
The United Kingdom is expected to have a total nuclear weapons stockpile of about 225 warheads, where not more than 160 are reported to be operational. In the 2010 Strategic Defence and Security Review, the United Kingdom declared that the UK "can meet the minimum requirement of an effective and credible level of deterrence with a smaller nuclear weapons capability".[66] However the UK government also announced that it couldn't dismiss the possibility that a major direct nuclear threat to the UK might re-emerge.[67] Its plan is to retain a "minimum requirement nuclear deterrent out until the 2060s".[68]

[60] "New ICBM contract reportedly went to Makeyev Design Bureau", *RussianForces.org*, 14 May 2011
[61] Podvig. P, "Russia," In *Assuring destruction forever: nuclear weapon modernization around the world*, Reaching Critical Will, 2012, pp. 60-61
[62] Kearns. I, "Beyond the United Kingdom: Trends in the Other Nuclear Armed States", British American Security Information Council (BASIC), November 2011, p. 16
[63] "Text of Newly-Approved Russian Military Doctrine", Carnegie Endowment, February 2010
[64] De Haas. M, "Russia's New Military Doctrine: A Compromise Document", *Russian Analytical Digest No 78*, Institute of History, University of Basel, Switzerland, May 2010
[65] "Putin pledges 400 ICBMs for Russia in ten years", *RIANovostro*, 20 February 2012
[66] Securing Britain in an Age of Uncertainty. The Strategic Defence and Security Review, Her Majesty Government, October 2010, p. 38
[67] ibid p. 55
[68] The United Kingdom's Nuclear Deterrent. The Submarine Initial Gate Parliamentary Report, May 2011, p. 2

Quantitative:
In contrast with the other NWS, the United Kingdom currently only operates a single nuclear weapon delivery system: three Vanguard submarines armed with Trident missiles. Until 2010 each of the Vanguard class submarines carried between 12 and 14 operational Trident II D5 missiles and a maximum of 48 warheads. The UK Ministry of Defence is reducing this "over the next few years" to 8 missiles and a maximum of 40 per submarine.[69] This was implemented on one submarine by June 2011.[70] The decision to deploy 40 warheads on eight missiles will require an increase in warheads per missiles, from three to five.[71]

Currently the UK maintains some warheads in an operational state in addition to those on submarines. In 2010 there were "fewer than 160" operationally available warheads. This is 16 more than the maximum number that could be carried on three armed submarines. Over the next few years the total number of operationally available warheads will be reduced to "no more than 120," which is the same as the new maximum number for three armed submarines.[72]

Qualitative:
In May 2011, the UK government decided to move forward with the preparatory work for renewal of its Trident submarine fleet. The "Initial Gate Parliamentary Report" stated that the UK would move forward into the "Assessment Phase", wherein the design will be finalized and preparation for the main build will take place. In 2016, the government will sign the main construction contracts and also decide whether "continuous at sea deterrence can be delivered by three or four boats."[73]

If approved, the delivery of the first submarines will take place in 2028. The former British Foreign Minister, Dr. Fox, said that the new submarine "will incorporate the latest safety technologies and ensure our future nuclear-armed submarines have the performance required to deliver our minimum credible deterrent out until the 2060s."[74]

Because of financial constrains, the UK's decision on the final outcome of Britain's new Trident system has been put off until the next election in 2015.[75] Despite the fact that no formal decision has been made on the outcome of the new submarines, the Ministry of Defence is already spending £2 billion on new nuclear weapons plans. The plans include a £734 million facility for dismantling and assembling of warheads, a 634m highly enriched uranium plant and a £231 million high explosive factory. Other similar facilities are being built as part of the Atomic Weapon Establishment development plan covering 2005 to 2015 and the cost of two more are being kept secret for commercial reasons. The new spending has stirred up debate in the UK on how crucial military spending decisions can be pushed through parliament without a proper parliamentary procedure.[76]

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[69] Securing Britain in an Age of Uncertainty. The Strategic Defence and Security Review, Her Majesty Government, October 2010, p.10
[70] Ainslie. J, "United Kingdom", Assuring Destruction Forever; nuclear weapon modernization around the world, Reaching Critical Will, 2012, p. 67
[71] Kristensen. H & Norris. R, "British nuclear forces, 2011", *Bulletin of the Atomic Scientists*, September 2011, p. 91
[72] Securing Britain in an Age of Uncertainty, The Strategic Defence and Security Review, Her Majesty Government, October 2010, p.10.
[73] The United Kingdom's Future Nuclear Deterrent: Submarine Initial Gate Parliamentary Report, May 2011, p. 2
[74] The United Kingdom's Future Nuclear Deterrent: The Submarine Initial Gate Parliamentary Report, May 2011
[75] North-Taylor. R, "Trident more effective with US arming device, tests suggest", *the Guardian*, 6 April 2011
[76] Edwards. R, "MoD spends £2BN on nuclear weapons ahead of Trident renewal decision", the Guardian, 27 November 2011

Security doctrines and policies
While stating that the UK will strive for the "minimum amount of deterrence," the government also restated that the UK makes clear that it will only use their weapons in extreme circumstances of self-defence, including the defence of its NATO allies. The 2010 Strategic Defence and Security Review also stated that the United Kingdom would retain and renew its independent nuclear deterrent—"the United Kingdom's ultimate insurance policy in this age of uncertainty."[77]

The "minimum nuclear deterrent" policy made in 2010 was also mentioned in the 1998 Defence Review that was updated in 2003. The 1998 Review stated: "We will retain our nuclear deterrent with fewer warheads to meet our twin challenges of minimum credible deterrence backed by a firm commitment to arms control."[78] Furthermore the 1998 Review states that the UK will "not use nuclear weapons against a non-nuclear weapon state not in material breach of its nuclear non-proliferation obligations, unless it attacks us, our Allies or a state to which we have a security commitment, in association or alliance with a nuclear weapon state."[79] Although the concept of a "minimum nuclear deterrent" is not new for a UK security policy, the language in the 2010 Strategic Defence and Security Review is stronger that previous copies.

United States
The United States is reported to have a total nuclear weapons stockpile of 8,500, with about 3,500 warheads awaiting dismantlement. On 8 April 2010, President Obama and President Medvedev signed the New Strategic Arms Reduction Treaty (START). Under New START the United States (US) has until February 2018 to reduce its nuclear capacity from 1950 to 1550 of operationally deployed nuclear stockpiles and limit its deployed missiles strategic launchers and heavy bombers to 700.[80]

Quantitative:
In accordance with these obligations, the US is planning to maintain up to 420 ICBMs, each equipped with one warhead each, 240 SLBM with multiple warheads each, deployed on a fleet of 12-14 SSBNs, and finally 60 heavy bombers, long-range B-2s and B-52s,[81] with capability to deliver gravity bombs or cruise missiles.[82] In accordance with the US' plans for its ICBM force, this means that many of the warheads attached to the ICBMs today will be removed from the missiles. The removed warheads will not necessarily be destroyed, but kept in storage.[83]

The Arms Control Association estimates that the current US nuclear delivery systems will remain operational for another 20–30 years.[84] As of September 2011, the United States deployed 1,790 warheads on 822 strategic delivery vehicles and 1,043 deployed and non-

[77] ibid, p. 8
[78] Strategic Defence Review, Ministry of Defence, July 1998, point 8
[79] ibid
[80] Kristensen. H, "New START Aggregate Numbers Released: First Round Slim Pickings", FAS Strategic Security Blog, 1 June 2011
[81] Collina. T & Kimball. D, "Time to Rethink and Reduce Nuclear Weapons Spending", Arms Control Today, December 2011
[82] Kearns. I, "Beyond the United Kingdom: Trends in the Other Nuclear Armed States", British American Security Information Council (BASIC), November 2011, p. 10
[83] ibid
[84] Collina. T & Kimball. D, "Time to Rethink and Reduce Nuclear Weapons Spending", *Arms Control Today*, December 2011

deployed launchers.[85] This is a reduction of ten warheads, 60 delivery vehicles, and 81 deployed and non-deployed launchers since 5 February 2011.[86] By adding the numbers of warheads not covered by New START, the United States possesses around 8,500 warheads.[87]

The Obama administration is currently carrying out a Nuclear Posture Review (NPR) Implementation Study, which could open up space for further reductions of its arsenal. [88] The administration has been reported to be "making preparations for the next round of nuclear reductions."[89]

Qualitative:
While reductions under New START are taking place, in 2010 Secretary of Defense Robert Gates and Admiral Mike Mullen stated, "Over the next decade, the United States will invest well over $100 billion in nuclear delivery systems to sustain existing capabilities and modernize some strategic systems. US nuclear weapons will also undergo extensive life extension programmes in the coming years to ensure their safety, security, and effectiveness."[90]

The ratification of New START by the US Senate included a 10-year plan to maintain US nuclear warheads supporting infrastructure. The plan called for $80 billion over ten years to spend on activities for the National Nuclear Security Administration, and $100 billion in spending on maintaining and modernizing US nuclear delivery systems.[91] Bob Corker, Republican Senator from Tennessee explained the trade-off clearly: "I saw this entire process as an opportunity to push for long overdue investments in modernization of our existing nuclear arsenal and made clear I could not support the treaty's ratification without it."[92]

Security doctrines and policies
The United States 2010 Nuclear Posture Review (NPR) states that the US will keep relying on its nuclear weapons as an important part of its national security and will also do this for the foreseeable future.[93] In spite of this, the NPR states that US capacity in conventional weapons together with major improvements in missile defence has enabled the US to rely on less nuclear weapon without jeopardizing its "deterrence".[94] The NPR also states that with the changing security climate the US will "better align" its nuclear polices to deal with its priorities such as preventing nuclear terrorism and nuclear proliferation. It also acknowledges that nuclear weapons are not adequate to address today's main security threats, such as terrorism and new regimes seeking nuclear weapons.[95] Furthermore US Secretary of State Hillary Clinton stated in her statement to the Conference on Disarmament on the 28 February 2011 that the NPR "reduces the prominence of nuclear weapons in our national defence."[96]

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[85] New START Treaty Aggregate Numbers of Strategic Offensive Arms, U.S Department of States official webpage, 25 October 2011
[86] Comparison between the 1 June New Start Treaty Aggregate Numbers of Strategic Offensive Arms to the one available on 25 October.
[87] Status of World Nuclear Forces, Federation of American Scientists (FAS), June 2011
[88] "U.S. Blueprint for New Nuclear Arms Cuts Expected By Year's End", *Global Security Newswire*, 8 November 2011
[89] Kristensen. H & Norris. *R, Reviewing Nuclear Guidance: Putting Obama's Words Into Action,* Arms Control Association, November 2011;
[90] Kearns. I, "Beyond the United Kingdom: Trends in the Other Nuclear Armed States", British American Security Information Council (BASIC), November 2011, p. 11
[91] New START and Nuclear Modernization, Center for Arms Control and Non-Proliferation, viewed on 3 April 2012
[92] Lichterman, A. "The START treaty and the state of U.S. disarmament discourse", *Disarmament Activist*, 11 April 2011
[93] Nuclear Posture Review report, Department of Defense United States of America, April 2010, p. 1
[94] ibid p. 6
[95] ibid, p. v
[96] US Secretary of State Hillary Clinton's statement to the Conference on Disarmament, 28 February 2011

The 2002 NPR was not publicly published due to classification considerations. The released NPR foreword states that the NPR "puts in motion a major change in our approach to the role of nuclear offensive forces in our deterrent strategy and presents the blueprint for transforming our strategic posture."[97] Since no information is publicly available it is difficult to compare the two NPRs. However, the 2010 NPR does introduce some new elements, in particular by stating that the fundamental role of nuclear forces is to deter a nuclear attack.

The US has not made any further reductions of the role of nuclear weapons in its nuclear posture review since the adoption of the 2010 NPT Action Plan.

New START

The US senate ratified New START in December 2010 and the Russian Federal Assembly in January 2011.[98]

By September 2011 the United States and the Russian Federation had conducted more then 1000 notifications under the Treaty since its entry in to force in February 2011. The notifications track the movement and changes in the status of treaty-covered systems, for example if a heavy bomber were to be out of its home territory for more then 24 hours. The US together with Russia has together conducted 8 on-site inspections since April 2011. This is the first time that the two countries exchange data on re-entry vehicles loadings on their missiles. The two countries have also, under obligation by the Treaty, exchange a comprehensive database, every six months, of exactly where weapons systems are located if they are undergoing maintenance or have been retired.[99]

The second session of the Bilateral Consultative Commission under New START took place in Geneva on 19 October–2 November 2011. During these consultations, the United States and Russia discussed a number of practical issues related to the implementation of the Treaty.[100]

However, New START has some problematic parts. For example the aggregate numbers does not cover thousands of additional warheads that are not counted by the treaty (non-deployed and non-strategic warheads).[101] Furthermore dual-cable bombers are counted as both one delivery vehicle and one warhead.[102] Each bomber is also counted as only carrying one warhead, which means that "[a] force of 60 bombers loaded at their maximum capacity of 1,136 bombs and cruise missiles would only count as 60 weapons."[103]

The New START verification regime is, in comparison to START I, less intrusive and burdensome. This is largely because the New START ceilings and limitations are relatively simple.[104] Furthermore the Treaty does not include the Russian Federation's estimated 2000 and the United States' 200 tactical nuclear weapons in Europe.[105]

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[97] Nuclear Posture Review Report*,* U.S. Department of Defense, Office of the Assistant Secretary of Defense (Public Affairs), March 2002
[98] Arbatov. A, "Gambit or Endgame?", *the New State of Arms Control*, Carnegie Moscow Center, March 2011, p. 3
[99] Collina. T, "New START Hits 1,000 Notifications", *Arms Control Today*, September 2011
[100] U.S.-Russia Bilateral Consultative Commission on the New START Treaty*,* Washington, DC, November 2011
[101] Kristensen. H, "New START Data: Modest Reductions and Decreased transparency", *FAS Strategic Security Blog*, 24 October 2011
[102] Nuclear Posture Review, Department of Defense United State of America, April 2010, p. 21
[103] Kearns. I, "Beyond the United Kingdom: Trends in the Other Nuclear Armed States," British American Security Information Council (BASIC), November 2011, p. 10
[104] Arbatov. A, "Gambit or Endgame?", *the New State of Arms Control*, Carnegie Moscow Center, March 2011, p. 12
[105] ibid

In addition, the issue of missile defence have put restrictions on further discussions on follow-on measures in relation to New START. The 2010 NATO decision to push ahead with NATO missile "defence" project has created tension between Russia and NATO.[106] On 24 November 2011 Russia announced that it "reserves the right to discontinue further disarmament and arms control measures," such as withdrawal from New START and deployment of new nuclear weapons if the US progress with its anti-missile plans in Europe without Russian cooperation.[107]

France-UK

In November 2010, France and the United Kingdom joined in a collaboration of developing equipment and technologies for the next generation of nuclear submarines. The co-operation is aimed to "sustain their combined industrial base" and "generate savings".[108] The cooperation also includes a new warhead simulation facility that will open in 2015 and a joint Technology Development Centre in Britain to provide scientific and engineering expertise to support both countries stockpile.[109]

United Kingdom-United States

Since 1958 the United States and the United Kingdom have been collaborating on the basis of the US-UK Mutual Defence Agreement. The agreement was last renewed in 2004 and extends to 2014. The Agreement enables the US and the UK to exchange classified information with the objective of improving each party's nuclear weapons design, development, and fabrication capability.

The nuclear warhead deployed on the UK submarines today is partly American made. The UK has also purchased the right of 58 Tridents missiles out of the existing American pool of missiles.[110]

In December 2006, after an exchange of letters between President Bush and Prime Minister Blair on the renewal/replacement of Trident, a new wave of enhanced collaborations with the US into how to refurbish or replace the UK Trident warhead began.[111] The two countries are also working together to develop the new ballistic- missile submarines. If the renewal goes ahead as planned, the first British vessel is due to enter service in 2024 and the last could still be at sea in 2060. The first new US submarine is scheduled for 2027 and some of the vessels are due to remain in service until 2080.[112]

The UK's Trident system is very dependent on the US, which could complicate further reductions.[113]

P5 initiatives

On 30 June–1 July 2011, the five NWS met in Paris for a meeting to discuss nuclear non-proliferation and disarmament for the first time since the adoption of the 2010 NPT Action Plan. The meeting focused on transparency, nuclear doctrines, and verification. Furthermore the P5 approved the establishment of a working group that will pursue work on definitions for

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[106] Borgers. J, "Nato offers Russia a shared 'security roof'", *the Guardian*, 27 March 2010.
[107] Medvedev. D, "Russia will deploy deterrent to Nato missile shield", *the Guardian*, 24 November 2011
[108] UK-France Summit 2010 Declaration on Defence and Security Co-operation, 2 November 2010
[109] Kristensen. H & Norris. R, "British nuclear forces, 2011", *Bulletin of the Atomic Scientists*, September 2011, p. 93
[110] Ritchie. N, "Trident: Still the Wrong Weapon at the Wrong Time for the Wrong Reasons", *the Acronym Institute*, 2009
[111] Ainslie, J, "US-UK Nuclear Sharing", *Beyond Arms Control*, Reaching Critical Will, 2010, p. 48
[112] ibid, p. 51
[113] North-Taylor. R, "Trident more effective with US arming device, tests suggest", *the Guardian*, 6 April 2011

key nuclear terms, in order to facilitate future consultations and discussions.[114] The P5 are planning to meet next in the context of the 2012 NPT Preparatory Committee meeting.

The meeting did not seem to include any specific proposal or discussions on nuclear doctrines. At the United Nations General Assembly's (UNGA) First Committee in 2011, several delegations voiced concerns over the lack of progress in these meetings.[115]

North Atlantic Treaty Organization (NATO)
At NATO's Lisbon Summit in November 2010, NATO adopted a new Strategic Concept and a Summit Declaration that outline the alliance's future nuclear policy. In the new concept, titled "Active Engagement, Modern Defence," NATO for the first time commits itself to "create the conditions for a world without nuclear weapons". The Concept explains that this goal must be pursued "in accordance with the goals of the Nuclear Non-Proliferation Treaty, in a way that promotes international stability, and is based on the principle of undiminished security for all." At the same time, the Strategic Concept states, "as long as nuclear weapons exist, NATO will remain a nuclear alliance."

The alliance retains around 200 American B-61 nuclear weapons on American bases in five[116] NNWS of the NPT. These arrangements have been criticized repeatedly as being in non-compliance with NPT obligations.

NATO members are currently undergoing a Defence and Deterrence Posture Review (DDPR) meant to define an "appropriate mix" between nuclear and conventional weapons and missile defence needed to uphold Alliance commitments to collective self-defence. The first phase in the DDPR process was an initiative that came from four[117] states, supported by six[118] additional NATO members, during a NATO Foreign Affairs meeting in Berlin where they submitted a joint non-paper of suggestions on how to collaborate with Russia on the issue of tactical nuclear weapons (TNW).[119] The Terms of Reference for the process were agreed earlier in 2011 and the process was meant to be concluded by the time of NATO's next summit in Chicago from 20 to 21 May 2012. However, the meeting with Russia is currently on hold because of the conflict regarding the issue of missile "defence".[120]

As for NWS NATO members: France has been reluctant to include any forward-looking language on nuclear disarmament in the NATO Strategic Concept. According to France, many NATO countries are too focused on disarmament and therefore are losing sight of the security angle.[121] France has also been the biggest opposition to the German-led demand for a greater nuclear disarmament effort from NATO.[122]

NATO security doctrines and policies
During the Lisbon summit, NATO reaffirmed its commitment to a goal of a world without nuclear weapons. This commitment is new, but when comparing the document to the previous Strategic Concept from 1999, there is no sign of a reduction of the role of nuclear weapons.

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[114] ibid
[115] Acheson. R, "Nuclear Disarmament", *First Committee Monitor*, Reaching Critical Will October 2011
[116] Belgium, Germany, Italy, Netherlands and Turkey
[117] Germany, Netherlands, Norway and Poland
[118] Belgium, Czech Republic, Hungary, Iceland, Luxemburg and Slovenia
[119] Kristensen. H, "10 NATO Countries Want More Transparency for non-Strategic Nuclear Weapons", FAS Strategic Security Blog, April 2011
[120] As discussed under the section on the START treaty
[121] ibid, p. 21
[122] Traynor. I, "Germany demands NATO show greater commitment to nuclear disarmament", *the Guardian*, 14 October 2010

However, there is increasing opposition from numerous NATO member states[123] that are showing greater reluctance regarding NATO's relationship to nuclear weapons, in particular to the current deployed TNW on US NATO bases in Europe[124]. According to IKV Pax Christi's report on NATO member views of TNW, 24 of the 28 member states said they would not oppose the removal of the TNW in Europe. Only France, Hungary, and Lithuania are supporting the status quo and Albania expressed no opinion in this matter. France is also the only NATO member that is more pessimistic regarding the wisdom of even pursuing nuclear disarmament and will therefore only agree to create the "conditions" for this goal.[125]

Non-strategic nuclear weapons

In preparation for the NATO summit in 2010, the United States announced that its TNW, deployed in Europe, would not be unilaterally withdrawn.[126] These weapons are as of yet under no international arms control regime. US President Obama stated that his administration is interested in further discussions with Russia on reducing both strategic and tactical weapons during the signing ceremony of New START. But no such discussions have taken place.

Furthermore, the US-NATO nuclear capacity is undergoing modernization. The 2010 Nuclear Posture Review announced that the United States would be retiring all nuclear Tomahawk land attack sea-launched cruise missile, half of which were earmarked for NATO support. However, the NPR also announced plans on making the F-35 Joint Strike Fighter (JSF) aircraft nuclear-capable so that the US can replace the F-15E and F-16. Two states with NATO nuclear strike missions, Italy and the Netherlands, are planning on acquiring JSF aircraft over the next 15 years. This modernization project is estimated to cost several hundred million dollars.[127]

In comparison with the 1999 NATO Strategic Concept document, the 2010 version places less importance on US TNW as an essential military and political link between Europe and North America. However, the new NATO concept makes further reductions in US nuclear weapons in Europe conditional on similar actions by Russia. This has not been the language used in the 1999 report, in which the US discussed removal without mentioning Russia.[128] Previously, Russia has stated that the US would have to remove all of its TNW from Europe before it would even consider discussion on its own TNW. The argument for this has been that since the breakup of the Soviet Union, Russia took sole responsibility for collecting all USSR nuclear weapons spread out in the former Soviet Union states and Russia has been waiting for the US to do the same with its European TNW.[129]

In addition to the 200 tactical nuclear weapons in Europe, the United States has also around 560 tactical nuclear weapons in storage on American soil.[130]

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[123] Including Belgium, Germany, Netherlands, Luxembourg, and Norway
[124] Belgium, Germany, Italy, Nertherlands and Turkey
[125] Snyder. S & van der Zeijden. W, "Withdrawal Issues", IKV Pax Christi, March 2011, p. 12
[126] Borgers. J, "Nato experts group say US nukes should stay in Europe", *the Guardian*, 29 March 2010
[127] ibid p. 71
[128] ibid p. 72
[129] Snyder. S & van der Zeijden. W, "*Withdrawal Issues"*, IKV Pax Christi, March 2011, p. 20
[130] Kristensen. H, "10 NATO Countries Want More Transparency for non-Strategic Nuclear Weapons", FAS Strategic Security Blog, April 2011

General Assembly resolutions on nuclear weapons[131]

2009	2010	2011	NWS votes in 2011
A/RES/66/46: Follow-up to the advisory opinion of the International Court of Justice on the *Legality of the Threat or Use of Nuclear Weapons.*			
Yes: 127 No: 25 Abstain: 22	Yes: 133 No: 28 Abstain: 23	Yes: 130[132] No: 26[133] Abstain: 23[134]	China: **Yes** France, Russia, UK & US: **No**
A/RES/66/57: Convention on the Prohibition of the Use of Nuclear Weapons			
Yes: 116 No: 50 Abstain: 11	Yes: 124 No: 49 Abstain: 11	Yes: 117[135] No: 48 Abstain: 12[136]	China: **Yes** France, UK & US: **No.** Russia: **Abstain**
A/RES/66/51: Nuclear disarmament			
Yes: 113 No: 44 Abstain: 18	Yes: 120 No: 45 Abstain: 18	Yes: 117[137] No: 45[138] Abstain: 18[139]	China: **Yes** France, UK & US: **No.** Russia: **Abstain**
A/RES/66/32: Promotion of multilateralism in the area of disarmament and non-proliferation			
Yes: 126 No: 5 Abstain: 49	Yes: 129 No: 5 Abstain: 49	Yes: 125[140] No: 5 Abstain: 48[141]	US and UK: **No** France: **Abstain**
2009	2010	2011	NWS votes in 2011
A/RES/66/45: United action towards the total elimination of nuclear weapons			
Yes: 171 No: 2 Abstain: 8	Yes: 173 No: 1 Abstain: 11	Yes: 169[142] No: 1 Abstain: 11[143]	China: **Abstain**
A/RES/66/28: Follow-up to nuclear disarmament obligations agreed to at the 1995, 2000 and 2010 Review Conferences of the Parties to the NPT.			
Yes: 105 No: 56 Abstain: 12	-	Yes: 118[144] No: 52[145] Abstain: 6[146]	France, Russia, UK & US: **No** China: **Abstain**
A/RES/66/40: Towards a nuclear-weapon-free world: accelerating the implementation of nuclear disarmament commitments.			
Yes: 169 No: 5 Abstain: 5	Yes: 173 No: 5 Abstain: 5	Yes: 169 No: 6[147] Abstain: 6[148]	France, UK & US: **No** China & Russia: **Abstain**
A/RES/66/33: 2015 Review Conference of the Parties to the NPT and its Preparatory			

[131] For more detailed information on these resolutions, please see Reaching Critical Wills website.
[132] Azerbaijan, Belarus, Cape Verde, Comoros, Ethiopia, Kazakhstan, Salomon-Islands and Timor-Leste, Tonga and Ukraine, changed their votes to yes, comparing with 2009 voting results.
[133] Denmark changed its vote to no
[134] Georgia, Iceland, Montenegro and Former Yugoslav republic of Macedonia changed to abstain
[135] Azerbaijan, Cape Verde, Chad, Comoros, Kazakhstan, Saint Vincent and the Grenadines, Sierra Leone and Uganda changed their votes in to yes.
[136] Georgia and Tajikistan changed to abstain
[137] Azerbaijan, Cape Verde, Comoros, Gabon, Kazakhstan, Sierra Leone and Uganda changed to voting yes
[138] Republic of Moldavia and Macedonia changed into voting no
[139] New Zealand changed to abstain in 2011
[140] Cape Verde, Chad, Comoros, Solomon Islands and Ukraine changed their votes in to yes in 2011
[141] El Salvador abstained in 2011
[142] Bhutan and France change their votes to yes in 2011
[143] Brazil, Ecuador, India, Mauritius and Syria changed to abstained in 2011
[144] Afghanistan, Cape Verde, Chad, Comoros, El Salvador, Saint Vincent and the Grenadines and Sierra Leone
[145] Uganda, Marshall Islands, Panama, Azerbaijan, Columbia, Costa Rica, Haiti, Honduras. Peru, Vanuatu and Ukraine changed their votes to no in 2011
[146] Cameroon, DRC and Pakistan changed into abstaining in 2011
[147] UK changed its vote to no in 2011
[148] China and Russia changed to abstain in 2011

Committees			
-	-	Yes: 175 No: 0 Abstain: 3[149]	All NWS voted **Yes**
A/RES/65/71: Decreasing the operational readiness of nuclear weapons systems			
-	Yes: 157 No: 3 Abstain: 22	-	(2010) France, UK & US: **No**, Russia: **Abstain**, China: **Yes**
A/RES/66/48: Reducing nuclear danger			
Yes: 115 No: 50 Abstain: 14	Yes: 121 No: 49 Abstain: 14	Yes: 117 No: 49 Abstain: 13	France, UK & US: **No** China & Russia: **Abstain**

Nuclear disarmament discussions in the Conference on Disarmament (CD)

Since the adoption of the 2010 NPT Action Plan, the CD has still not been able to adopt a programme of work. However, there have been some attempts by states to move the issue forward and start negotiations of the substantive issues in these actions elsewhere.

One of the most promising attempts since 2005 to unblock the stalemate at the CD was withdrawn at the end of the UNGA's First Committee in 2011. The draft resolution "Taking forward multilateral disarmament negotiations" was put forward by Austria, Mexico, and Norway but was not submitted to a vote once it became clear that it would not gain enough support from key states. It received criticism from the nuclear weapon possessors and some key NNWS, which argued that it would undermine the CD.[150] The draft resolution resolved that, if the CD does not adopt a programme of work in its 2012 session, the UNGA would consider establishing open-ended working groups to begin substantive work on the core issues on the CD's agenda.[151]

While this was apparently a bridge too far for many states, a new resolution, "Revitalizing the work of the Conference on Disarmament and taking forward multilateral disarmament negotiations,"[152] put forward by the Netherlands, South Africa, and Switzerland, was adopted by consensus. This resolution offers space for continuing the dialogue on breaking the impasse at the CD, though it unfortunately does not contain any mechanisms itself for breaking that impasse.[153]

In addition, in July 2011 at the UNGA plenary meeting on revitalizing multilateral disarmament negotiations, the Secretary-General's Advisory Board on Disarmament Matters released a report, which contained three recommendations: that the United Nation Secretary-General (UNSG) continue to encourage the CD to achieve a breakthrough; that if a panel of eminent persons be established to consider the stalemate at the CD, the UNSG should ask the panel to make recommendations on ways to revitalize the United Nations disarmament machinery as a whole; and that the UNSG should continue to raise public awareness and encourage civil society and NGOs to offer input on ways to overcome the stalemate at the CD.[154] No such panel of eminent persons has been established yet.

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[149] The three non-NPT states parties, India, Israel, and Pakistan, abstained.
150 ibid
[151] Acheson. R, "Editorial: Time to act on commitments to multilateralism", *First Committee Monitor*, Reaching Critical Will, 24 October 2011
[152] A/C.1/66/L.39, UNGA First Committee resolution
[153] ibid
[154] A/66/125, UNGA First Committee resolution

Transparency, Irreversibility and Verification

Action 2: All States parties commit to apply the principles of irreversibility, verifiability and transparency in relation to the implementation of their treaty obligations.

Action 5: The nuclear-weapon States commit to accelerate concrete progress on the steps leading to nuclear disarmament, contained in the Final Document of the 2000 Review Conference, in a way that promotes international stability, peace and undiminished and increased security. To that end, they are called upon to promptly engage with a view to, inter alia:

(g) Further enhance transparency and increase mutual confidence.

Action 19: All States agree on the importance of supporting cooperation among Governments, the United Nations, other international and regional organizations and civil society aimed at increasing confidence, improving transparency and developing efficient verification capabilities related to nuclear disarmament.

Action 20: States parties should submit regular reports, within the framework of the strengthened review process for the Treaty, on the implementation of the present action plan, as well as of article VI, paragraph 4 (c), of the 1995 decision entitled "Principles and objectives for nuclear non-proliferation and disarmament", and the practical steps agreed to in the Final Document of the 2000 Review Conference, and recalling the advisory opinion of the International Court of Justice of 8 July 1996.

Action 21: As a confidence-building measure, all the nuclear-weapon States are encouraged to agree as soon as possible on a standard reporting form and to determine appropriate reporting intervals for the purpose of voluntarily providing standard information without prejudice to national security. The Secretary-General of the United Nations is invited to establish a publicly accessible repository, which shall include the information provided by the nuclear weapon States.

Irreversibility, verifiability, and transparency of recent reductions

Treaty obligations for non-proliferation are monitored under the International Atomic Energy Agency (IAEA) safeguards system, but no such international body exists to monitor disarmament efforts under the NPT. Since the adoption of the NPT Action Plan, only three of the five NWS have announced reductions of nuclear arsenals.

China

China has not reported any reductions since the 2010 NPT Action Plan was adopted.

France

France has not carried out any reductions of nuclear warheads since the adoption of the 2010 NPT Action Plan. But it has been reported that the French stockpile is expected to decrease to around 290 warheads within the next few years.[155] No plan for verification of the irreversibility of this reduction has been reported.

Russian Federation and the United States

The New Strategic Arms Reduction Treaty (START) data exchange, which, under the terms of the Treaty, had to take place within 45 days of its entry into force, indicates that Russia had

[155] Kristensen. H, "French Nuclear Forces", *Federation of American Scientists Strategic Security blog*, 5 September 2011

1,537 deployed strategic warheads, 521 deployed strategic delivery vehicles, and 865 launchers. The United States had 1,800 deployed strategic warheads, 882 deployed strategic delivery vehicles, and 1,124 launchers. Both countries have seven years to meet the Treaty's targets. The data are to be updated every six months.[156] On-site inspections will offer access to additional data on missiles and bombers. When an intercontinental ballistic missile, submarine-launched ballistic missile, or air base is inspected (which may take place up to ten times each year, as noted above), in what the Treaty labels 'Type One" inspections, the inspectors will be told and shown where each missile is and told how many warheads are deployed on it.

The verification system for New START has been called "the most intrusive verification system ever implemented for counting nuclear warheads"[157] and for the first time includes verification of actual warhead numbers, rather than counting delivery vehicles as carrying a pre-determined number of warheads based on maximum loading.

But, it has also been noted that while the Treaty reduces the legal limit for deployed warheads, it does not actually reduce the number of warheads as no limits are set for non-deployed warheads. This is due to a new counting regulation that attributes one weapon to each bomber, rather than the actual number of weapons assigned to them. It has been argued by nuclear experts that such "fake counting rules frees up a large pool of warhead spaces under the treaty limit that enable each country to deploy many more warheads than would otherwise be the case."[158]

New START lacks any requirements for warheads to actually be dismantled. Since the Treaty establishes no procedures for the dismantlement of warheads, as it and other treaties before it have done for delivery vehicles, and while it does mark a significant departure from the system of counting "attributed" warheads, it is only through the actual destruction of warheads that disarmament can realistically be irreversible.[159]

United Kingdom

The UK government reported in October 2010 that the number of warheads on-board each nuclear submarine will be reduced from 48 to 40, which will reduce the number of operational and available warheads to "no more than 120".[160] The UK also announced that over the next few years, it would reduce the number of operational missiles on the Vanguard class submarines to no more than eight, and thereby reduce the British overall nuclear weapon stockpile to "not more than 180" by the mid 2020s.[161] However, on 9 June 2010 the Foreign Office Minister Alister Burt stated, "We have no plans to establish procedures to allow the international community to verify the UK's nuclear warhead stockpile."[162] Furthermore, the UK is currently contemplating modernization of its nuclear weapon system and has already invested money in such programmes.[163]

That said, the United Kingdom together with Norway is currently conducting research into the verification of warhead dismantlement. This UK-Norway initiative started in 2007 and is

[156] Collina. T, "Russia Below Some New START Limits", Arms Control Association, July/August 2011
[157] "Verification of New START", *Union of Concerned Scientists*, July 2010
[158] Kristiansen, H. "New START has new counting", *Federation of American Scientists Strategic Security blog*, 29 March 2010
[159] Cliff. D, Elbanting. H, & Persbo. A, Irreversibility in Nuclear Disarmament, September 2011, p. 61
[160] Duncan. J, Statement at the 65th session of the UNGA First Committee, October 2010
[161] ibid
[162] Burt. A, "Nuclear Weapons", speech at the United Kingdom Parliament, June 2010
[163] See Chapter on Disarmament and Arms Reduction Efforts for details.

monitored by the Verification, Research, Training and Information Centre (VERTIC). The project's main goal is to investigate more information in regards to verified dismantlement of nuclear warheads and to formulate recommendations for further work. The UK-Norway process has also inspired new projects presently under construction by several countries.[164] In December 2010, the United Kingdom hosted a workshop in London to share experiences with non-nuclear weapons states[165] and in April 2012 the UK hosted a similar meeting to share the outcomes of the research project with the other P5 nuclear weapon states.[166]

Further transparency and confidence-building measures

Information available on nuclear weapons differs greatly between NWS. A special concern regarding lack of transparency involves warheads that are not covered by any control regime. For example, information on the stockpile of TNW is not available.

China

China reportedly published its 2010 white paper in an effort to deepen trust and transparency of its national defence policy. It has been argued that China's defensive policy might be changing, and therefore the publication of the white paper aimed to create a security environment featuring mutual trust and cooperation."[167] Unfortunately, the white paper does not give any official data on China's nuclear stockpile. China has never released any official data on its nuclear arsenal[168] and any discussion of the Chinese inventory is based on estimates made by Western governments and non-governmental organizations.

France

France has released numbers through public speeches and legal documents attached to procurement laws and defence budgets.[169]

Russian Federation

Public information on Russia's nuclear weapons is limited. Russia's strategic nuclear weapons are thought to be on Russian soil, but there is no available information on the numbers or location.[170] Also, the availability of information on non-strategic nuclear weapons is limited. However, the US and Russia have, through the entry into force of New START, exchanged information on strategic nuclear-warhead delivery systems.[171]

United Kingdom

The United Kingdom has published some information on warhead numbers and their operational status.

United States

The United States has released the most detailed information on its nuclear weapons, although it does not reveal deployment locations or exact numbers of total inventory of warheads.[172] In May 2010, the United Sates revealed the total size of its deployed nuclear stockpile. On 1 December 2011, the United States released the full aggregate numbers of strategic offensive

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[164] Arms Control and Disarmament: completed projects, VERTIC online database, www.vertic.org
[165] Statement by United Kingdom in UNGA First Committee, 7 October 2011
[166] UK host meeting on nuclear verification, http://www.fco.gov.uk/en/news/latest-news/?view=News&id=750457882
[167] Guanqun. W, "China issues white paper on national defense to enhance transparency", March 2011
[168] Kearns. I, "Beyond the United Kingdom: Trends in the Other Nuclear Armed States", *BASIC paper* , November 2011, p. 9
[169] Schaper. A, "Transparency and security in Nuclear Weapons", *The Weapons of Mass Destruction Commission Report*, 2006, p. 6
[170] ibid.
[171] ibid, p. 3
[172] Ibid, p.5

arms under New START. The data comes from the biannual exchange of data required under New START.[173]

None of the NWS have published a full account of specific strategic weapons modernization programmes and their costs. The official statement from the P5 Paris meeting in 2011 indicated that the NWS "continued their previous discussions on the issues of transparency and mutual confidence, including nuclear doctrine and capabilities, and of verification, recognizing such measures are important for establishing a firm foundation for further disarmament efforts."[174]

Regular reports under the NPT

Step 12 of the 13 Practical Steps for the implementation of Article VI adopted by the 2000 NPT Review Conference calls for regular reports by all states parties on the implementation of Article VI and paragraph 4 (c) of the 1995 Decision.

In the lead up to the 2010 NPT Review Conference, only 23[175] out of 189 states parties submitted such national reports. China and Russia were the only two NWS to do so. Reports submitted for the upcoming review cycle have not yet been released. It is therefore not possible to evaluate any possible change at this moment. However, if the rate of participation is similar to the previous review cycle, this action cannot be considered implemented.

Reporting for the nuclear weapons states

While several of the NWS disclose information about their reductions, each of them has different counting rules on their arsenals, which complicates comparison.[176]

The issue of reporting was mentioned in the joint P5 statement from their Paris meeting in June 2011. The statement said that the P5 "met with the determination to work together in pursuit of their shared goal of nuclear disarmament under article VI of the NPT, including engagement on the steps outlines in action 5, as well as reporting and other efforts called for in the 2010 Review Conference Action Plan."[177]

On 22 September 2010, the Non-Proliferation and Disarmament Initiative (NPDI)[178] was formed.[179] In 2011, the group developed a draft standard nuclear disarmament reporting form, as promoted by action 21 in the Action Plan. The reporting form has been shared with the five NPT NWS during the P5 meeting in Paris on 30 June–1 July, but has not received any official response from the five NWS.

The United Nations Office for Disarmament Affairs has set up a website to function as a repository of information provided by NWS in accordance with the 2010 NPT Action Plan. Once action is taken by the NWS, the information will be available there.[180]

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[173] Kristensen. H, "New START Treaty Aggregate Numbers of Strategic Offensive Arms", *Federation of American Scientists*, December 2011
[174] Final Joint Press Statement, First P5 follow-up meeting to the NPT Review Conference, Paris, 2011
[175] Algeria, Australia, Austria, Brazil, Canada, Chile, China, Cuba, Finland, Iran, Ireland, Japan, Kazakhstan, Mexico, Morocco, New Zealand, Norway, Poland, Republic of Korea, Russian Federation, Sweden, Ukraine, and Uruguay
[176] Kearns. I, "Beyond the United Kingdom: Trends in the Other Nuclear Armed States", *BASIC paper*, November 2011, p. 9
[177] Final Joint Press Statement, First P5 follow-up meeting to the NPT Review Conference, Paris, 2011
[178] Australia, Canada, Chile, Germany, Japan, Mexico, the Netherlands, Poland, Turkey and the United Arab Emirates
[179] Berlin statement by Foreign Ministers on nuclear disarmament and non-proliferation, Conference on Disarmament, CD/1908, 17 May 2011
[180] United Nations Office for Disarmament Affairs, http://www.un.org/en/

Nuclear Weapon Free Zones and Negative Security Assurances

Action 7: All States agree that the Conference on Disarmament should, within the context of an agreed, comprehensive and balanced programme of work, immediately begin discussion of effective international arrangements to assure non-nuclear-weapon States against the use or threat of use of nuclear weapons, to discuss substantively, without limitation, with a view to elaborating recommendations dealing with all aspects of this issue, not excluding an internationally legally binding instrument. The Review Conference invites the Secretary-General of the United Nations to convene a high-level meeting in September 2010 in support of the work of the Conference on Disarmament.

Action 8: All nuclear weapon States commit to fully respect their existing commitment with regard to security assurances. Those nuclear weapon States that have not yet done so are encouraged to extend security assurances to non-nuclear-weapons States parties to the Treaty.

Action 9: The establishment of further nuclear-weapon-free-zones, where appropriate, on the basis of arrangements freely arrived at among States of the region concerned, and in accordance with the 1999 Guidelines of the United Nations Disarmament Commission, is encouraged. All concerned States are encouraged to ratify the nuclear-weapon-free zone treaties and their relevant protocols, and to constructively consult and cooperate to bring about the entry into force of the relevant legally binding protocols of all such nuclear-weapon-free zones treaties, which include negative security assurances. The concerned States are encouraged to review any related reservation.

General negative security assurances

Since May 2010, a number of efforts have been made by some of the NWS on the topic of NSAs. Although the international community is no closer to a legally-binding regime than before the NPT RevCon, modification of previous assurances from some NWS has been made since.

China

China is the only NWS that has a no first use policy. This policy has two parts. Firstly, it means China has declared that it will not use nuclear weapons against any NWS in a first strike and secondly, that it will never use or threaten to use nuclear weapons against any NNWS or NWFZ.

China holds that while moving towards the complete prohibition of nuclear weapons, all NWS should abandon any nuclear "deterrence" policy based on first use of nuclear weapons as well as make an unequivocal commitment that under no circumstances will they use or threaten to use nuclear weapons against NNWS or NWFZs and negotiate an international legal instrument in this regard. In the meantime, China maintains, NWS should negotiate and conclude a treaty on no-first-use of nuclear weapons against each other.[181]

France

France reiterated its NSA policy in line with UN Security Council Resolution 984 in a statement delivered during the 2010 NPT Review Conference: "France granted positive and negative security assurances to all NNWS Parties to the NPT, in compliance with their non-

[181] China's National Defense in 2010, English.news.cn, 21 March 2011

proliferation obligations. The Security Council recalled these security assurances in its Resolution 1887, stressing that they strengthen the non-proliferation regime."[182]

France has consistently been against the idea of a no first use pledge when it comes to nuclear weapons and attaches less weight to NSAs than other NWS. It qualifies the NSAs it has previously given to NNWS that are party to the NPT by arguing that nuclear retaliation is consistent with the legal right to self-defence as recognised in Article 51 of the UN Charter and that the right to self-defence would, in the face of aggression by others, take precedence over any no first use commitments given in peacetime. France also argues that any state not delivering on its own non-proliferation commitments, including in relation to chemical and biological weapons, could not expect any NSA to apply to them.[183]

Russia

Russia has shown readiness toward elaborating global NSAs, provided that they will take into consideration Russian military doctrine and its national security concepts.[184] This statement was reiterated with modest changes during the 2011 CD session, when Russia stated that it unswervingly supports the desire of NNWS to obtain NSAs and declared it is ready to start developing global assurances, taking into account the provisions in the Russian security doctrine.[185]

The United Kingdom

The United Kingdom's government stated in its 2010 Strategic Defence and Security Review that it is "now able to give an assurance that the UK will not use or threaten to use nuclear weapons against NNWS parties to the NPT." It explained, "In giving this assurance, we emphasise the need for universal adherence to and compliance with the NPT, and note that this assurance would not apply to any state in material breach of those non-proliferation obligations. We also note that while there is currently no direct threat to the UK or its vital interests from states developing capabilities in other weapons of mass destruction, for example chemical and biological, we reserve the right to review this assurance if the future threat, development and proliferation of these weapons make it necessary."[186]

The United States

In the 2010 NPR, the US policy says: "The United States will not use or threaten to use nuclear weapons against NNWS that are party to the NPT and in compliance with their nuclear non-proliferation obligations."[187] The NPR gives no definition of what compliance in this regards means, leaving this statement open to interpretation.

The NPR also states that conventional weapons would be used to retaliate against a biological or chemical weapons attack. This is a change from the last NPR, which stated that nuclear weapons could be used, even if the attack came from an NNWS.[188] The 2010 NPR does however also state that if the evaluation and proliferation in biological weapons threat would change, the US reserves the right to adjust its NSA policy accordingly.[189] Furthermore, the

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[182] Statement delivered by France at the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, 7 May 2010

[183] Kearns. I, "Beyond the United Kingdom: Trends in the Other Nuclear Armed States", *British American Security Information Council (BASIC),* November 2011, p. 21

[184] Statement by the Russian Federation to the Conference on Disarmament, 3 August 2006

[185] Fihn. B, "Thematic discussion on negative security assurances"*, CD Report*, Reaching Critical Will, February 2011

[186] "Securing Britain in an Age of Uncertainty. The Strategic Defence and Security Review", Her Majesty Government, October 2010, pp. 37-38

[187] Nuclear Posture Review report, Department of Defense, United States of America, April 2010, p. 15

[188] Nurja. A, "Obama Submits NWFZ Protocols to Senate", *Arms Control Today*, June 2011

[189] Nuclear Posture Review report, Department of Defense United States of America, April 2010, p. viii

NPR states that the nuclear weapons may still play a role in deterring conventional, chemical, and biological weapons from the states listed as not being under the US security assurances. The NPR also indicates that the US will seek to ensure that nuclear weapons would only be used in "extreme circumstances".[190]

NSAs in the UNGA

During the 2011 session of the UNGA First Committee, resolution (A/RES/66/26), "Conclusion of effective international arrangements to assure non-nuclear-weapon States against the use or threat of use of nuclear weapons," was adopted with a vote of 119-0-56.[191] France, Russia, United Kingdom, and the United States all abstained in the voting while China voted yes. This result was the same as previous years and no change has taken place since the adoption of the 2010 NPT Action Plan.[192]

High-level meetings

Although no significant steps towards legally-binding NSAs have been taken, action 7 also calls on the UN Secretary-General to convene a high-level meeting. In September 2010 he convened such a meeting on "revitalizing the work of the Conference on Disarmament and taking forward multilateral disarmament negotiations".[193]

Furthermore in July 2011 the UNGA convened a follow-up to this meeting, at the request of 49 member states. The follow-up served as a general debate on revitalizing the work of the CD and to discuss ways to break its longstanding deadlock. The participants discussed issues such as whether or not negotiations should be pursued outside of the CD and if the CD itself should be reformed.

Nuclear Weapon Free Zones

The Pelindaba Treaty (African Nuclear-Weapon-Free-Zone)

In accordance with Article 14 of the Pelindaba Treaty, the African region held its First Conference of States Parties to the Treaty on 4 November 2010 at the African Union Headquarters in Addis Abeba, Ethiopia.

Two countries, Zambia and Cameroon, have ratified the Treaty since the adoption of the NPT Action Plan.[194] As of June 2011, 22[195] signatories have yet to ratify the Pelindaba Treaty.

Both Protocol I (NSA) and Protocol II (ban on nuclear testing in the NWFZ) have been signed by all NWS, and ratified by all except the United States. The protocols were handed in to the US Senate in May 2011 for ratification.[196] Protocol III is open for signature by France and Spain, as non-African countries that are "de jure" or "de facto" responsible for territories

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[190] ibid, pp. viii - ix

[191] Albania, Andorra, Argentina, Armenia, Australia, Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Marshall Island, Micronesia, Monaco, Montenegro, Netherlands, New Zealand, Norway, Poland, Portugal, Republic of Korea, Republic of Moldavia, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, FYR Macedonia, Turkey, United Kingdom, United States.

[192] Khokhar. T, "Negative Security assurances", *First Committee Monitor*, Reaching Critical Will, October 2011

[193] Acheson. R, "High-level meeting on revitalizing the CD serves as catalyst for action", *CD Report*, Reaching Critical Will, September 2010

[194] "Nuclear weapons free zone", *Disarmament Forum*, UNIDIR, June 2011, p. 15

[195] Angola, Central African Republic, Cape Verde, Chad, Comoros, Congo, Djibouti, Democratic Republic of Congo, Egypt, Eritrea, Ghana, Guinea-Bissau, Liberia, Namibia, Niger, Sahrawi Arab Democratic Republic, Seychelles, Sierra Leone, Somalia, Sao Tome & Principe, Sudan, Uganda.

[196] "Nuclear weapons free zone", *Disarmament Forum*, UNIDIR, June 2011, p. 1

within the zone. France has signed Protocol III but Spain has yet not sign it for reasons independent of its nuclear obligations.

All NWS, except for China, have attached reservations to Protocol II, reserving the right to use their nuclear arsenals in response to "changes of the international environment".

The Treaty of Tlatelolco (Nuclear-Weapon-Free-Zone in Latin America and the Caribbean)
The Treaty of Tlatelolco has two additional protocols. Protocol I involves non-Latin American countries that have territories in the NWFZ. France, the United Kingdom, and the United States have signed and ratified Protocol I. Protocol II deals with the provisions of NSAs and is open for signature to the NWS, which all are signatories and have ratified the protocol, albeit with reservations.[197]

The Treaty of Rarotonga (South Pacific Nuclear-Weapons-Free-Zones)
After the Treaty's entry into force in 1986, the Republic of the Marshall Islands, the Federal State of Micronesia, and Palau became eligible states for signing this Treaty, but none have yet done so.[198] The Treaty's Protocol I (which calls on US, UK and France to apply the key provisions of the Treaty in respect to their territories situated within the zone), Protocol II (on negative security assurances) and Protocol III (whereby NWS undertake not to test nuclear weapons in the zone) have been ratified by all NWS except for the United States.[199] President Obama handed in the request for ratification of the three Protocols together with the Pelindaba Treaty protocols to the US senate in May 2011.[200]

Out of the four NWS that have ratified the protocols, France and the United Kingdom have made reservations on Protocol II (NSAs). These reservations are the same they have made for the Pelindaba Treaty.

The Treaty of Bangkok (Southeast Asia Nuclear-Weapon-Free-Zone)
The Protocol to the Treaty has not been signed by any of the NWS.[201]

In August 2011, the NWS met with officials from the Association of Southeast Asian Nations (ASEAN) to discuss their ratification of the Protocol to the Treaty. One follow-up meeting was held in October 2011. In November 2011, Thailand's foreign minister announced that the ASEAN countries together with the NWS had reached an agreement on how to proceed on the regions NWFZ. On 19 November the White House stated, "All sides have agreed to take the necessary steps to enable the signing of the protocol and its entry into force at the earliest opportunity." This agreement involves further negotiations.[202]

The Treaty of Semipalatinsk (Central Asia Nuclear-Weapon-Free-Zone)
The Protocol to the Treaty has not yet been signed by any of the NWS.

[197] Latin America Nuclear Weapons Free Zone Treaty (Treaty of Tlatelolco), Arms Control Associations, last updated 2011.
[198] Official Website of the Treaty of Tlateloco: www.opanal.org/opanal/about/about-i.htm
[199] Crail. P & Kimball. D, Nuclear-Weapon-Free Zones (NWFZ) at a glance, Arms Control Associations website, last updated 2011.
[200] "Nuclear weapons free zone", *Disarmament Forum*, UNIDIR, June 2011, p. 20
[201] Crail. P & Kimball. D, Nuclear-Weapon-Free Zones (NWFZ) at a glance, Arms Control Associations website, last updated 2011.
[202] Crall. P, "Progress Made on SE Asian Nuclear Pact", *Arms Control Today*, December 2011

Developments regarding a potential Weapon of Mass Destruction Free Zone in the Middle East (MEWMDFZ)

Since the MEWMDFZ also incorporates nuclear weapons, it is integrated in action 9 on NWFZs. The issue of a MEWMDFZ is central to the NPT. During the NPT RevCon in 2010, states parties agreed on "practical steps" to implement the 1995 Resolution on the Middle East. In this context, a Conference was planned for 2012, a "facilitator" was appointed (Jaakko Laajava, Under-Secretary of State in Finland's Foreign Ministry), and a venue was chosen (Helsinki). In view of the 2012 Conference, the following elements are particularly noteworthy:

- Immediately after the conclusion of the 2010 NPT RevCon, US President Obama said he "strongly oppose efforts to single out Israel." Gary Samore, President Obama's advisor on nuclear disarmament and proliferation, did not show up at the EU seminar on a WMDFZ in Brussels in July 2011 to make his scheduled keynote speech.
- The IAEA General Conference adopted the traditional resolution on the implementation of safeguards in the Middle East in 2010 and 2011. This resolution calls upon all states in the region to accede to the NPT and invites the countries concerned, which have not yet done so to adhere to international non-proliferation regimes. Despite being the only country in the Middle East not party to the NPT, Israel is not mentioned by name in the resolution. In 2010, the INC (Israeli Nuclear Capabilities) resolution that singled out Israel's nuclear programme was rejected at the IAEA General Conference. At the 2011 IAEA General Conference, the Arab League decided not to table the INC resolution in order to improve the atmosphere in view of the 2012 MEWMDFZ Conference.
- Just as in previous years, resolution A/C.1/66/L.1 on the establishment of the Middle East NWFZ was adopted without a vote in the 2011 GA First Committee. Israel stated in its explanation of vote that it "remains committed to a vision of the Middle East developing eventually into a zone free of Chemical, Biological, and Nuclear weapons as well as ballistic missiles." The Israeli representative suggested that the process should begin with "modest" confidence-building measures and be followed by "the establishment of peaceful relations, reconciliation, mutual recognition and good neighborliness, and complemented by conventional and non-conventional arms control measures." A "mutually verifiable" NWFZ could follow "in due course".
- In November 2011, the IAEA organized a Forum on NWFZs in its headquarter in Vienna, Austria. The discussions focused on how the experiences of existing NWFZs might apply to the development of such a zone in the Middle East. Following the adoption by the BoG of a resolution on 18 November 2011, Iran decided not to participate to the Forum. The Arab states participated to the discussions in a cooperative way. Israel repeated its traditional position on the MEWMDFZ issue.

The "facilitator" will report on his first outreach activities during the 2012 NPT PrepCom.

Comprehensive Nuclear-Test-Ban Treaty

Action 10: All nuclear-weapon States undertake to ratify the Comprehensive Nuclear-Test-Ban Treaty with all expediency, noting that positive decisions by nuclear-weapon States would have the beneficial impact towards the ratification of the Treaty, and that nuclear-weapon States have the special responsibility to encourage Annex 2 countries, in particular those which have not acceded to the Treaty on the Non-Proliferation of Nuclear Weapons and continue to operate unsafeguarded nuclear facilities, to sign and ratify.

Action 11: Pending the entry into force of the Comprehensive Nuclear-Test-Ban Treaty, all States commit to refrain from nuclear-weapon test explosions or any other nuclear explosions, the use of new nuclear weapons technologies and from any action that would defeat the object and purpose of that Treaty, and all existing moratoriums on nuclear-weapon test explosions should be maintained.

Action 12: All States that have ratified the Comprehensive Nuclear-Test-Ban Treaty recognize the contribution of the conferences on facilitating the entry into force of that Treaty and of the measures adopted by consensus at the Sixth Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty, held in September 2009, and commit to report at the 2011 Conference on progress made towards the urgent entry into force of that Treaty.

Action 13: All States that have ratified the Comprehensive Nuclear-Test-Ban Treaty undertake to promote the entry into force and implementation of that Treaty at the national, regional and global levels.

Action 14: The Preparatory Commission for the Comprehensive Nuclear-Test- Ban Treaty Organization is to be encouraged to fully develop the verification regime for the Comprehensive Nuclear-Test-Ban Treaty, including early completion and provisional operationalization of the international monitoring system in accordance with the mandate of the Preparatory Commission, which should, upon entry into force of that Treaty, serve as an effective, reliable, participatory and non-discriminatory verification system with global reach, and provide assurance of compliance with that Treaty.

New developments for the CTBT

The Treaty has been signed by 182 states, and ratified by 157. Since the adoption of the 2010 NPT Action Plan, six[203] additional states have become parties.

14 countries that have not yet signed the CTBT[204] and 25[205] countries have signed but not yet ratified it. Formal entry into force of the CTBT requires that a specific group of 44 states named in Annex 2 of the Treaty ratify it. Eight more ratifications are needed before it can enter into force, including that of four NPT States: China, the Democratic People's Republic of Korea (DPRK), Egypt, India, Iran, Israel, Pakistan, and the United States.

[203] The Central African Republic, Trinidad and Tobago, Ghana, Guinea, Guatemala and Indonesia.
[204] Bhutan, Cuba, the Democratic People's Republic of Korea, Dominica, India, Mauritius, Niue, Pakistan, Saudi Arabia, Somalia, South Sudan, Syrian Arab Republic, Tonga, Tuvalu
[205] Angola, Brunei Darussalam, Chad, China, Comoros, Congo, Egypt, Equatorial Guinea, Gambia, Guinea-Bissau, Iran, Iraq, Israel, Myanmar, Nepal, Papua New Guinea, Sao Tome and Principe, Solomon Islands, Sri Lanka, Swaziland, Thailand, Timor-Leste, United States, Yemen, Zimbabwe.

Specific NWS obligations

United States

In May 2011, the Under-Secretary of State for Arms Control and International Security, said that, "The Obama Administration is preparing to engage the Senate and the public on an education campaign that we expect will lead to ratification of the CTBT."[206] In August 2011, the United States pledged a voluntary, in-kind contribution of $8.9m to the Preparatory Commission of the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)[207]. On 6 December 2011, US President Barack Obama welcomed Indonesia's ratification and stated, "The United States remains fully committed to pursuing ratification of the Test Ban Treaty and will continue to engage members of the Senate on the importance of this Treaty to U.S. security. America must lead the global effort to prevent proliferation, and adoption and early entry into force of the CTBT is a vital part of that effort."[208]

Since May 2010, the US administration has begun informal briefings of Senators and staff on key technical and scientific issues related to the CTBT. Several members of the US Congress are also reported to have toured the Comprehensive Test-Ban Treaty Organization's headquarters in Vienna during the past year.[209] However, it does not appear likely that the US Senate will be able to conduct an in-depth review of the Treaty before US presidential elections in November 2012.

China

The 2010 white paper on China's National Defence says, "China has strictly abided by its commitment to a moratorium on nuclear testing and has actively participated in the work of the Preparatory Commission of the Comprehensive Nuclear Test Ban Treaty Organization, and is steadily preparing for the national implementation of the Treaty. China is responsible for setting up 12 international monitoring stations and laboratories. At present, six primary seismological monitoring stations, three radionuclide stations, the Beijing Radionuclide Laboratory and the China National Data Centre have been set up, and one infrasound station is under construction." [210] However, despite the support for the CTBT, the Chinese government has not yet initiated the ratification process.

On 19 January 2011, Chinese President Hu Jintao and US President Barack Obama in a joint statement said "both sides support early entry into force of the CTBT."[211]

Other outstanding NPT states

In addition to the NWS there are two more states parties to the NPT that are Annex II states that have not yet ratified the CTBT, Egypt and Iran.

Egypt

In 2009, the Egyptian delegation to the UNGA First Committee stated that it had not ratified the CTBT because doing so "would only result in widening the steep gap in commitments undertaken by States member to the NPT and States outside the Treaty which enjoy unlimited freedom in the nuclear area."[212] In 2011, the Egyptian delegation made it clear that Egypt

[206] Tauscher. E, "The Case for the Comprehensive Nuclear Test Ban Treaty", US State Department, May 2011
[207] Recent changes in the IAEA safeguards regime, July-September 2011
[208] Kimball. D, "Indonesia ratifies CTBT", *Arms Control Today*, January/February 2012
[209] ibid
[210] China's National Defense in 2010, English.news.cn, 21 March 2011
[211] US-China Joint Statement, CTBTO Preporatory Commission website, 25 January 2011
[212] Calder. D, "Nuclear Testing", *First Committee Monitor*, Reaching Critical Will, 2009

would not ratify the Treaty without a change in Israeli policy with regard to nuclear weapons. No change in the Egyptian position has been reported.

Iran
At the Fifth Conference on Facilitating the Entry into Force of the CTBT in 2007, Iran outlined a number of negative developments that "have jeopardized the prospects of entry into force of the Treaty", including lack of progress towards nuclear disarmament, upgrading and modernization of existing nuclear weapons, rejection of the CTBT by major NWS, and acknowledgement of the possession of nuclear weapons by Israel.[213] No change in the Iranian position has been reported.

CTBT Conferences

In September 2010, the fifth ministerial meeting of the CTBT took place in New York. The meeting concluded with a joint ministerial statement, which reaffirmed the commitment of the parties to the CTBT and called upon the states that had not yet ratified the treaty to do so.[214]

Since the 2010 NPT Action Plan was adopted, one CTBT Article XIV conference has been held. The conference took place in September 2011 and over 70 countries participated. In all, 58 states and the Secretary-General of the United Nations delivered statements on the importance of entry into force of the CTBT and reported on progress made to this end.[215] The Conference adopted a Final Declaration unanimously, in which over 160 countries appealed to holdout states to join the CTBT. The declaration was also endorsed by 70 signatory states.[216] In addition, Japan, Australia, and the Netherlands have organized the first "Friends of the CTBT" Foreign Ministers' meeting on the margins of the UNGA in New York in 2011[217] The aim of this meeting was to sustain and generate further political momentum as well as public attention for the entry into force of the Treaty.

Verification

Pending the entry into force of the Treaty, the Preparatory Commission of the CTBTO is establishing a verification regime to detect nuclear explosions anywhere on the globe.

From 28 November to 9 December 2011, over 60 participants including International Monitor Station (IMS) operators, National Data Centre staff, diplomats, academics, and members of civil society attended the Advanced Science Course on the verification technologies of the CTBT. In total, participants from more than 100 different countries followed the event.[218]

The CTBTO Preparatory Commission lists several key challenges for the completion of the verification regime. For example, stations intended for India and Pakistan cannot be started until these two countries sign the CTBT.[219]

[213] Statement by Iran to the Conference on the Entry into force of the CTBT, September 2007
[214] Joint Ministerial Statement on the CTBT, Reaching Critical Will website, 23 September 2010
[215] Conference on Facilitating the Entry into Force of the CTBT, New York, September 2011
[216] Final Declaration, Conference on Facilitating the Entry into Force of the CTBT, New York, 23 September 2011
[217] CTBT Ministerial Meetings, CTBT official website, April 2012
[218] Advanced Science Course on the CTBT Verification technologies, CTBTO Preparatory Commission, 2011
[219] The future role of the International Monitoring System, CTBTO Preparatory Commission, 2011

Fissile Material

Action 15: All States agree that the Conference on Disarmament should, within the context of an agreed, comprehensive and balanced programme of work, immediately begin negotiation of a treaty banning the production of fissile material for use in nuclear weapons or other nuclear explosive devices in accordance with the report of the Special Coordinator of 1995 (CD/1299) and the mandate contained therein. Also in this respect, the Review Conference invites the Secretary-General of the United Nations to convene a high-level meeting in September 2010 in support of the work of the Conference on Disarmament.

Action 16: The nuclear-weapon States are encouraged to commit to declare, as appropriate, to the International Atomic Energy Agency (IAEA) all fissile material designated by each of them as no longer required for military purposes and to place such material as soon as practicable 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.

Action 17: In the context of action 16, all States are encouraged to support the development of appropriate legally binding verification arrangements, within the context of IAEA, to ensure the irreversible removal of fissile material designated by each nuclear-weapon State as no longer required for military purposes.

Action 18: All States that have not yet done so are encouraged to initiate a process towards the dismantling or conversion for peaceful uses of facilities for the production of fissile material for use in nuclear weapons or other nuclear explosive devices.

Fissile materials in the Conference on Disarmament (CD)

Despite the continuing stalemate over the adoption of a programme of work in the CD, substantive work has been undertaken somewhat in the margins of the Conference.

In February 2011, along with CD plenary discussions on an FMCT, Australia and Japan co-hosted a first round of expert-level talks seeking to define key aspects of a treaty, including what would be considered fissile material and what constitutes production of such material. These events were arranged in order to "build confidence about FMCT and momentum towards FMCT negotiations in the CD on the basis of CD/1299 and the mandate contained therein." Several delegations participated with experts from capitals. Several states supported the Australian-Japanese initiative. However, China said in remarks to the CD on 17 February that it did not attend the first session. Two additional rounds were held during 2011 and a report from the discussions was submitted as an official document by the delegation of Japan to the CD.

At the UNGA First Committee 2011, Canada presented a draft version of, A/RES/66/40, "Treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices". The draft suggested at first that the UNSG should establish a group of governmental experts (GGE) in March 2012 "to consider options, including the necessary legal and procedural requirements" for a fissile materials treaty on the basis of the Shannon mandate. However, the final resolution removed any reference to the establishment of a GGE and contained no new measure for kick-starting substantive discussions on the issue.

The resolution was adopted in the First Committee with a vote of 158-2-21. Pakistan and the Democratic People's Republic of Korea voted against the text, while the Arab Group, Ecuador, Indonesia, Iran, and Israel abstained.

Declaration of excess fissile material for military use

Between 1996 and 2002, the Russian Federation, the United States, and the IAEA launched the Trilateral Initiative. This initiative was dedicated to examining the technical, legal, and financial issues associated with IAEA verification of fissile material determined to be excess to military purposes. Included in the Trilateral Initiative were discussions on a possible legal instrument through the Voluntary Offer Agreements. [220] Since the end of 2002, when the Bush administration made clear that the US would withdraw its participation,[221] no significant steps have been taken to put the Trilateral Initiative, or any similar agreements, into action. There is no information available concerning this initiative.

In 2000 Russia and the US signed the Plutonium Management and Disposition Agreement (PMDA), which was finalized in 2010. Both states will eliminate 34 tonnes of excess weapon-grade plutonium and ensure that the plutonium is irreversibly removed from military use. The agreement also calls on both states to implement monitoring and inspection activities. The US monitors the key stages of the Russian process in the programmes facilities and Russia will conduct visits to the US facilities to ensure that LEU is not diverted from civilian use. The agreement also opens up for IAEA verification once appropriate agreements with the IAEA are concluded,[222] but as of yet the IAEA is not involved in any activities.[223]

The global stockpile of highly enriched uranium (HEU) in 2010 was 1475±125 metric tonnes and 485±10 tonnes separated plutonium.[224] In January 2012, global stocks of HEU had decreased to around 1440±125 tonnes while stockpiles of separated plutonium now are estimated to be 495±10 tonnes. These numbers are still enough to produce more than 55,000 nuclear weapons. About 98% of this HEU is held by the NWS, the largest stockpiles being in the United States and the Russian Federation. [225] The stockpile of separated plutonium for weapons continues to increase because of production in India, Pakistan, and perhaps Israel. The United Kingdom, France, Russia, and Japan have accumulated the largest civilian plutonium stockpiles.

Three of the five NWS have declared their military nuclear material as excess. Russia and the US have since the end of the Cold War declared more than 700 tonnes of HEU and 100 tonnes of weapon-grades plutonium and both countries have set up programmes to eliminate their excess material.[226]

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[220] Shea. T, "Verification of weapon origin fissile material in the Russian Federation and United States", *IAEA Bulletin*, International Atomic Energy Agency, 1999
[221] Squassoni. S, "Grading Progress on 13 Steps Toward Disarmament", Carnegie Endowment for International Peace, 2009, p. 2
[222] Sokova. E, "Plutonium Disposition", *Nuclear Threat Initiative*, September 2010
[223] Podvig. P, "Disposition of Excess Military Nuclear Material", *UNIDIR paper*, February 2012, p.3
[224] Global Fissile Material report 2010, International Panel of Fissile Materials, December 2010, p. 9
[225] Global Fissile Material Report 2011, International Panel of Fissile Materials, January 2012, pp. 2-3
[226] ibid, p.8

Russia
In 1996 Russia declared 500 tonnes excess HEU as a part of the US-Russian HEU-LEU deal. By the end of 2011 the programme had eliminated 442.5 tonnes and has plans to down-blend the remaining amount by 2013.[227] The remaining HEU in Russia, more than 600 tonnes, is enough to produce about 24,000 nuclear weapons. [228] Russia has also declared up to 50 tonnes weapon grade plutonium to be eliminated as excess material. Out of these 50 tonnes, 34 tonnes are included in the PMDA. Russia has not yet started building the designated fuel fabrication plan that will eliminate the plutonium; it is estimated that the programme will start in 2018.[229]

United Kingdom
The UK has declared some of its excess military material; however it has not proceeded to eliminate this material yet. The United Kingdom has an estimated stockpile of 20 tonnes HEU. In 1998, the UK declared 0.3 tonnes weapon-grade plutonium and informed that it would, together with 4.1 tonnes of non-weapon grades material, place this under IAEA safeguards. It has not been reported that any such safeguard agreement has been concluded.[230]

United States
The US has declared more than 370 tonnes HEU as excess, both in 1996 and 2005. Currently, only about 100 tonnes of this HEU is available before 2050, leaving 210 tones designated for elimination.[231] The US is expected to have down-blended 135 tonnes of HEU by 2013 and the remaining will be completed in 2050.[232] The IAEA conducted a verification experiment that monitored down-blending of 50 tonnes of HEU at two US facilities. This experiment has not been repeated and the IAEA has never had access to the US Department of Energy facilities that carry out most of the current down-blending activities. The remaining HEU in the US, 200 tonnes, could be used to produce over 8,000 nuclear weapons.[233]

In addition to the declared 52.5 tonnes of plutonium excess to its military necessities, the US has 34 tonnes included in the PMDA. The elimination is estimated to begin in 2025 and it will take 13 years to eliminate the 34 tonnes of plutonium.[234]

Dismantling of production facilities for fissile material for military use

Pending the negotiations of an FM(C)T, most NWS adhere to a moratorium on production of fissile material for military use. Most production facilities for weapons-grade fissile materials in the five NPT weapon states are therefore shut down and, in some cases, are in the process of being decommissioned. However, this is not verified. Only France has invited international experts to visit the dismantling of its former fissile material facilities at Pierrelatte and Marcoule.

The production of fissile materials for weapons in Russia ended in 1994. Ten out of Russia's thirteen plutonium production reactors were shut down by 1992. Of the three remaining facilities, the Zeleznogorsk was the last to be closed down on 15 April 2010.[235]

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[227] ibid, p.3
[228] ibid
[229] Podvig. P, "Disposition of Excess Military Nuclear Material", *UNIDIR paper*, February 2012, p. 4
[230] Podvig. P, "Disposition of Excess Military Nuclear Material", *UNIDIR paper*, February 2012
[231] ibid, p.2
[232] Global Fissile Material Report 2011, International Panel of Fissile Materials, October 2012, pp. 2-3
[233] Podvig. P, "Disposition of Excess Military Nuclear Material", *UNIDIR paper*, February 2012, p.2
[234] ibid, p.4
[235] Podvig. P, "*Russia no longer produces weapon materials"*, *IPFM blog*, International Panel on Fissile Material, 2010

The United States has a number of shutdown reprocessing facilities, including the Nuclear Fuel Services' West Valley plant near Buffalo, New York; a plant near Morris, Illinois; a PUREX reprocessing plant in Hanford, Washington that was shut down in 1989; the Idaho Chemical Processing Plant; and the Savannah River Plant.[236]

While China has not officially declared a moratorium on HEU and plutonium production for weapons, it is believed that China ceased its production of HEU in 1987 and of plutonium by about 1990. All its previous military production facilities are reported to be closed, converted, or being decommissioned.[237]

[236] ibid, p. 60
[237] Zhang. H, "China", *Global Fissile Material Report 2010: Balancing the Books*, International Panel on Fissile Material, 2011

Disarmament Education

Action 22: All States are encouraged to implement the recommendations contained in the report of the Secretary-General of the United Nations (A/57/124) regarding the United Nations study on disarmament and non-proliferation education, in order to advance the goals of the Treaty in support of achieving a world without nuclear weapons.

In 2002, the UNGA unanimously adopted 34 recommendations in the UN Study on Disarmament and Non-Proliferation Education (A/57/124). The UN Secretary-General (UNSG) issues a report on the implementation of these recommendations biennially. Unfortunately, not many member states contribute to the report. In July 2010 when the latest report[238] was released, only five[239] countries submitted information. The next biannual report will be released in July 2012. Hopefully this will show an increase in the implementation of the 34 recommendations.

Japan

During the 2010 session of the UNGA First Committee, the Japanese delegation highlighted the fact that the outcome document of the 2010 NPT Review Conference included for the first time a reference to the importance of disarmament and non-proliferation education as a useful and effective means to advance the goal of a world without nuclear weapons.[240] Japan and the United Nations University (UNU) submitted a working paper to the 2010 NPT Review Conference that encouraged cooperation between governments and civil society on relevant education initiatives. Japan and UNU indicated they would "initiate dialogue" to this end. Japan announced to the First Committee 2010 that together with the UNU they intend to hold this forum in March 2011 in Japan.[241] During the final week of First Committee in 2011, Japan hosted a side event where Special Communicators for a World without Nuclear Weapons spoke for the first time in their new role. The Special Communicators status has been thus far given to *hibakusha* (atomic bomb survivors) in recognition of their work for nuclear disarmament.[242]

UNGA resolutions

In October 2010, First Committee adopted two biannual resolutions on disarmament education: "United Nations study on disarmament and non-proliferation education" (A/C.1/65/L.53) and "United Nations Information Programme" (A/C.1/65/L.52). While education is not a controversial topic compared to others during the First Committee, implementation of these resolutions is still limited.

[238] A/65/160, UNGA
[239] Burkina Faso, Japan, Mexico, Ukraine and Spain
[240] Fihn. B, "Disarmament education", *First Committee Monitor*, Reaching Critical Will, October 2010
[241] The Forum was cancelled due to the earthquake that hit Japan on 11 March 2011
[242] Sullivan. K, "Disarmament education", *First Committee Monitor*, Reaching Critical Will, November 2011

Universalization

Action 23: The Conference calls upon all States parties to exert all efforts to promote universal adherence to the Treaty, and not to undertake any actions that can negatively affect prospects for the universality of the Treaty.

Exert all efforts

Democratic People's Republic of Korea (DPRK)

The six-party talks between the DPRK, the United States, China, Russia, Japan, and the Republic of Korea were last held in December 2008.[243] The DPRK had pulled out of the talks shortly before conducting a second nuclear test in April 2009.[244]

In January 2011, China declared the six-party talks as more "suitable" than the UN Security Council for solving the issue.[245] Furthermore in January 2011, the DPRK and the Republic of Korea agreed to hold high-level military talks in February 2011. The talks were the first between the countries' defence ministers since late 2007.[246]

The G8 Summit's declaration from June 2011 urged the DPRK to comply with its international obligations, including the complete, verifiable, and irreversible abandonment of all its nuclear programmes and ballistic missile programmes and promptly to address international humanitarian concerns, such as the issue of abduction.[247] Several calls by large number of states are made repeatedly at the UN General Assembly's First Committee each October.[248]

India

On 23 and 24 June 2011, the Nuclear Suppliers Group (NSG) adopted new guidelines that can be interpreted as affecting the exemption of India granted in 2008.[249] During this meeting, the NSG recommended that its members should "not authorize the transfer of enrichment and reprocessing facilities and equipment and technology" to any country that has not ratified the NPT, that does not have a comprehensive safeguard agreement with the International Atomic Energy Agency (IAEA), and that has not implemented the IAEA Additional Protocol, which permits closer scrutiny of atomic sites in signatory nations.[250]

While the new guidelines would not prevent India from importing nuclear power reactors from NSG member states, government officials in New Delhi have suggested it might curb such purchases from countries that rule out access to nuclear fuel enrichment and reprocessing systems. India has not received enrichment and reprocessing systems from NSG

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[243] Arms Control Association official website, "Chronology of U.S. – North Korean Nuclear and Missile Diplomacy", 8-11 December 2008, http://www.armscontrol.org/factsheets/dprkchron#2008
[244] "North Korea `keen' for six-party nuclear talks", *BBC News Asia-Pacific*, 1 August 2011.
[245] "China says six-party talks key to North Korea dispute, *Reuters*, 14 January 2011,
[246] McCurry, J. "North and South Korea to hold military talks", *The Guardian*, 21 January 2011,
[247] G8 Declaration Renewed Commitment for Freedom and democracy, 26-27 May 2011,
[248] See RCW's First Committee Monitor, http://www.reachingcriticalwill.org/disarmament-fora/unga/2011/fcm
[249] The current member states of the NSG are Argentina, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, China, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Kazakhstan, Republic of Korea, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States
[250] "Nuclear Exporters Appear to Restrict Trade with India", *Global Security Newswire*, 7 July 2011.

member states in the past, but according to reports, the new rules explicitly restrict exports of such materials.[251]

However, shortly after the annual NSG meeting, US Secretary of State Clinton stated at a press conference that the new guidelines on the enrichment and reprocessing technology "should not be construed as detracting from the India-US civilian nuclear deal." She further emphasized that "the US remains fully committed to expanding our civil nuclear cooperation with India" and that the NSG "clean waiver was an important joint accomplishment for both our governments and we stand by it." "Nothing", she said, about "the new ENR transfer restrictions agreed to by the NSG members should be construed as detracting from the unique impact and importance of the US-India civil nuclear agreement or our commitment to full civil nuclear cooperation".[252]

Israel

Efforts regarding Israel are to be considered as part of the 2012 MEWMDFZ Conference. A MEWMDFZ would have significant positive impact for the universalization of the NPT, and therefore this process is relevant to this action. For more information, see the chapter on Nuclear-Weapon-Free Zones and Negative Security Assurances.

United Nations General Assembly (UNGA) resolutions on universalization of the NPT.

2009	2010	2011	NWS votes in 2011
A/RES/65/88: The risk of nuclear proliferation in the Middle East			
Yes: 167 No: 6 Abstain: 6	Yes: 172 No: 6 Abstain: 8[253]	Not tabled during the 2011 session	US: **No** (in 2010)
A/RES/66/45: United action towards the total elimination of nuclear weapons			
Yes: 171 No: 2 Abstain: 8	Yes: 173 No: 1 Abstain: 11	Yes: 169[254] No: 1 Abstain: 11[255]	China: **Abstain**
A/RES/66/40: Towards a nuclear-weapon-free world: accelerating the implementation of nuclear disarmament commitments.			
Yes: 169 No: 5 Abstain: 5	Yes: 173 No: 5 Abstain: 5	Yes: 169 No: 6[256] Abstain: 6[257]	France, UK and US: **No** China and Russia: **Abstain**

Actions that can negatively affect universality

One of the main reasons cited for joining the NPT as a NNWSis the promise of the "inalienable right" to develop nuclear energy for "peaceful purposes". Nuclear export groups, such as the NSG and the Zangger Committee, have reinforced this. These export groups have adopted guidelines that prevent members from exporting nuclear technology to non-states parties to the NPT.

[251] ibid
[252] "US: New NSG norms no hurdle to nuclear deal", *Indian Express*, 20 June 2011
[253] Ethiopia and Madagascar changed to abstain in 2010.
[254] Bhutan and France change changed to yes in 2011
[255] Brazil, Ecuador, India, Mauritius and Syria changed to abstain in 2011
[256] UK changed its vote to no in 2011
[257] China and Russia changed to abstain in 2011

Trade with non-NPT states parties

The US-India nuclear deal and the resulting NSG exemption waiver for nuclear trade with India were concluded well before the 2010 NPT Action Plan was adopted. However, as this was the first time such a deal was concluded with a non-NPT state party, it has set a standard for similar deals.

The agreement has been criticized for the fact that the 45 countries in the NSG have made a decision on behalf of the 189 states parties of the NPT. Objections have been raised that the NSG has never been given the authority to reinterpret the NPT, overturn NPT decisions, or violate existing international standards. After the NSG waiver was approved in 2008 and since the adoption of the NPT Action Plan, several deals and cooperation agreements have been concluded between India and other NPT states.[258]

Ahead of the NSG annual plenary meeting in the Netherlands in 2011 the United States circulated a "Food for Thought" paper[259] as a follow-up to President Obama's announcement on 1 November 2010 in New Delhi of his support for Indian membership in the NSG.[260] In addition to this, in June 2010, China planned to provide Pakistan with two new nuclear reactors. Spokespeople emphasised that the reactors were for "peaceful uses," in line with China's international obligations and under IAEA supervision.[261] In March 2011 China announced it was to sell further nuclear reactors to Pakistan.[262]

Permanent seat in the UNSC

The current five permanent seats coincide with the nuclear weapon states under the NPT. Promoting an additional seat for India, also a state with nuclear weapons, can be considered harmful to the prospects for universality of the NPT.

Previously, the US has opposed India's bid to become a permanent member on the grounds of nuclear proliferation concerns and because India has not signed the NPT. However, on 8 November 2010, US President Obama backed India for a permanent seat on the UNSC.[263]

India was elected a non-permanent member of the UNSC in 2011, with an overwhelming majority where only three UN member states did not vote for India. In addition to this, several other countries and organizations openly support India's aim of a permanent seat.[264] For example, Japan, Germany, and Brazil, which have also expressed a desire to become permanent members of the UNSC, all support a joint bid for permanent seats together with India and one or two African states.[265]

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[258] Argentina, Australia, Canada, France, Kazakhstan, Mongolia, Namibia, Republic of Korea, Russia, Tanzania, United Kingdom. India may also be seeking uranium from various countries in Africa, including Angola, Gabon, Namibia, Niger, Nigeria, Tanzania and Uganda. These kinds of uranium deals could also be considered to be actions that significantly harm the prospects of the universality of the NPT. It would also be a violation of the African Nuclear Weapon Free Zone, the Pelindaba Treaty, as states parties to this treaty are not permitted to exchange in nuclear trade with non-NPT states parties.

[259] "Nuclear Suppliers Group Annual Plenary meeting"*, Arms Control Today*, 20 May 2011,

[260] Kimball, D. G, "Indian Membership in the NSG? A Bad Ideas Whose Time Has Not Come", *Arms Control Now*, 23 June, 2011.

[261] "China says Pakistan nuclear deal 'peaceful'", *BBC News South Asia*, 17 June, 2010.

[262] Ho. S, "China to Sell Outdated Nuclear Reactors to Pakistan", *VOANews*, 24 March, 2011.

[263] Lamont, J. & Luce, E. "Obama calls for top India role at UN", *Financial Times*, 8 November 2010.

[264] Such as the United Arab Emirates, Kazakhstan, Bangladesh, Chile, Australia, Czech Republic, Tanzania, the African Union, France, Russia, United Kingdom, Hungary, Poland, Croatia, Belarus, Romania, Norway, Finland, Slovakia, Portugal, Belgium, Armenia, Bulgaria, Greece, Luxembourg, Denmark, Iceland, Oman, Singapore, Laos, Sri Lanka, Malaysia, Mongolia, Uzbekistan, Kyrgyzstan, Vietnam, Tajikistan, Syria, Myanmar, Maldives, Qatar, Brunei, Palau, Micronesia, Tuvalu, Suriname, Bolivia, Guyana, Peru, Cuba, Belize, Bahamas, and Jamaica

[265] Security Council reform, Global Policy Forum; http://www.globalpolicy.org/security-council/security-council-reform.html

Nuclear non-proliferation efforts

At the Nuclear Security Summit (NSS) in March 2012, representatives of India, Pakistan, and Israel were invited to participate and the final communiqué did not include any call upon these countries to join the NPT or any reference to the NPT at all.[266]

[266] Seoul Communiqué; 2012 Seoul Nuclear Security Summit*,* Nuclear Security Summit, 26-27 March 2012.

Non-proliferation obligations

Action 24: The Conference re-endorses the call by previous review conferences for the application of IAEA comprehensive safeguards to all source or special fissionable material in all peaceful nuclear activities in the States parties in accordance with the provisions of article III of the Treaty.

Action 25: The Conference, noting that 18 States parties to the Treaty have yet to bring into force comprehensive safeguards agreements, urges them to do so as soon as possible and without further delay.

Action 26: The Conference underscores the importance in complying with the non-proliferation obligations, addressing all compliance matters in order to uphold the Treaty's integrity and the authority of the safeguards system.

Action 27: The Conference underscores the importance of resolving all cases of non-compliance with safeguards obligations in full conformity with the IAEA statute and the respective legal obligations of Member States. In this regard, the Conference calls upon Member States to extend their cooperation to the Agency.

Action 29: The Conference encourages IAEA to further facilitate and assist the States parties in the conclusion and entry into force of comprehensive safeguards agreements and additional protocols. The Conference calls on States parties to consider specific measures that would promote the universalization of the comprehensive safeguards agreements.

Action 32: The Conference recommends that IAEA safeguards should be assessed and evaluated regularly. Decisions adopted by the IAEA policy bodies aimed at further strengthening the effectiveness and improving the efficiency of IAEA safeguards should be supported and implemented.

Action 33: The Conference calls upon all States parties to ensure that IAEA continues to have all political, technical and financial support so that it is able to effectively meet its responsibility to apply safeguards as required by article III of the Treaty.

Action 34: The Conference encourages States parties, within the framework of the IAEA statute, to further develop a robust, flexible, adaptive and cost effective international technology base for advanced safeguards through cooperation among Member States and with IAEA.

Action 46: The Conference encourages IAEA to continue to assist the States parties in strengthening their national regulatory controls of nuclear material, including the establishment and maintenance of the State systems of accounting for and control of nuclear material, as well as systems on regional level. The Conference calls upon IAEA Member States to broaden their support for the relevant IAEA programmes.

This group of actions involve some interpretation difficulties. For example, action 24 calls for the application of the IAEA Comprehensive Safeguards Agreement (CSA) in accordance with the provisions of article III of the NPT. Article III states that safeguards are to 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."[267] In this context, states are debating whether safeguards should be interpreted as they were set out in

[267] Article III of the NPT.

1968 or in a more comprehensive manner to incorporate the Additional Protocol (AP) as some states call for. As no agreement has been reached by the NPT states parties on the interpretation of safeguards in today's context, this report's analysis is based on the view that the safeguards obligations represent the CSA unless the AP is specifically referred to.

Comprehensive Safeguard Agreements

Action 25 specifically calls upon those 14 NNWS that have not yet entered into force CSAs i to proceed in doing so. Since May 2010, new CSAs have entered into force in seven of these 14 states.[268]

The role of the IAEA

The Director General of the IAEA repeatedly calls on states that have not already done so to sign and ratify CSAs and APs. In every introductory statement to the IAEA Board of Governors (BoG) he reports on the progress made, the signatory of new agreements, developments in the cases of non-compliance, and the IAEA's role.[269]

In its mid-term strategic plan 2012–2017, the IAEA states that it will continue to "encourage Member States to conclude comprehensive safeguards agreements which are in accordance with relevant obligations, and additional protocols, and will provide associated assistance where requested." [270] Further, it will provide states with the necessary guidance and training.[271]

Non-proliferation cases of concern

According to the IAEA, safeguards are successfully implemented in the majority of member states. However, some countries are reported by the IAEA to have not fully complied with their obligations under their respective safeguard agreements. These countries are the DPRK, Iran, and Syria.

Democratic People's Republic of Korea

Since April 2009 the IAEA has not had inspectors in the DPRK and since December 2002 it has not been permitted to implement safeguards.[272]

The IAEA's resolution, GC(55)/RES/13, adopted on the 22 September 2011 in the General Conference urges the DPRK not to conduct further nuclear tests and to comply with its obligations under the UNSC resolutions. Further it calls on the DPRK to come into full compliance with the NPT and to cooperate promptly with the IAEA.

Like the year before, the IAEA Director General urged the DPRK in his introductory statement in 2011 to the BoG to implement all relevant non-proliferation obligations. The Director General presented a comprehensive report on the IAEA's previous verification activities in the DPRK in September 2011.[273]

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[268] Andorra, Chad, Democratic Republic of Congo, Montenegro, Mozambique, Pakistan but only on limited number of installations, and Rwanda. A few states have signed but not yet put into force the CSA: Benin,, Cape Verde,, Djibouti, Guinea, Timor-Leste,, and Togo .. For some states—Equatorial Guinea, Guinea and Vanuatu —CSAs have been approved by the Board of Governors but have not yet been signed. Others—Eritrea, Guinea-Bissau, Liberia, Micronesia, São Tomé & Principe and Somalia—have not yet submitted CSAs to the IAEA Board of Governors for its consideration.
Status List, Conclusion of Safeguards agreements, additional protocols and small quantities protocols, IAEA, 21 June 2011, http://www.iaea.org/OurWork/SV/Safeguards/documents/sir_table.pdf

[269] Amano. Y, "Introductory Statement to Board of Governors", IAEA, 13 September 2010 and 6 June 2011,

[270] Medium Term Strategy 2012-2017, IAEA, p.6

[271] Ibid

[272] Amano. Y, Introductory Statement to Board of Governors, by IAEA Director General, IAEA, 2 December 2010,

[273] Amano. Y, Introductory Statement to Board of Governors, by IAEA Director General, IAEA, 6 June 2011,

In February 2012, the DPRK promised it would stop testing long-distance missiles and stop its nuclear testing and uranium reprocessing in return for US food aid.[274] Two weeks later, the DPRK announced that it will launch a satellite for peaceful purposes. Japan, the US and the UK have urged the DPRK not to launch its satellite, since the launch technology for missiles and satellites is nearly identical. However, the DPRK has stated that the launch will strictly abide by international regulations.[275] The same day that the DPRK announced its satellite launch, the IAEA received an invitation from the country to inspect its nuclear facilities.[276]

Iran

In the case of Iran, the conflicting accounts of the situation by the IAEA and Iran show the complexity of the topic. The IAEA has not found Iran to be in non-compliance with its NPT obligations and continues to verify the non-diversion of declared nuclear materials and activities at Iran's nuclear facilities, in accordance with Iran's CSA. However, the IAEA asserts that Iran has "not fully implemented its binding obligations"[277] and that the "full implementation of these obligations is needed to establish international confidence in the exclusively peaceful nature of Iran's nuclear programme."[278]

Since 2010, eight reports were produced by the IAEA on Iran, concluding that the IAEA is "concerned about the possible existence in Iran of past or current undisclosed nuclear-related activities including activities related to the development of a nuclear payload for a missile" and that the IAEA is not in a position to prove the exclusively peaceful nature of Iran's nuclear programme. The most prominent IAEA report was the one produced in November 2011, which included a 14-page annex summarizing all of the outstanding issues between the IAEA and Iran. The IAEA held two rounds of talks with Iranian officials in January and February 2012 with the overall objective to resolve all outstanding issues. However, these talks did not reach the goal of defining the modalities for solving all of these issues.

Since the 2010 NPT RevCon, two important resolutions have been adopted, one IAEA BoG resolution (GOV/2011/69) and one UNSC resolution (SC/1929). UNSCR 1929 notes that Iran has failed to comply with previous UNSC resolutions regarding Iran's nuclear programme and the resolution imposed further sanctions on Iran.[279]

On the diplomatic front, the P5+1 or E3+3—China, France, Russia, the UK, the US, and Germany—have met with Iran on two occasions since May 2010.[280] The first meeting in December 2010 in Geneva did reach a consensus on a project linked to the Tehran Research Reactor (TRR). Unfortunately, this project was never realized. The parties had a new meeting in Istanbul in January 2011, but the meeting ended without any development. During an official visit to Washington in mid-July 2011, Russian Foreign Minister Lavrov announced a "step-by-step" approach that would, if Iran agreed to clarify questions about its nuclear programme, lead to a gradual easing of sanctions.[281] Reactions to the proposal have been

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[274] McGreal. G, "North Korea pledges to halt nuclear programme in exchange for US aid", *the Guardian*, 29 February 2012
[275] Branigan. T, "North Korea to launch satellite", *the Guardian*, 16 March 2012
[276] "North Korea invites IAEA's nuclear inspectors to return", *the Guardian*, 20 March 2012
[277] These obligations include, according to the IAEA: The implementation of the provision of the additional protocol; The implementation of the modified Code 3.1 of the subsidiary arrangement general part to the safeguard agreement; The suspension of enrichment related activities; and Suspension of heavy water related activities and clarification of the remaining outstanding issue on the possible military dimensions of Iran's nuclear programme.
[278] Amano. Y, Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran (GOC/2011/54), IAEA, 2 September 2011,
[279] UNSC Resolution 1929 (2010), UNSC, 9 June 2010
[280] Background Note: Iran, U.S. Department of State. 17 February 2011,
[281] "Iran's "nuclear partner" Russia seeks to revive global talks", *Reuters*, 15 August 2011,

hesitant so far. In October 2011, EU High Representative Ashton wrote a letter to the Secretary of the Supreme National Security Council, Dr. Jalili, to state the E3+3 readiness to restart the dialogue. On 14 February 2012, Dr. Jalili responded in a positive way to Ashton's letter but no further concrete progress has been made.

Syria

Since the 2010 RevCon, four reports have been produced by the IAEA. The most significant was presented to the BoG on 24 May 2011, where the Director General came to the conclusion that the destroyed building in Dair Alzour "was very likely a nuclear reactor". The IAEA also reported that it had been unable to provide any assessment concerning the nature or operational status of three other locations that it determined were related to the Dair Alzour site. After several exchanges of information and a visit to Homs, the IAEA concluded that the information provided by Syria regarding the detection of uranium particles at the Miniature Neutron Source Reactor in 2008 and 2009 is "not inconsistent with the Agency's findings"[282] and would therefore be addressed in the routine implementation.

Following this report, the IAEA BoG adopted a resolution[283] on 9 June 2011 in which it determined that Syria's "undeclared construction of a nuclear reactor" and failure to provide design information on the Dair Alzour site "constitutes non-compliance with its obligations under its Safeguards Agreement with the Agency in the context of Article XII.C of the Agency's Statute." It calls on Syria to "remedy urgently its non-compliance" with its obligations under the safeguard agreements, to respond to the Director General's request for updated reporting, and to resolve all outstanding questions. It also calls upon Syria to sign, bring into force, and implement an AP. Furthermore, the BoG reported the matter to the UNSC and the UNGA.

Assessing and evaluating IAEA safeguards

Relevant Decisions of the General Conference

In September 2010, the IAEA General Conference adopted as usual a resolution on "Strengthening the effectiveness and improving the efficiency of the safeguards system and the application of the Model Additional Protocol".[284] It deals with the promotion of the conclusion of CSAs and APs as well as the implementation, efficiency, and measures to strengthen the safeguards system.[285] Due to procedural questions, the 2011 IAEA General Conference was not able to adopt the resolution on strengthening the IAEA safeguards.

IAEA initiatives

The IAEA mid-term plan 2012–2017 includes a section on "Strengthening the effectiveness and improving the efficiency of the Agency's safeguards and other verification activities".[286] It outlines the IAEA's plan to further develop a state-level approach to the planning, implementation, and evaluation of the safeguards activities and by that making them "information driven, focused and more efficient.[287]

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[282] Ibid, p. 8
[283] Implementation of the NPT safeguards agreement in the Syrian Arab Republic, Resolution adopted by the Board of Governors on 9 June 2011 (GOV/2011/41), IAEA, 9 June 2011,
[284] Strengthening the effectiveness and improving the efficiency of the safeguards system and application of the Model Additional Protocol (GC(54)/RES/11), IAEA, September 2010,
[285] Ibid
[286] Medium Term Strategy 2012–2017, IAEA; http://www.iaea.org/About/mts2012_2017.pdf
[287] ibid

The department of safeguards itself has developed a long-term strategic plan from 2012–2023.[288] It addresses the conceptual framework of the IAEA safeguards system, its legal authority, the technical capabilities, and the available resources.[289] The three main long-term strategic objectives are to:

> 1. Deter the proliferation of nuclear weapons, by detecting early the misuse of nuclear material or technology, and by providing credible assurances that States are honouring their safeguards obligations;
> 2. Contribute to nuclear arms control and disarmament, by responding to requests for verification and other technical assistance associated with related agreements and arrangements; and
> 3. Continually improve and optimize departmental operations and capabilities to effectively carry out the IAEA's verification mission.[290]

In November 2011, the IAEA, in cooperation with the Institute of Nuclear Materials Management and the Europeans Safeguards Research and Development Association (ESRDA), [291] held a "Symposium on International Safeguards: Preparing for Future Verification Challenges". [292] Giving the IAEA Secretariat, member states, the nuclear industry, and "members of the broader safeguards and nuclear non-proliferation community" a chance for dialogue and the exchange of information, the symposium addressed upcoming challenges for nuclear verification and the IAEA safeguards programme.[293]

The IAEA Enhancing Capabilities of the Safeguards Analytical Services project was initiated in 2010. In his introductory statement to the BoG on 6 June 2011, the IAEA Director General announced the new Clean Laboratory at Seibersdorf "is now fully operational and has already analysed its first samples."[294] The work on a Nuclear Material Laboratory is in progress and scheduled to be completed in 2014.[295]

Initiatives by other organisations

ESARDA held their annual meeting in Budapest from 16–20 May 2011.[296] The Asia Pacific Safeguards Network was launched on 1 October 2009, but held its inaugural meeting in June 2010. The objective of the network is to improve the quality, effectiveness, and efficiency of safeguards implementation in the Asia-Pacific region.[297]

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[288] Cooley. Jill, Department of Safeguards Long-Term Strategic Plan, 2012-2023, IAEA, 1 November 2010,
[289] IAEA Annual Report 2009*,* as of 31 December 2009, Ch. Safeguards, http://www.iaea.org/Publications/Reports/Anrep2009/anrep2009_full.pdf
[290] ibid
[291] ESARDA is a coalition of European organisations, both governmental and commercial, actively involved in research and development of nuclear safeguards. Its main objective is to "assist the European safeguards community with the advancement of safeguards, enhancing the efficiency of systems and measures, as well as investigating how new techniques can be developed and implemented."
[292] IAEA Safeguards Symposium 1-5 November 2010, IAEA.
[293] ibid
[294] Amano. Y, Introductory Statement to Board of Governors, by IAEA Director General, IAEA. 6 June 2011,
[295] Scheland. M, "Science Essential in Verifying Peaceful Use of Nuclear Material", *IAEA paper*, 5 January 2012
[296] 33rd Esarda Annual Meeting, European Safeguards Research and Development Association, 16-29 May 2011, http://esarda2.jrc.it/events/esarda_meetings/2011-Budapest/01-index.html
[297] Communication received from the Resident Representative of Australia to the Agency concerning the Asia-Pacific Safeguards Network (INFCIRC/769), IAEA, 25 September 2009

Other initiatives
The Centre for International Security and Arms Control Studies in Paris has, in cooperation with Switzerland, published a report on "Optimizing the IAEA Safeguard System". The report addresses the issue of the optimisation of the IAEA safeguards system and includes a list of recommendations on:

- Optimization of the safeguards system as a means to universalize of the Additional Protocol;
- Global principles of optimization; and
- Suggested tracks for optimization.

In connection with this report, Switzerland has held a side event to further discuss it on the margins of the IAEA General Conference in September 2011 as well as during the INMM/ESARDA meeting in Aix-en-Provence, France in October 2011.

Financial support

While the annual budget for the IAEA safeguards and nuclear verification programme does increase each year,[298] it does not appear to be a very significant change. The financial contribution for safeguards will remain the same and the increased budget will most likely be offset by inflation, changes in exchange rates, and other similar factors.

Technical improvements

The IAEA continued to work on the IAEA Safeguards Information System and Reengineering Project to increase the effectiveness and efficiency of information processing by replacing the current information system with a modern one. The Secretariat has also continued to utilize high-resolution commercial satellite-based sensors to improve its ability to monitor nuclear sites and facilities worldwide.[299] Germany has reported on taking steps to facilitate IAEA access to commercially available German satellite imagery.[300]

Since the 54th General Conference, the IAEA has tested a new inspection concept using new combinations of existing techniques and technologies to improve safeguard implementation. The techniques used were, among others: remote monitoring; unattended measurement; and unannounced or short-notice inspections. New short-notice random inspection approaches were introduced for the conversion/fuel fabrication plants in Belgium, Kazakhstan, and India.

The IAEA is working on new types of power plants in an effort to further develop better safeguards, for example geological repositories, pyroprocessing plants, and laser enrichment facilities. Furthermore, during 2010 Canada, Finland, and Sweden worked with the IAEA on improving design for upcoming facilities.[301]

Since 2009, the nuclear material and environmental samples that have been collected and analysed by the IAEA have increased by a small amount. The IAEA reported on significant delays in the collection, distribution, analysis, and evaluation of environmental sampling

[298] 2009: € 117 150 480, 2010: € 121 542 584, 2011: € 123 143 928, 2012: € 128 780 549, and estimated for 2013: € 128 784 718
[299] Strengthening the effectiveness and improving the efficiency of the safeguards system and application of the Model Additional Protocol (GC(55)/16), 55th IAEA General Conference, 26 July 2011, http://www.iaea.org/About/Policy/GC/GC55/GC55Documents/English/gc55-16_en.pdf
[300] Germany's response to RCW questionnaire
[301] Strengthening the effectiveness and improving the efficiency of the safeguards system and application of the Model Additional Protocol, (GC(55)/16), 55th IAEA General Conference, 26 July 2011,

during 2010.[302] Since June 2010 a laboratory in Brazil has qualified for the IAEA Network of Analytical Laboratories. In addition, laboratories in Belgium, China, Finland, France, Hungary, the Republic of Korea and the US are either being assessed in terms of their capabilities and capacities or are already at various stages of the qualification process. These laboratories are intended to contribute to reducing the delays in processing environmental samples. Germany has reported its support to the ECAS project towards modernising the IAEA Safeguards Laboratory and has contributed with 5 million euros.[303]

The IAEA reports that more intensified efforts have been made within the organization to enhance and establish new CSAs and APs, especially with significant nuclear activity states. Through extra budgetary funds, the IAEA has been able to encourage and facilitate wider connections to the safeguard system.

The IAEA SSAC Advisory Service (ISSAS) provides requesting national authorities with recommendations and suggestions for improvements to their State systems for accountancy and control (SSACs) of nuclear material. By the end of June 2011, 13 ISSAS missions had been conducted. Although continued training and meetings have been conducted, no significant increase in activities has been detected.[304]

[302] Safeguards Statement for 2010, IAEA, 2010, http://www.iaea.org/OurWork/SV/Safeguards/documents/es2010.pdf
[303] Germany's response to RCW questionnaire
[304] Strengthening the effectiveness and improving the efficiency of the safeguards system and application of the Model Additional Protocol, (GC(55)/16), 55th IAEA General Conference, 26 July 2011,

Other non-proliferation instruments

Action 28: The Conference encourages all States parties which have not yet done so to conclude and to bring into force additional protocols as soon as possible and to implement them provisionally pending their entry into force.

Action 30: The Conference calls for the wider application of safeguards to peaceful nuclear facilities in the nuclear-weapon States, under the relevant voluntary offer safeguards agreements, in the most economic and practical way possible, taking into account the availability of IAEA resources, and stresses that comprehensive safeguards and additional protocols should be universally applied once the complete elimination of nuclear weapons has been achieved.

Action 31: The Conference encourages all States parties with small quantities protocols which have not yet done so to amend or rescind them, as appropriate, as soon as possible.

Additional Protocol (AP)

The Model AP[305] to the IAEA Comprehensive Safeguards Agreement (CSA) requires states to provide the IAEA with information covering all aspects of a states' nuclear fuel cycle. It also ensures IAEA short notice inspector access to all buildings on a nuclear site and other nuclear-related locations, information on the manufacture and export of sensitive nuclear-related technologies, and inspection mechanisms for manufacturing and import locations. It also enables the IAEA to use the most advanced verification technologies.[306]

As of 20 February 2012, 115 states have additional protocols in force.[307] 22 states[308] have signed an AP but have still not put it into force. Since May 2010, the AP has entered into force for 14 additional states parties.[309]

Small Quantities Protocol (SQP)

States with little or no nuclear material may conclude, in addition to the CSA, a protocol "which holds in abeyance the implementation of most of the detailed safeguard procedures of comprehensive safeguards agreements."[310] In 2005, the IAEA BoG decided to modify the standard text of the SQP[311] and change the criteria for eligibility. States with existing or planned facilities are no longer eligible for an SQP. States with a revised SQP in force need to report on their material and inform the IAEA about changes to enable it to conduct verification activities in the field.[312] Since the 2010 RevCon, nine states have amended their

[305] Model Protocol Additional to the Agreement(s) between state(s) and the International Atomic Energy Agency for the Application of Safeguards (INFCIRC/540 (Corrected)), IAEA, http://www.iaea.org/Publications/Documents/Infcircs/1997/infcirc540c.pdf
[306] IAEA Safeguards: Stemming the Spread of Nuclear Weapons, IAEA http://www.iaea.org/Publications/Factsheets/English/S1_Safeguards.pdf
[307] Safeguards and verification, status of Additional Protocols, IAEA, 21 June 2011, www.iaea.org/OurWork/SV/Safeguards/protocol.html
[308] Belarus, Benin, Cameroon, Cape Verde, Côte d'Ivoire, Djibouti, Guinea, Honduras, India (on civilian nuclear separation), Iran, Iraq, Kiribati, Liechtenstein, Malaysia, Moldova, Senegal, Serbia, Timor-Leste, Togo, Tunisia, Viet Nam, and Zambia.
[309] Albania, Andorra, Bahrain, DRC; Costa Rica, Gambia, Kyrgyzstan, Mexico, Montenegro, Morocco, Mozambique, Namibia, Romania, Swaziland and United Arab Emirates.
[310] Safeguards and verification, status of Additional Protocol, IAEA, 20 February 2012, http://www.iaea.org/OurWork/SV/Safeguards/documents/AP_status_list.pdf
[311] IAEA Board of Governors, The Standard Text of Safeguards Agreements in connection with the Treaty on the Non-Proliferation of Nuclear Weapons (GOV/INF/276/Mod.1) and GOV/INF/276/Mod.1/Corr.1, IAEA, February 2006
[312] The Safeguards System of the International Atomic Energy Agency, IAEA, http://www.iaea.org/OurWork/SV/Safeguards/documents/safeg_system.pdf

SQPs[313], while 52[314] states still have not yet amended or rescinded their SQP. In addition, one country has signed a new SQP[315] and three more SQPs[316] have entered into force.

Voluntary Offer Agreements

For the five nuclear weapons states, special safeguards agreements have been established, since they are not required by the NPT to accept safeguards. The so-called Voluntary Offer Safeguard Agreements (VOAs) between the IAEA and a nuclear weapon state usually follow the format of INFCIRC/153 (Corr.) but vary in the scope of materials and facilities covered. They also include the possibility of withdrawing materials and facilities for safeguards.[317] No changes or amendments to the VOAs have been reported since the 2010 NPT Action Plan was adopted.

[313] El Salvador, Gambia, Guatemala, Swaziland, Panama, Moldova, San Marino, El Salvador and Zimbabwe
[314] Afghanistan, Andorra, Antigua and Barbuda, Barbados, Belize, Bhutan, Bolivia, Brunei Darussalam, Cambodia, Cameroon, Dominica, Ethiopia, France, Fiji, Gabon,, Grenada, Guyana, Haiti, Jordan, Kiribati, Kuwait, Kyrgyzstan, Lao P.D.R., Maldives, Mauritania, Mongolia, Myanmar, Namibia, Nauru, Nepal, Netherlands, New Zealand, Oman, Papua New Guinea, Paraguay, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Samoa,, Saudi Arabia, Sierra Leone, Solomon Islands, Sudan, Suriname, Tonga, Trinidad and Tobago, Tuvalu, United Arab Emirates, United Kingdom, United sates Yemen and Zambia.
[315] Guinea.
[316] DRC, Montenegro and Mozambique,
[317] The Safeguards System of the International Atomic Energy Agency, IAEA, http://www.iaea.org/OurWork/SV/Safeguards/documents/safeg_system.pdf

Export control and nuclear cooperation

Action 35: The Conference urges all States parties to ensure that their nuclear related exports do not directly or indirectly assist the development of nuclear weapons or other nuclear explosive devices and that such exports are in full conformity with the objectives and purposes of the Treaty as stipulated, particularly, in articles I, II and III of the Treaty, as well as the decision on principles and objectives of nuclear non-proliferation and disarmament adopted in 1995 by the Review and Extension Conference.

Action 36: The Conference encourages States parties to make use of multilaterally negotiated and agreed guidelines and understandings in developing their own national export controls.

Action 37: The Conference encourages States parties to consider whether a recipient State has brought into force IAEA safeguards obligations in making nuclear export decisions.

Action 38: The Conference calls upon all States parties, in acting in pursuance of the objectives of the Treaty, to observe the legitimate right of all States parties, in particular developing States, to full access to nuclear material, equipment and technological information for peaceful purposes.

Action 39: States parties are encouraged to facilitate transfers of nuclear technology and materials and international cooperation among States parties, in conformity with articles I, II, III and IV of the Treaty, and to eliminate in this regard any undue constraints inconsistent with the Treaty.

Action 44: The Conference calls upon all States parties to improve their national capabilities to detect, deter and disrupt illicit trafficking in nuclear materials throughout their territories, in accordance with their relevant international legal obligations, and calls upon those States parties in a position to do so to work to enhance international partnerships and capacity-building in this regard. The Conference also calls upon States parties to establish and enforce effective domestic controls to prevent the proliferation of nuclear weapons in accordance with their relevant international legal obligations.

Direct or indirect assistance

This action does not add any additional obligations aside from what is already in the NPT and previous decisions, but it does serve as a reminder that states are obliged to ensure that their nuclear-related exports do not directly or indirectly assist the development of nuclear weapons and that the 1995 decision on objectives and purposes of the Treaty requires states parties to promote transparency in nuclear-related export controls. The NPT states parties that have concluded nuclear energy cooperation agreements with non-parties to the NPT (see section on nuclear cooperation with India) do usually not provide transparent information on how such nuclear exports do not directly or indirectly assist the development of nuclear weapons.

Export Controls

Action 36 refers to the existing agreed guidelines and understandings. This usually refers to the guidelines of the Nuclear Suppliers Group (NSG) and the Zangger Committee. All member states of these groups are implementing such guidelines in their national legislation concerning nuclear exports.[318]

[318] See chapter on nuclear cooperation for details on these groups and their recent undertakings.

Nuclear cooperation and safeguard agreements[319]

Apart from 14 states,[320] all non-nuclear weapon states parties to the NPT have signed a CSA. The five NWS of the NPT have Voluntary Offer Agreements (VOAs) in some of their nuclear material and facilities dedicated to peaceful uses of nuclear energy (see previous chapter).[321]

A multitude of nuclear cooperation deals have been concluded in the past year between NPT states parties, none involving the 14 states without a CSA in force.[322] For the majority of those deals, the implementation of IAEA safeguard obligations is an explicit part of the agreement. This shows a wide acceptance of IAEA safeguards as a valid verification tool for the "peaceful uses" of nuclear energy and proliferation prevention.

Non-states parties of the NPT

For non-states parties of the NPT, the IAEA concludes so-called item-specific safeguard agreements according to INFCIRC/66/Rev.2 with the concerned state. Instead of covering all the nuclear activities of a state they only apply to the nuclear material, facilities, equipment, and/or materials specified in the agreement. "Under such agreements, the Agency is required to ensure that the nuclear material and other specified items are not used for nuclear weapons or other nuclear explosive devices or in such a way as to further any military purpose." [323] Currently the IAEA is implementing these agreements with India, [324] Israel, [325] and Pakistan.[326]

By avoiding defining safeguards obligations, the phrase "brought into force IAEA safeguard obligations" has been interpreted to allow deals with NPT non-states parties, since they are implementing the item-specific safeguard agreements on their declared peaceful facilities. Since the adoption of the 2010 NPT Action Plan, several trade agreements between an NPT state and a non-NPT state have been made.[327]

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[319] See chapter on non-proliferation obligations for details.
[320] Benin, Cape Verde, the Republic of Congo, Djibouti, Eritrea, Equatorial Guinea, Guinea, Guinea Bissau, Liberia, Micronesia, São Tomé & Principe Somalia, Timor-Leste, Togo, and Vanuatu.
[321] "IAEA Safeguards Glossary 2001 Edition", International Nuclear Verification Series No. 3, June 2002, http://www-pub.iaea.org/MTCD/publications/PDF/nvs-3-cd/PDF/NVS3_scr.pdf
[322] 2010 NPT Review Conference Action Plan Monitoring Report, Peaceful Uses of Nuclear Energy, Reaching Critical Will, 29 June 2011, p. 15
[323] The Safeguards System of the International Atomic Energy Agency, IAEA, http://www.iaea.org/OurWork/SV/Safeguards/documents/safeg_system.pdf
[324] Safeguards agreements in force: INFCIRC/211, INFCIRC/260, INFCIRC/360, INFCIRC/374, INFCIRC/433, INFCIRC/754
[325] Safeguards agreements in force: INFCIRC/249/Add.1
[326] Safeguards agreements in force: INFCIRC/34, INFCIRC/116, INFCIRC/135, INFCRIC/239, INFCIRC/393, INFCIRC/418, INFCIRC/705, INFCIRC/816
[327] See chapter on Universality for details

Illicit trade and trafficking of nuclear material[328]

The IAEA has developed several instruments dealing with illicit trade and trafficking of nuclear material:

- The IAEA illicit trafficking database (ITDB) records and analyzes incidents of illicit trafficking in nuclear and other radioactive material.[329] As of September 2010 the ITDB has 111 states participating in the programme and since 2009, seven[330] new countries have joined the ITDB.[331]
- The International Nuclear Security Advisory Service (INSServ), which was created by the IAEA to help a state review the general status of measures that protect against nuclear terrorism and identify ways to improve a broad spectrum of nuclear security activities.
- The International Conference on the Safe and Secure Transport of Radioactive Material,[332] The objective of which is to encourage application of appropriate levels of safety and security during transport.
- The IAEA's Nuclear Security Fund, a voluntary funding mechanism designed to support IAEA activities in nuclear security.[333]
- Nuclear Security Training Programme, which in 2010 provided 72 nuclear security training courses to people from 120 states.

EU initiatives

The European Union (EU) carries out a significant amount of activities related to combating illicit trafficking of nuclear material, including:

- In June 2011, the EU's Joint Research Centre (JRC) and its Institute for Transuranium Elements was reported to have carried out research on new methods of analysing radioactive materials to fight illicit trafficking;[334] and
- The JRC has also carried out support programmes to the IAEA, where it has developed metrological tools to organisations and laboratories in the nuclear and environmental field.[335]

EUROPOL and INTERPOL

Since May 2010, Europol has started or completed different projects and initiatives related to illicit trafficking on nuclear and radiological materials to a greater or lesser extent[336]. Interpol has also implemented some projects in this field.[337]

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[328] For more details on these projects and programmes please see the second NPT Action Plan Monitoring report, http://www.reachingcriticalwill.org/images/documents/Publications/2010-Action-Plan/NP_Report_RCW.pdf

[329] IAEA information system on illicit trafficking and other unauthorized activities and events involving nuclear and other radioactive materials, IAEA, http://www-ns.iaea.org/downloads/security/itdb-fact-sheet.pdf

[330] Bahrain, Côte d'Ivoire, the Democratic Republic of the Congo, Haiti, Malawi, United Arab Emirates, and Bosnia and Herzegovina.

[331] "Combating Illicit Trafficking in Nuclear and other Radioactive Material", *IAEA Nuclear Security series,* No. 6, December 2007, http://www-pub.iaea.org/MTCD/publications/PDF/pub1309_web.pdf

[332] International Conference on the Safe and Secure Transport of Radioactive Material: The Next Fifty Years of Transport - Creating a Safe, Secure and Sustainable Framework, IAEA, 17-21 October 2011,

[333] UK signed an agreement on 8 March 2011 to contribute £4 million, or approximately $6.4 million, to this fund. The Russian Federation also signed an agreement on 10 December 2010 to contribute $6.5 million to the Fund.

[334] New method of analysing radioactive materials to fight illicit trafficking, European Commission, 29 June 2011, n

[335] Providing metrological tools to support nuclear safeguards activities, European Commission, http://ec.europa.eu/dgs/jrc/index.cfm?id=1710&obj_id=PROJECTSJPB53102&dt_code=ACT&lang=en

[336] Project Rutherford; assesses the criminal activities related to the illicit trafficking on nuclear and radiological materials; The EU Bomb Data System (EBDS); The system is intended for sharing intelligence and technical information on explosives, explosive and incendiary devices, and chemical, biological, radiological, nuclear, and explosive (CBRNe)-related incidents; The Early Warning System on CBRNe, explosives, and firearms; is a communication system intended for the circulation of warnings (alerts) about the theft, loss, disappearance, and lack of control of any material or precursors that could be used for terrorist purposes or when a terrorist background cannot be discarded.

[337] Project Geiger aims at gathering comprehensive data on the illicit traffic in nuclear and radiological materials, analysing the threats, and assisting with international investigations.

Newly Independent States (NIS) Nuclear Trafficking Database
The NIS Nuclear Trafficking Database[338] is a project of the Nuclear Threat Initiative (NTI), where researchers are compiling information from hundreds of foreign and domestic news sources as well as from field reports. Since the adoption of the 2010 NPT Action Plan, the NIS Nuclear Trafficking Database has reported several incidents.[339]

World Customs Organization (WCO)
The Working Group on Border Management established under the United Nations Counter-Terrorism Implementation Task Force held its inaugural session at WCO headquarters from 11 to 12 January 2011. The Working Group will compile a compendium of international instruments, standards, recommended practices, and guidance material, which will be made available to all UN member states in support of their efforts to address terrorist threats at borders.[340]

Proliferation Security Initiative (PSI)
This initiative aims to stop shipments of biological, chemical, and nuclear weapons, as well as missiles and goods that could be used to deliver or produce such weapons, to terrorists and countries suspected of trying to acquire WMD. PSI is an informal arrangement among countries. Since May 2010, PSI has carried out a set of workshops on both regional and bilateral levels and for new members.[341] By 2011, the PSI has grown to include the endorsement of 98 nations.[342] However, a number of countries have expressed opposition to the initiative. The PSI is currently more or less a dormant organization.

Global Initiative to Combat Nuclear Terrorism
The Global Initiative to Combat Nuclear Terrorism (GICNT) is an international partnership of 82 nations and four official observers who are committed to working individually and collectively to implement a set of shared nuclear security principles. Since May 2010, the GICNT has welcomed new partner countries[343] and has carried out different activities on a regular basis.[344]

The UN Security Council (UNSC) and the 1540 Committee
The UNSC adopted resolution 1977 on 20 April 2011. The resolution is a follow-up to UNSC resolution 1540 (2004). The resolution extends the mandate of the 1540 Committee to monitor efforts to prevent WMD from being acquired by terrorists or other non-state actors for another 10 years.[345]

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[337] The Global Radiological and Nuclear Terrorism Prevention Conference marked the public launch of INTERPOL's Radiological and Nuclear Terrorism Prevention Unit.
[338] NIS Nuclear Trafficking Database, Nuclear Threat Initiative, http://www.nti.org/db/nistraff/index.html
[339] May 2010: Ukraine's Security Service Detains seized strontium-90; 1 March 2010: Japan Pledges Funding to Equip Uzbek Customs Checkpoints; 22 April 2010: Ukraine to Receive Mobile Radiation Detection Vehicle with the Help from IAEA, Finland and Sweden; 14 December 2010: A Cargo with radioactive Scrap Metal En Route to Turkey Detained in Kazakhstan.
[340] Working Group on Border Management related to Conuter-Terrorism holds inaugural meeting, UN, 25 January 2011; http://www.un.org/en/terrorism/ctitf/pdfs/feature_article.pdf
[341] For more details on these workshops, please see original report, www.reachingcriticalwill.org/images/documents/publications/2010-Action-Plan/NP_Report_RCW.pdf
[342] Proliferation security initiative participants, U.S. Department of State, 10 September 2010, www.state.gov/t/isn/c27732.htm
[343] Mexico, Viet Nam, the Philippines, Singapore, Argentina, and Thailand.
[344] 29 June 2010, plenary meeting of the GICNT in Abu Dhabi, the United Arab Emirates and 30 June 2011, plenary meeting of the GICNT in Daejeon, Republic of Korea. By June 2011, partner nations have completed 45 activities aimed at building capacity to prevent, detect, deter, and respond to acts of nuclear terrorism. 13-16.2.2012, workshop in Marrakesh, Morocco.
[345] UNSC Resolution 1977,(2011)

Through resolution 1540, the UNSC called upon all states to present to the 1540 Committee a first report, not later than six month from the adoption of the resolution, i.e. 28 October 2004, on steps they have taken or intend to take to implement this resolution. Since the conclusion of the 2010 NPT RevCon, several countries have submitted reports[346] and some have made requests for assistance. There has also been a significant amount of workshops and outreach activities done by the 1540 Committee. A full list of these activities can be found at the 1540 Committee website.[347]

In 2010, the 1540 Committee adopted revised procedures to rationalize, improve, and accelerate response to assistance requests and facilitate matchmaking.[348] It also adopted the 10th programme of work for 1 June 2011 to 31 May 2012 for the 1540 Committee, in S/2011/380.

Nuclear cooperation

In the context of the NPT, states have debated whether or not language such as that in actions 38 and 39 imply obligations of states with nuclear power to transfer technology to non-nuclear states that are party to the NPT. It is difficult to ascertain systematically how the facilitation of such access has been achieved in the past or what the reaction to such facilitation has been. These questions are beyond the scope of this report.

However, by examining statements at the IAEA General Conference, IAEA press releases, and IAEA reports and documents, we have sought to find any potential critiques or concerns about current procedures of cooperation in the "peaceful uses" of nuclear energy. Additionally we reviewed statements delivered during the UNGA General Debate and its First Committee. Some states have raised the issue in international fora and called for equal treatment of NPT states parties trying to pursue nuclear energy, but no detailed examples have been given.

Existing restrictions on the development and trade of nuclear technology

The Nuclear Suppliers Group (NSG) is a consortium of nuclear supplier countries that seeks to contribute to non-proliferation efforts by drawing up guidelines for nuclear-related exports.[349]

The Zangger Committee is another group of nuclear supplier states,[350] whose objective is to reach a common understanding on (i) the definition of "equipment or material especially designed or prepared for the processing, use or production of special fissionable material;" and (ii) the conditions and procedures that would govern exports of such equipment or material in order to meet the obligations of article III of the NPT on the basis of fair commercial competition. The Committee is an informal group and its decisions are not legally-binding.

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[346] List of National Reports by Submitting Member States, UN 1540 Committee, http://www.un.org/sc/1540/nationalreports.shtml

[347] Chairperson's Statements at Outreach Activities, UN 1540 Committee, http://www.un.org/sc/1540/chairpersonsstatements.shtml

[348] Interim working procedures for processing assistance requests, UN official website, http://www.un.org/sc/1540/pdf/Assistance Processing Procedure.pdf

[349] NSG Guidelines for Transfers of Nuclear-Related Dual-Use Equipment, Materials, Software and Related Technology, IAEA document INFCIRC/254, Part 2

[350] Argentina, Australia, Austria, Belarus, Belgium, Bulgaria, Canada, China, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Kazakhstan, South Korea, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States.

These two export control regimes have been criticized for putting additional restrictions on nuclear technology exports, and thereby effectively preventing countries from participating in the fullest possible exchange of activities for developing "peaceful uses" of nuclear energy. This criticism has continued after the adoption of the NPT Action Plan.[351]

However, members of these two export control regimes argue that all members of the NPT are able to enjoy the benefits of peaceful uses of nuclear energy "in accordance with their international obligations".[352] What these "international obligations" should consist of is difficult to objectively define without a decision by, for example, an NPT Review Conference. Some members of these export control regimes want to include the IAEA AP, together with other decisions from other fora, such as UNSC resolutions and resolutions from the IAEA BoG. Others believe that it should only include the original CSA as was agreed upon at the time of the conclusion of the NPT in 1968.

Comments in international forums

As in previous years before the Action Plan was adopted, developing states have used international fora such as the UNGA to highlight the right of all states to use nuclear technology peacefully. However, most references after May 2010 are generic calls for the "inalienable right" to develop nuclear energy and few countries have specified any incidents of lack of respect for their choices. Such statements were made at the UNGA general debate, the UNGA First Committee, and the IAEA General Conference.

On 26–27 May 2011, the G8 met in Deauville, France, and agreed on a declaration on "Renewed commitment for freedom and democracy". In this declaration, the G8 declared its support for "the exchange, in conformity with the obligations of the NPT, of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy, in particular for developing countries."[353]

[351] At the September 2010 general debate of the UNGA, the Cuban representative argued "the existence of a club of the privileged and the countries of the South denial of the right to a peaceful use of nuclear energy should cease."
[352] Example from statement made by Australia at the IAEA General Conference, 22 September, 2010. http://www.iaea.org/About/Policy/GC/GC54/Statements/australia.pdf
[353] Renewed commitment for freedom and democracy, G8 declaration, 27 May 2011, http://www.g20-g8.com/g8-g20/g8/english/live/news/renewed-commitment-for-freedom-and-democracy.1314.html.

Nuclear Security

Action 40: The Conference encourages all States to maintain the highest possible standards of security and physical protection of nuclear materials and facilities.

Action 41: The Conference encourages all States parties to apply, as appropriate, the IAEA recommendations on the physical protection of nuclear material and nuclear facilities (INFCIRC/225/Rev.4 (Corrected)) and other relevant international instruments at the earliest possible date.

Action 42: The Conference calls on all States parties to the Convention on the Physical Protection of Nuclear Material to ratify the amendment to the Convention as soon as possible and encourages them to act in accordance with the objectives and the purpose of the amendment until such time as it enters into force. The Conference also encourages all States that have not yet done so to adhere to the Convention and adopt the amendment as soon as possible.

Action 43: The Conference urges all States parties to implement the principles of the revised IAEA Code of Conduct on the Safety and Security of Radioactive Sources, as well as the Guidance on the Import and Export of Radioactive Sources approved by the IAEA Board of Governors in 2004.

Action 45: The Conference encourages all States parties that have not yet done so to become party to the International Convention for the Suppression of Acts of Nuclear Terrorism as soon as possible.

International Security Standards

IAEA instruments

The IAEA has classified the following instruments as fundamental for nuclear security:[354]

- Convention on the Physical Protection of Nuclear Material (CPPNM);
- International Convention for the Suppression of Acts of Nuclear Terrorism (Nuclear Terrorism Convention);
- Security Council resolutions 1373 (2001) and 1540 (2004);
- Code of Conduct on Safety and Security of Radioactive Sources;
- Physical Protection Objectives and Fundamental Principles;
- INFCIRC/225/Rev.4 (Corrected);
- Nuclear Security—Measures to Protect Against Nuclear Terrorism, 2006 GC(50)/13; and
- Resolution 1887 Sep 2009, nuclear security and terrorism.

United Nations instruments

- UNSC Resolution 1373[355] on "Threats to international peace and security caused by terrorist acts" was adopted under Chapter VII of the UN Charter on 28 September 2001;[356] and
- UNSC 1540[357] on the non-proliferation of weapons of mass destruction was adopted unanimously under Chapter VII of the UN Charter on 28 April 2004.[358]

[354] Fundamental nuclear security documents, IAEA, http://www-ns.iaea.org/security/security_documents.asp?s=4&l=29
[355] UNSC Resolution 1373 (2001), UNSC, 28 September 2001,
[356] ibid
[357] UNSC Resolution 1540 (2004), UNSC, 28 April 2004
[358] ibid

The UNSC extended the mandate of resolution 1373 (2001) three times until 25 April 2021. [359] Through resolution 1540 (2004), the UNSC has called upon all states to present to the 1540 Committee a report on the implementation of the resolution. Since May 2010, several states parties have submitted their report to the 1540 Committee.[360]

The UNSC also adopted the 10th programme of work, for 1 June 2011 to 31 May 2012, for the 1540 Committee, in S/2011/380. The Committee will focus its attention on five main areas of work: (i) monitoring and national implementation; (ii) assistance; (iii) cooperation with international organizations, including the Security Council Committees established pursuant to resolutions 1267 (1999) and 1373 (2001); (iv) transparency and media outreach; and (v) administration and resources.

Physical protection of nuclear material

The Convention on the Physical Protection of Nuclear Material (CPPNM) entered into force on 8 February 1987. It is the only legally-binding international instrument in the area of physical protection of nuclear material. It establishes measures related to the prevention, detection, and punishment of offences related to nuclear material.[361] The Convention has 145 parties and 44 signatories. Since May 2010 it has entered into force for three states parties.[362] 48 NPT states parties are still not parties to the Convention.[363]

From 4–8 July 2005, the IAEA held a "CPPNM Amendment Conference" where an amendment to the treaty was adopted. It makes it legally-binding for states parties to protect nuclear facilities and material in peaceful and domestic use, and in storage as well as transport.[364] For the amendment to enter into force, two thirds of the states parties to the Convention have to ratify, accept, or approve the amendment. At the time of the conclusion of the NPT RevCon in May 2010, 35 contracting parties to the CPPNM had ratified the amendment. Since then, 19[365] additional countries have ratified it. However, 88 states[366] are parties to the Convention but have not yet ratified the amendment.[367]

The IAEA recommendations on the physical protection of nuclear material and nuclear facilities (INFCIRC/225/Rev.4) were published in 2005.[368] In 2011 the IAEA published a fifth revised version.[369] The fifth version is intended to assist member states in further implementing a comprehensive physical protection regime. As the document does not entail a legal commitment and does not require signature and ratification of member states, it is difficult to assess compliance levels.

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[359] UNSC Resolution 1673 (2006), UNSC Resolution 1801(2008) and UNSC Resolution 1977 until 25 April 2021. http://www.un.org/documents/scres.htm

[360] List of National Reports by Submitting Member States,1540 Committee, http://www.un.org/sc/1540/nationalreports.shtml

[361] Convention on Physical Protection of Nuclear material and Amendment thereto, IAEA, http://www-ns.iaea.org/conventions/physical-protection.asp?s=6&l=42

[362] Convention on the Physical Protection of Nuclear Material, IAEA, 29 September 2010, http://www.iaea.org/Publications/Documents/Conventions/cppnm_status.pdf

[363] ibid

[364] States Agree on Stronger Physical Protection Regime, IAEA, 8 July 2005, http://www.iaea.org/newscenter/pressreleases/2005/prn200503.html

[365] Amendment to the Convention on Physical Protection of Nuclear material, IAEA, 23 March 2012, http://www.iaea.org/Publications/Documents/Conventions/cppnm_amend_status.pdf

[366] ibid

[367] ibid and [367] Convention on the Physical Protection of Nuclear Material, IAEA, 29 September 2010, http://www.iaea.org/Publications/Documents/Conventions/cppnm_status.pdf

[368] The Physical Protection of Nuclear Material and Nuclear Facilities, IAEA, June 1999, http://www.iaea.org/Publications/Documents/Infcircs/1999/infcirc225r4c.pdf

[369] Nuclear security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities /INFCIRC/225/Revision 5), IAEA Nuclear Security Series No. 13, January 2011,

Handling of radioactive sources

The IAEA Code of Conduct on the Safety and Security of Radioactive Sources[370] was approved by the IAEA BoG in September 2003.[371] While not covering nuclear material addressed in the CPPNM,[372] the Code applies to all other radioactive sources "that may pose a significant risk to individuals, society and the environment".[373] It lays out basic principles for states to ensure the security of radioactive sources within their territory, the appropriate training of relevant personnel, and the establishment of necessary information channels. It also gives recommendations for an effective national legislative system of control over the management and protection of radioactive sources.[374]

The supplementary Guidance on the Import and Export of Radioactive Sources[375] was approved by the IAEA BoG in September 2004.[376] It recommends the designation of a point of contact in every state, responding to a self-assessment questionnaire developed by the IAEA, and that states should become parties of the Convention on Nuclear Safety in accordance with operative paragraph 8 of GC(48)/RES/10/D.

111 states have expressed their support for the Code in a letter to the Director General of the IAEA.[377] 72 countries explicitly support all aspects of the supplementary Guidance on the Import and Export of Radioactive Sources.[378] Most states have designated a national point of contact for radioactive sources, however, 13 states have not yet done so.[379] Numerous states have not responded at all to the IAEA self-assessment questionnaire.[380] A few states have withdrawn their political commitment to the Code as of 6 May 2010.[381]

Nuclear terrorism

Nuclear Security Summit

Just before the 2010 NPT RevCon, the US hosted the first Nuclear Security Summit (NSS), which resulted in a joint communiqué and a work plan.[382] Work on this plan is taking place at the moment; some recommendations also deal with illicit trafficking of nuclear materials.

The follow-up meeting held in Seoul, Republic of Korea in March 2012 focused on discussing how to strengthen the international nuclear security regime to prevent nuclear

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[370] Code of Conduct on the Safety and security of Radioactive sources and the Supplementary Guidance on the Import and Export of Radioactive Sources (INFCIRC/663), IAEA, 29 December 2005, http://www.iaea.org/Publications/Documents/Infcircs/2005/infcirc663.pdf

[371] Measures to Strengthen International Co-operation in Nuclear, Radiation and Transport Safety and Waste Management GC(847)/RES/7, IAEA, September 2003, http://www.iaea.org/About/Policy/GC/GC47/Resolutions/gc47res7.pdf

[372] Except for sources incorporating plutonium-239

[373] Code of Conduct on the Safety and security of Radioactive sources and the Supplementary Guidance on the Import and Export of Radioactive Sources (INFCIRC/663), IAEA, 29 December 2005, p. 4

[374] "ibid, p. 5-7

[375] Guidance on the Import and Export of Radioactive Sources, IAEA, March 2005, http://www-pub.iaea.org/MTCD/publications/PDF/Imp-Exp_web.pdf

[376] The IAEA General Conference welcomed this approval in resolution GC(48)/RES/10.D, endorsing the guidance while recognizing it is not a legally binding instrument.

[377] List of States that have a made a political commitment with regard to the Code of Conduct on the Safety and Security of Radioactive Sources and the Supplementary Guidance on the Import and Export of Radioactive Sources, IAEA, 27 March 2012, http://www.iaea.org/Publications/Documents/Treaties/codeconduct_status.pdf

[378] ibid

[379] ibid

[380] ibid

[381] Democratic Republic of Congo, Egypt, Honduras, Kazakhstan, Nicaragua, Senegal.

[382] Final Communiqué of the Nuclear Security Summit, White House official website, 13 April 2010, http://www.whitehouse.gov/the-press-office/communiqu-washington-nuclear-security-summit

terrorism and to reach the ultimate goal of "a world without nuclear weapons". The final communiqué of the 2012 Summit translated the outcome from the Washington meeting in 2010 into concrete actions and provides measures to prevent nuclear and radiological terrorism.[383] Some of these actions included: "minimization of highly enriched uranium (HEU); ratification of relevant international agreements on nuclear security such as the amended Convention on Physical Protection of Nuclear Material and International Convention for the Suppression of Acts of Nuclear Terrorism; and the establishment of Centre's of Excellence to provide relevant training and education."[384] The next NSS will be held in the Netherlands in 2014.

Both the International Convention for the Suppression of Acts of Nuclear Terrorism[385] and the 2006 Measures to Protect Against Nuclear Terrorism[386] focus on the danger of proliferation of nuclear material into the possession of so called non-state actors.

The UN General Assembly adopted the International Convention for the Suppression of Acts of Nuclear Terrorism on 13 April 2005.[387] It entered into force on 7 July 2007 and currently has 115 signatories and 79 parties.[388] States parties to the Convention have the obligation to establish the offences within the scope of the convention as criminal offences under their national laws. They are also required to establish jurisdiction, both territorial and extra-territorial, over the offences set forth in the Convention and to cooperate with each other in the exchange of information.[389]

Since May 2010, the Convention has 13 new parties.[390] 60 states have signed the Convention but not yet ratified it.[391]

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[383] Irsten. G, *CD breaks for recess without any progress on substantive work*, Reaching Critical Will, 27 March 2012
[384] Republic of Korea statement in the Conference on Disarmament, 27 March 2012; www.reachingcriticalwill.org/images/documents/Disarmament-fora/cd/2012/statements/part1/27march_rok.pdf
[385] International Convention for the Suppression of Acts of Nuclear Terrorism", United Nations, 13 April 2005, http://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XVIII/XVIII-15.en.pdf
[386] Board of Governors General Conference, "Nuclear Security – Measures to Protect Against Nuclear Terrorism", IAEA; 16 August 2006, http://www.iaea.org/About/Policy/GC/GC50/GC50Documents/English/gc50-13_en.pdf
[387] International Convention for the Suppression of Acts of Nuclear Terrorism", United Nations, 13 April 2005, http://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XVIII/XVIII-15.en.pdf
[388] ibid
[389] "Report of the Ad Hoc Committee established by General Assembly resolution 51/210 of 17 December 1996, United Nations General Assembly, 4 April 2005, http://www.iaea.org/Publications/Documents/Treaties/unga040405_csant.pdf
[390] International Convention for the Suppression of Acts of Nuclear Terrorism", United Nations, 13 April 2005, http://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XVIII/XVIII-15.en.pdf
[391] ibid

Nuclear Cooperation

Among States Parties

Action 47: Respect each country's choices and decisions in the field of peaceful uses of nuclear energy without jeopardizing its policies or international cooperation agreements and arrangements for peaceful uses of nuclear energy and its fuel cycle policies.

Action 48: Undertake to facilitate, and reaffirm the right of States parties to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy.

Action 49: Cooperate with other States parties or international organizations in the further development of nuclear energy for peaceful purposes, with due consideration for the needs of the developing areas of the world.

Action 50: Give preferential treatment to the non-nuclear-weapon States parties to the Treaty, taking the needs of developing countries, in particular, into account.

Action 51: Facilitate transfers of nuclear technology and international cooperation among States parties in conformity with articles I, II, III, and IV of the Treaty, and eliminate in this regard any undue constraints inconsistent with the Treaty.

Within the IAEA

Action 52: Continue efforts, within IAEA, to enhance the effectiveness and efficiency of its technical cooperation programme.

Action 53: Strengthen the IAEA technical cooperation programme in assisting developing States parties in the peaceful uses of nuclear energy.

Action 54: Make every effort and to take practical steps to ensure that IAEA resources for technical cooperation activities are sufficient, assured and predictable.

Action 55: Encourage all States in a position to do so to make additional contributions to the initiative designed to raise 100 million dollars over the next five years as extra budgetary contributions to IAEA activities, while welcoming the contributions already pledged by countries and groups of countries in support of IAEA activities.

Action 56: Encourage national, bilateral and international efforts to train the necessary skilled workforce needed to develop peaceful uses of nuclear energy.

Nuclear cooperation amongst states parties

The right to nuclear energy

Actions 47 and 48 are subject to interpretation of both the wording in the specific actions as well as relevant provisions of the NPT itself. However, by examining statements at the IAEA General Conference, IAEA press releases, and IAEA reports and documents, this report has sought to find any potential critiques or concerns about current procedures of cooperation in the "peaceful uses" of nuclear energy. Additionally we reviewed statements delivered during the UNGA General Debate and its First Committee. Some states have raised the issue in international fora and called for equal treatment of NPT states parties trying to pursue nuclear energy, but no detailed examples have been given.

By examining nuclear energy cooperation between states parties, the scope of the technical cooperation programme of the IAEA and other relevant cooperation arrangements for nuclear energy (see next section on nuclear cooperation), we have found no concrete signs that indicate that these actions are not implemented.

Since May 2010, a number of new bilateral agreements were signed between states parties to the NPT,[392] showing a continued emphasis on nuclear energy cooperation.

Preferential treatment

Under action 50, we looked at the different nuclear deals with non-nuclear weapon states parties to the NPT and nuclear deals with non-NPT states parties. The US-India nuclear deal and the resulting NSG exemption for nuclear trade with India were concluded well before the 2010 NPT Action Plan was adopted. However, as this was the first time such a deal was concluded with a non-NPT state party, it has set a standard for similar deals.

The agreement has been criticized for the fact that the 45 countries in the NSG have made a decision on behalf of the 189 states parties of the NPT. Objections have been raised that the NSG was never given the authority to reinterpret the NPT, overturn NPT decisions, or violate existing international standards. When the NSG waiver was approved in 2008, ten [393] additional states joined the US in approving nuclear trade agreements with India. Since the adoption of the 2010 NPT Action Plan, several new deals and cooperation agreements have been concluded between India and other NPT states.[394]

Ahead of the NSG annual plenary meeting of June 2011 in Noordwijk, The Netherlands, the United States circulated a "Food for Thought" paper[395] as a follow-up to President Obama's announcement on 8 November 2010 of his support for Indian membership of the NSG.[396] On 23 and 24 June 2011, the NSG adopted new guidelines that can be interpreted as affecting the exemption of India granted in 2008.[397] For more information on this, see chapter on Universalization.

In addition to this, in June 2010, China planned to provide Pakistan with two new nuclear reactors. In March 2011, China announced it was to sell further nuclear reactors to Pakistan.[398]

Facilitating nuclear transfer

Action 51 is subject to interpretation of both the wording in the specific actions as well as relevant provisions of the NPT itself. Examining this action would require a more comprehensive examination of the right to "peaceful uses" of nuclear energy, the right of

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[392] A full list of these bilateral agreements are found in the first NPT Action Plan monitoring report; http://www.reachingcriticalwill.org/images/documents/Publications/2010-Action-Plan/PUNE_Report_RCW.pdf, page p. 15.

[393] Argentina, Canada, France, Japan, Kazakhstan, Mongolia, Namibia, Republic of Korea, Russia, UK.

[394] Nuclear agreements between India and Australia, Canada, France, Kazakhstan, Republic of Korea, Russia, Tanzania, UK, US have been reported.

[395] Nuclear Suppliers Group Annual Plenary meeting, Arms Control Association official website, 20 May 2011,

[396] Kimball, D. G, "Indian Membership in the NSG? A Bad Idea Whose Time Has Not Come", *Arms Control Now*, 23 June, 2011

[397] The current member states of the NSG are Argentina, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, China, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Kazakhstan, Republic of Korea, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States

[398] Ho. S, "China to Sell Outdated Nuclear Reactors to Pakistan", *VOANews*, 24 March, 2011.

states to apply export restrictions on technologies to prevent proliferation, and how these actions and commitments are interpreted in light of the context and purpose of the NPT itself. Such an examination is beyond the scope of this report. However, nuclear energy cooperation agreements have increased in numbers and more countries are developing nuclear energy infrastructure.[399] It is therefore possible to say that transfers of nuclear technology and international cooperation among states parties is increasing, which signals that this action is currently being implemented.

Cooperation within the IAEA

IAEA Technical Cooperation programme

In order to evaluate implementation of "enhancing the effectiveness" and "strengthening" the technical cooperation (TC) programme, we have looked at newly established programmes within the IAEA. In this respect, a significant number of new cooperation programmes and training courses have been initiated and implemented since May 2010.[400]

As of 17 February 2011, InTouch, an interactive online communication platform for the IAEA technical cooperation community, is operational. At this stage, InTouch allows registered users to complete and maintain their professional profile online, and to apply for a fellowship, scientific visit, training course or meeting, or for expert/lecturer assignments.[401]

IAEA funding

In order to examine the resources of the technical cooperation programme, we aimed to compare the target figure set by the IAEA BoG with the pledged amounts by governments and the rate of attainment of those pledged amounts. However, the IAEA does not release pledged amounts or rate of attainment of individual states—only total numbers—with regard to their contributions to the Agency's Technical Cooperation Fund (TCF). It is therefore impossible to make an accurate examination of how individual states parties ensure that IAEA resources for technical cooperation activities are sufficient, assured, and predictable. It is only possible to make an estimated guess based on the target figure set by the IAEA BoG and the likelihood of states meeting this target.[402]

The TCF is currently being financed through voluntary contributions of member states. During the plenary discussion of the IAEA General Conference in September 2010 and 2011, member states such as Switzerland,[403] Liechtenstein,[404] and the Netherlands[405] suggested the IAEA should apply established UN standards, since technical cooperation is its primary and fundamental task and therefore should be funded under the regular budget.[406] Several developing countries underlined the importance of the technical cooperation programme for

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[399] See list of nuclear cooperation deals and IAEA Technical Cooperation programmes
[400] A full list of all IAEA Technical Cooperation Programmes initiated in 2010 and 2011 can be found in our previous NPT Monitoring Report; http://www.reachingcriticalwill.org/images/documents/Publications/2010-Action-Plan/PUNE_Report_RCW.pdf, p. 13
[401] http://intouch.iaea.org
[402] In June 2010, the BoG recommended the target figure of $86 million for contributions to the Agency's TCF for 2011. This is an increase of $1 million from the previous year. The final report by the IAEA on the pledges against the 2011 TCF will not be released until September 2012.
[402] In June 2011, the BoG recommended the target figure of $88.75 million for contributions to the Agency's TCF for 2012. This is an increase of $2.75 million from the previous year. The final report by the IAEA on the pledges against the 2012 TCF will not be released until September 2013.
[403] IAEA GC(54)/OR.3, IAEA, December 2010,
[404] ibid
[405] IAEA GC(54)/OR.5, IAEA, December 2010,
[406] IAEA GC(54)/OR.3, IAEA, December 2010,

developing countries and stressed that it should not be politicised in any way.[407] In its resolution on "Strengthening of the Agency's technical cooperation activities,"[408] the 2010 IAEA General Conference stressed the need to work on achieving the goal of sufficient, assured, and predictable resources for the TCF and welcomed the meeting of a working group on financing the agency's activities.[409] The working group will comprehensively review the nature of the technical cooperation resources and discuss ways of making the TCF sufficient, assured and predictable. It will also address the relationship between the levels of the overall budget and the TCF.[410]

Peaceful Uses Initiative (PUI)

At the 2010 NPT RevCon, the US announced that it would supplement support for "peaceful uses" of nuclear energy with $50 million in additional funding over the next five years as part of President Obama's Peaceful Uses Initiative (PUI). Through the PUI, the US has already supported numerous IAEA projects related to human health, food security, water resource management, and nuclear power infrastructure development.[411] According to a US State Department brochure, more than $6 million has already been committed to projects.[412] Japan announced during the 2010 IAEA General Conference that it would contribute $3.5 million.[413] So far, Monaco, New Zealand and South Korea have announced that they will join this initiative, but did not specify how much money they would contribute.[414] Sweden and the EU are reported to be considering joining this initiative, but as of June 2011, no official decision has been taken and no concrete figures have been discussed.

[407] IAEA GC(54)/Or.2, IAEA, January 2011,
[408] IAEA GC(54)/RES/9, IAEA, September 2010,
[409] ibid, page 4
[410] IAEA GC(54)/2, IAEA, August 2011, page 19,
[411] Advancing Nuclear Non-Proliferation: The Peaceful Uses Initiative, U.S. Department of State - Bureau of Public Affairs, 21 September 2010.
[412] U.S. Contributions to the International Atomic Energy Agency Peaceful Uses Initiative, U.S. Department of State - Bureau of International Security and Nonproliferation, 2 March 2011.
[413] IAEA GC(54)/OR.11, IAEA, December 2010,
[414] Statement of the United States delivered to the IAEA Board of Governor's, 7 June, 2011,

Nuclear safety

Action 57: Ensure that, when developing nuclear energy, including nuclear power, the use of nuclear energy must be accompanied by commitments to and ongoing implementation of safeguards as well as appropriate and effective levels of safety and security, consistent with States' national legislation and respective international obligations.

Action 59: Consider becoming party, if they have not yet done so, to the Convention on Nuclear Safety, the Convention on Early Notification of a Nuclear Accident, the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the International Convention for the Suppression of Acts of Nuclear Terrorism, the Convention on the Physical Protection of Nuclear Material, and to ratify its amendment so that it may enter into force at an early date.

Action 60: Promote the sharing of best practices in the area of nuclear safety and security, including through dialogue with the nuclear industry and the private sector, as appropriate.

Action 61: Encourage States concerned, on a voluntary basis, to further minimize highly enriched uranium in civilian stocks and use, where technically and economically feasible.

Action 62: Transport radioactive materials consistent with relevant international standards of safety, security and environmental protection, and to continue communication between shipping and coastal States for the purpose of confidence-building and addressing concerns regarding transport safety, security and emergency preparedness.

Action 63: Put in force a civil nuclear liability regime by becoming party to relevant international instruments or adopting suitable national legislation, based upon the principles established by the main pertinent international instruments.

Action 64: The Conference calls upon all States to abide by the decision adopted by consensus at the IAEA General Conference on 18 September 2009 on prohibition of armed attack or threat of attack against nuclear installations, during operation or under construction.

Safety problems

The Fukushima accident has raised concerns over the safety of nuclear energy facilities. Though Japan has an advanced nuclear energy industry, this crisis highlighted that equipment used in the Fukushima reactors might not have been seismically sound. Independent information and evaluation of the safety and security of the Japanese nuclear power plants is difficult to find; most information comes from the Japanese government itself or the IAEA. The Japanese government released a report to the June 2011 IAEA Ministerial Conference on Nuclear Safety, it highlights some of the safety failures at Fukushima, both of preventive measures and the adequacy of responses.[415] Aside from structural issues such as the design of construction and the failing of power and cooling systems, emergency response, poor communication, lack of independence of the Japanese Nuclear Safety Commission, and unprepared and untrained personnel also posed problems in dealing with aftermath of the tsunami.

[415] Report of Japanese Government to IAEA Ministerial Conference on Nuclear Safety - Accident at TEPCO's Fukushima Nuclear Power Stations, 9 June 2011; http://www.iaea.org/newscenter/focus/fukushima/japan-report/

In the same report, the Japanese government suggests actions to be taken to address these safety problems. The suggested actions vary from reassessing the danger posed by earthquakes and tsunamis, redesigning safety structures, securing the power supply and alternative cooling systems in case of an accident, to the enhancement of training responding to severe accidents. It also suggested that the Japanese Nuclear Safety Commission should separate from Ministry of Economy, Trade and Industry.[416] However, on 1 April 2012, it was reported that the Japanese government has postponed a decision to put the Commission under the authority of the Ministry of Environment.[417] On 17 February 2012, the Japanese Government announced that it will hold a Fukushima Ministerial Conference on Nuclear Safety, in co-sponsorship with the IAEA. The Conference is aimed at strengthening nuclear safety worldwide and sharing knowledge and lessons learned from the Fukishima accident.

Aside from the Fukushima accident, nuclear safety problems in other countries have been reported, in particular in Canada, United States, and United Kingdom.[418]

Statements, resolutions, and conferences

On 26–27 May 2011, the G8 met in Deauville, France, and agreed on a declaration on "Renewed commitment for freedom and democracy". In this declaration, the G8 and the EU adopted a whole chapter on nuclear safety, emphasizing that nuclear safety should be addressed as a top priority on the G8 agenda. In this declaration, the G8 urged countries "to complete periodic review of safety assessments and to carry out assessments at every stage of a nuclear installation's lifetime, building on experience, and we reaffirm the high priority that we place on safety in the siting and design of new reactors, and the necessity of continuous improvement, learning from incidents and accidents everywhere." The declaration also called upon the IAEA to "consider the relevant IAEA standards[419] to identify issues that may warrant examination and revision in light of the Fukushima accident, and, in particular, to consider developing or improving additional standards for the construction and operation of nuclear power plants in seismically hazardous areas, as well as in areas that might be otherwise exposed to other external events, taking into account their integrated impact."[420] Regarding the Convention on Nuclear Safety, the G8 welcomed the extraordinary meeting of contracting parties that will take place in August 2012 to review measures that could strengthen the Convention, notably regarding safety objectives, the responsibility of governments for timely and sufficient measures on accident prevention and management,

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[416] ibid

[417] http://mdn.mainichi.jp/mdnnews/news/20120331p2g00m0dm024000c.html

[418] Canada: in March 2011, a leak was discovered at the Pickering Nuclear Generating Station. Demineralised water reached Lake Ontario and even though officials said it caused no risk to the population critics express concerns about the potential nuclear contamination of Lake Ontario in case of a severe accident. The leak has been stopped and the faulty pump replaced.
UK: the Office of Nuclear Regulation publishes quarterly statements of nuclear in nuclear incidents at nuclear installations[418] and quarterly site reports.[418] It reported of nine incidents at nuclear installations in Britain in the period from 2010 – 2011. Incidents include unplanned shutdowns, leaks and defective pumps of the cooling system. US: the Union of Concerned Scientists (UCS) published a report in March 2011 on the U.S. Nuclear Regulatory Commission (NRC) and nuclear power plant safety in 2010.[418] They report of fourteen so-called near-misses, where security problems, equipment failure, poor maintenance of equipment and poor training of personnel led to incidents that could have had severe consequences. The UCS called for more thorough inspections by the NRC and more responsible approach of the owners of the nuclear plants when dealing with security issues.

[419] Existing IAEA Safety standards

- Convention on Nuclear Safety
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
- Convention on Early Notification of a Nuclear Accident
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- Code of Conduct on the Safety and Security of Radioactive Sources
- Code of Conduct on the Safety of Research Reactors

[420] Renewed G8 Summit declaration, G8 summit, 26-27 May 2011

including the adjustment of procedures for coordination and interaction between the government, the operator and the safety authority, as well as an effective peer review mechanism.

The Fifth Review Meeting of the Convention on Nuclear Safety (CNS) convened in Vienna, Austria, from 4–14 April 2011. 61 of the 72 Contracting Parties to the CNS discussed long-term safety issues, as well as the unfolding nuclear emergency at the Fukushima Dai-ichi power plant.[421] As a result of the Japanese disaster, the contracting parties are carrying out safety reviews of their nuclear installations, including re-examining the nuclear power plants' safety measures that defend against extreme external events. The Contracting Parties stated that the learning process following the Fukushima disaster would continue as more information is acquired and analysed. A Second Extraordinary Meeting for states parties to the CNS will be held in August 2012 to analyse the Fukushima accident.[422]

The IAEA Ministerial Conference on Nuclear Safety met on 20–24 June 2011 in Vienna. The final declaration of the Conference was turned into an action plan on nuclear safety in light of the accident in Fukushima. The plan consists of 12 actions that aim to strengthen the global nuclear safety framework:

- Undertake safety assessments;
- Strengthen IAEA peer reviews;
- Strengthen emergency preparedness and response;
- Strengthen national regulatory bodies;
- Strengthen operating organizations;
- Review and improve IAEA safety standards;
- Improve the international legal framework;
- Facilitate infrastructure for new nuclear programmes in member states;
- Strengthen and maintain capacity building;
- Ensure protection from ionizing radiation;
- Enhance transparency and effectiveness of communication; and
- Effectively utilize research and development.[423]

The action plan was adopted by the IAEA BoG and endorsed by the IAEA General Conference in September 2011.[424] However, in the Chair's Conclusions on the item related to this issue, it is mentioned that some members expressed regret that the draft action plan did not ensure committed actions regarding peer reviews and that the principle of transparency, especially regarding the sharing of information, was not given due consideration. Several member states also expressed disappointment that the action plan did not meet the mandate of the Ministerial Conference, and that there was a need to address the current global nuclear safety regime through a more ambitious, stringent, and binding action plan. It was also noted by some member states that the action plan should be further developed, reviewed, and updated in the light of the progress made and the concrete results achieved by its implementation. In September 2012, the IAEA BoG will assess the implementation of the action plan. The IAEA has also established a task force to deal with the implementation of the action plan.

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[421] Eight contracting parties did not submit a National Report (Bahrain, Bosnia and Herzegovina, Jordan, Kazakhstan, Libyan Arab Jamahiriya, Mali, Saudi Arabia, and Sri Lanka) and 11 contracting parties did not attend the Review Meeting (Bahrain, Bangladesh, Bosnia and Herzegovina, Jordan, Kuwait, Libyan Arab Jamahiriya, Mali, Republic of Moldova, Saudi Arabia, Sri Lanka, and Uruguay).

[422] Nuclear Safety Convention Meeting Commits to Learn Lessons from Fukushima Nuclear Accident, IAEA, 14 April 2011

[423] IAEA document GOV/2011/59-GC(55)/14

[424] IAEA document GOV/2011/59-GC(55)/14

As a reaction to the accident at Fukushima, the EU has decided to review the safety of all EU nuclear plants on the basis of "comprehensive and transparent risk and safety assessments".[425] The Western European Nuclear Regulators' Association of the European Nuclear Safety Regulators Group (ENREG) put forward a proposal on 23 March 2011 for stress tests on European nuclear power plants[426] and on 1 June 2011 operators started reviewing their facilities and reported on the progress on 9 December 2011.[427] ENREG also hosted a Conference on Nuclear Safety in Brussels on 28–29 June 2011.

On 22 September 2011, UN Secretary General Ban Ki-moon organized a High-Level Meeting (HLM) on Nuclear Safety and Security in New York, in connection to the UN system-wide study on the implications of the accident at the Fukushima Dai-ichi nuclear power plant.[428] The Secretary-General had envisioned the meeting as a global debate on the future of nuclear energy, including "a new cost-benefit analysis of nuclear energy"[429]. However, the meeting fell short of such a debate and the majority of delegations that took the floor during the HLM reiterated the importance of nuclear power for meeting their countries' energy needs. Meanwhile, the countries that have rejected nuclear power because of its dangers to human health and the environment did not criticize the continued use of nuclear power as a form of energy or countered claims that it can ever be safe, clean, or economical.[430] The Secretary-General made several suggestions for actions, including:

- forwarding his final summary to the UNGA, the 2012 Seoul Nuclear Security Summit, and the 2012 NPT Preparatory Committee;
- having the UNGA ensure that the UN Scientific Committee on the Effects of Atomic Radiation has all the necessary capacity and resources to accomplish its task;
- encouraging the 2012 NPT Preparatory Committee to consider allocating specific time to discuss nuclear safety and security;
- urging all states to become party to and to implement all relevant international nuclear safety and security instruments;
- recommending that the preparatory process for Rio+20 consider addressing nuclear safety and security issues;
- asking the Inter-Agency Standing Committee to study ways to enhance capacity to strengthen the link between the international nuclear response system and the international humanitarian coordination system; and
- encouraging the G8 to further develop its nuclear safety and security initiatives, taking into account the issues raised by the Fukushima disaster.

[425] WENRA proposal – 'Stress tests' specifications, European Nuclear Safety Regulators Group, http://www.ensreg.org/node/281
[426] First Proposal about European 'stress tests' on nuclear power plants, Wester European Nuclear Regulators' Association, 23 March, 2011.
[427] Statement about the EU Stress Tests by Mr. Andrej Stritar, ENSREG, 25 May, 2011.
[428] SG/HLM/2011/1
[429] R. Acheson, "Report from the HLM on Nuclear Safety and Security", Reaching Critical Will, 22 September 2011,
[430] R. Acheson, "Report from the HLM on Nuclear Safety and Security", Reaching Critical Will, 22 September 2011,

Nuclear security

In September 2010, the IAEA General Conference adopted its annual resolution on nuclear security.[431] The resolution is not much different from previous years and continues to call on all member states to maintain the highest possible standards of security and physical protection of nuclear materials and facilities. On 26–27 March 2012, the second Nuclear Security Summit met in Seoul to review the states' progresses of the implementation of their commitments taken in Washington in 2010.[432] The final communiqué and results are discussed in under Action 40 of this report.

Adherence to nuclear safety conventions

While the commitment in action 59 is relatively weak and only obliges states parties to "consider" becoming a party, we have examined how many states parties to the NPT are not yet member of these treaties and how this has changed since the adoption of the 2010 NPT Action Plan.[433] Since the Fukushima disaster, this action is considered in a new light. Despite its voluntary nature, nuclear safety and security is becoming increasingly important and more attention to these conventions and instruments is essential.

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[431] GC(54)/RES/8. IAEA Resolution on Nuclear Security, http://www.iaea.org/About/Policy/GC/GC54/GC54Resolutions/English/gc54res-8_en.pdf

[432] "Report of NSS Commitments", *Arms Control Today*, 11 April. 2011.

[433] International Convention for the Suppression of Acts of Nuclear Terrorism
- Parties: 77
- Signatories: 115
- Changes since May 2010: Lesotho (22 September 2010 ratification), Nauru (24 August 2010 accession), Netherlands (30 June 2010 acceptance), St. Vincent and the Grenadines (8 July 2010 accession), Tunisia (28 September 2010 accession)

Convention on Nuclear Safety:
All countries with operating nuclear power plants are now parties to the Convention. 11 signatory countries have not yet ratified the convention
- Parties: 72
- Signatures: 11
- Changes since May 2010: Bahrain (09 February 2011 entry into force), Bosnia and Herzegovina (16 September 2010 entry into force), Kazakhstan (08 June 2010 entry into force), Saudi Arabia (16 June 2010 entry into force), Tunisia (20 July 2010 entry into force), Vietnam (15 July 2010 entry into force)

Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency:
- Parties: 105
- Signatories: 68
- Changes since May 2010: none

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management:
- Parties: 58 parties
- Signatories: 42
- Changes since May 2010: Indonesia (30 June 2011 entry into force), Gabon (28 July 2010 entry into force), Kazakhstan (08 July 2010 entry into force), Montenegro (07 November 2010 entry into force),

Convention on Early Notification of a Nuclear Accident:
- Parties: 110
- Signatories: 69
- Changes since May 2010: Georgia (05 November 2010 entry into force), Bahrain (4 June 2011 entry into force)

Convention on the Physical Protection of Nuclear Material:
- Parties: 145
- Signatures: 44
- Changes since May 2010: Bahrain (09 June 2010 entry into force), Lao P.D.R. (29 October 2010 entry into force), Lesotho (17 September 2010 entry into force)

Amendment to Convention on the Physical Protection of Nuclear Material:
- Parties: 47
- Remaining states needed to bring amendment into force: 50
- States parties to the Convention that have not yet ratified the amendment: 98

Best practices

There has been some effort to promote the sharing of best practices such as:

- **IAEA Technical Cooperation Programmes** INTO/0/085: sharing best practices for the design and management of technical cooperation projects.[434]
- **IAEA Communication Tool.** InTouch: Interactive communication platform to enhance communication between actors. It allows registered users to complete and maintain their professional profile online, and to apply for a fellowship, scientific visit, training course or meeting, or for expert/lecturer assignments.[435]
- **G8 Summit**: the Nuclear Safety and Security Group (NSSG) of the G8 submitted its report in May 2011. The NSSG shared best practices and lessons learned in implementing the International Initiative on 3S-Based Nuclear Energy Infrastructure and identified several key findings on safety, security, and safeguards.[436]

Current Stocks of Highly Enriched Uranium (HEU)

There have been efforts both on national and international levels to reduce the use of HEU. The global amount of HEU decreased from about 1600±300 metric tonnes in 2009[437] to 1475±125 metric tonnes in 2010, and further down to 1440±125 tonnes in 2011.[438] However, separating civil and military use of HEU is difficult. A table showing which states are currently in possession of HEU and their estimated HEU stocks was published in our first report.[439]

Recent reductions of HEU stockpiles

- Ukraine: At the Seoul 2012 Nuclear Security Summit, Ukraine announce that it had completed the removal of enriched uranium from the country's territory.[440]
- Czech Republic, Mexico, Viet Nam have converted research reactors using HEU fuel to LEU fuel.[441]
- Serbia: In December 2010, the US announced the removal of 13 kg of Russian-origin HEU spent fuel from the Vinca Institute of Nuclear Sciences in Serbia. The shipment is the culmination of an eight-year effort to remove all HEU from Serbia and makes that nation the sixth country to eliminate all of its HEU since April 2009.[442]
- Poland: In September 2010, 354.8 kg of uranium and 11.2 kg of plutonium was transferred from Poland to Russia. All HEU will be eliminated from Polish territory and the remaining shipments are planned for 2012, and 2015 or 2016.[443]
- United States: Since April 2010, the US has down-blended about 10.5 metric tonnes of HEU.[444]
- China: confirmed its MNSR-Shandong reactor, a HEU research reactor, was shutdown in December 2010.[445]

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[434] IAEA INT/0/085

[435] http://intouch.iaea.org

[436] Report of the Nuclear Safety and Security Group (NSSG), G8 Summit, 27-28 May, 2011.

[437] *Global Fissile Material Report 2009*, Fourth Annual Report of the International Panel on Fissile Materials International Panel on Fissile Materials, 2009.

[438] *Global Fissile Material Report 2010 and 2011*, Annual Reports of the International Panel on Fissile Materials.

[439] Numbers are taken from James Martin Center for Non-proliferation Studies (2011); Highly enriched Uranium: Who has what?, Nuclear Threat Initiative, 22 April, 2011 and Gloan-Vilella, R., Marchesano, M., and S. Williams (2011), the 2010 Nuclear Security Summit: Status Update, Arms Control Association and Partnership for Global Security, April 2011. For the DPRK: Global Fissile Material Report 2010, Fifth Annual Report of the International Panel on Fissile Materials, 2010, page 10.

[440] Statement by Ukraine at the Conference on Disarmament, 27 March 2012.

[441] Seoul 2012, Nuclear Security Summit, http://www.armscontrol.org/factsheets/NuclearSecuritySummit

[442], NNSA Announces Removal of All Highly Highly Enriched Uranium (HEU) from Serbia, U.S. Department of Energy 22 December, 2010.

[443] Poland's national progress report from the 2012 Nuclear Security Summit.

[444] US national progress report from the 2012 Nuclear Security Summit.

[445] Factsheet, GTRI: Reducing Nuclear Threats, Global Threat Reduction Initiative (GTRI), 1 February, 2011.

- Kazakhstan recently eliminated 33 kilograms of HEU at the Institute of Nuclear Physics in Almaty by down-blending the material into low-enriched uranium at the Ulba Metallurgical Plant.
- Belgium, France, the Netherlands, and the United States have a joint project to convert the production of medical isotope molybdenum-99 from the use of HEU targets to LEU targets.[446]

Several other national initiatives to promote reductions of HEU are reported in the national progress reports from the 2012 Nuclear Security Summit.[447]

International activities to reduce HEU

An IAEA international working group[448] of commercial experts was launched in August 2010, as a result of the "Consultancy on Conversion Planning for Mo-99 Production Facilities from HEU to LEU".[449] Their efforts aim to identify areas of potential multilateral collaboration in support of HEU to LEU conversion at/by the current major producers: NTP, Covidien, AECL/Nordion, and IRE, keeping in mind that processing technology is considered business confidential by all major producers. The group will support the consideration of LEU-based production by future producers such as the facility in Dimitrovgrad, Russia. A technical representative from NIIAR (Russia) participated in the IWG kick-off meeting. Three areas of work were identified during the first meeting.[450] The Coordinated Research Project (CRP)[451] on Developing Techniques for Small Scale Indigenous Mo-99 Production Using Low Enriched Uranium (LEU) was initiated in 2005. Currently, 8 agreement holders and 6 contract holders are either developing local production capabilities or supporting the development work of others.[452]

Transportation of radioactive materials

Most transports of radioactive materials occur between the different stages of the nuclear fuel cycle. Usually materials will be transported in solid form and under the existing regulations. The objective of these regulations is the protection of "people and environment from the effects of radiation during the transport of radioactive material."[453]

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[446] Seoul 2012, Nuclear Security Summit, Arms Control Association, http://www.armscontrol.org/factsheets/NuclearSecuritySummit

[447] Australia, Belgium, Canada, Czech Republic, France, Hungary, Indonesia, Italy, Kazakhstan, Mexico, Netherlands, Nigeria, Norway, Poland, Republic of Korea, Russian Federation, United Kingdom, United States and Viet Nam reported a wide range of activities promoting reductions or conversions of HEU.

[448] Bradley, E., Alldred, K., Adelfang, P., Ramamoorthy, N., and D. Ridikas, 2010 IAEA activities to support the transformation of Mo-99 production away from the use of HEU, IAEA, October 2010.

[449] Working materials: Consultancy on Conversion Planning for Mo-99 Production Facilities from HEU to LEU, IAEA, 24 - 27 August 2010

[450] High density, LEU target development, licensing support and commercial availability; front end, adaptive processing technology that will permit the use of the new targets with minimal required changes to existing process; and back-end technologies, including the consideration of uranium recovery and recycling.

[451] Bradley, E., Alldred, K., Adelfang, P., Ramamoorthy, N., and D. Ridikas, 2010, IAEA activities to support the transformation of Mo-99 production away from the use of HEU, IAEA, 12 October, 2010.

[452] A list of recent developments under the CRP, IAEA can be found in the first NPT Monitoring report by RCW, http://www.reachingcriticalwill.org/images/documents/Publications/2010-Action-Plan/PUNE_Report_RCW.pdf, p. 55.

[453] Existing international standards for the transport of radioactive materials:

- International Maritime Dangerous Goods Code (IMDG Code).
- IAEA Nuclear Security Recommendations on Physical Protection of Nuclear Materials and Nuclear Facilities INFCIRC 225.
- Chapter on "Requirements for Measures Against Unauthorized Removal and Sabotage of Nuclear Material during Transport".
- The Safety of Life at Sea (SOLAS) Convention.
- International Ship and Port Facility Security Code (ISPS Code).
- IAEA Safety Standards: Regulations for the Safe Transport of Radioactive Material.

Bahrain, Lesotho, and Lao PDR have joined the Convention on the Physical Protection of Nuclear Material.[454]

The IAEA General Conference adopts annually a resolution on "Measures to Strengthen International Cooperation in Nuclear, Radiation, Transport and Waste Safety". The part of the resolution that focuses on transport of nuclear material, as in previous years, urges states that do not have national regulatory documents governing the transport of radioactive material to adopt and implement such documents expeditiously, and urges all member states to ensure that such regulatory documents are in conformity with the current edition of the IAEA's transport regulations.[455] As usual, the 2010 and 2011 IAEA General Conferences adopted the resolution on "Measures to strengthen international cooperation in nuclear, radiation, transport and waste safety".

A Transport Safety Conference was held on 17–21 October 2011 in Vienna to encourage application of appropriate levels of safety and security during transport. The IAEA Transport Safety Standards Committee continues to meet twice a year and various trainings meetings regarding transport safety took place in 2011.[456]

During the UN General Assembly General Debate in October 2010, the Caribbean Community (CARICOM) expressed concerns about the continuing "transhipment of nuclear and toxic waste through the Caribbean Sea." It reiterated "strenuous and forceful rejection of the continued use of the Caribbean Sea for the shipment or transhipment of nuclear waste" and called for "a full cessation of this activity in the Caribbean".[457] CARICOM continues to call for states engaged in the transportation of these hazardous materials should enact the necessary domestic legislation to give effect to the provisions of the IAEA Transport Regulations. CARICOM also reiterated its calls for on-going dialogue between shipping states and states in the Caribbean region prior to the transhipment of radioactive materials.[458]

Nuclear liability

Since 2010, only a few states reported amendments of their nuclear liability legislation.[459]

During the IAEA General Conference in September 2010, Austria expressed interest in the creation of a global nuclear liability regime, though the conventions under discussion offered less protection for possible victims than the Austrian regulations in place and "the maximum liability amounts laid down in the Paris and Vienna Conventions were inadequate and that the principle of channelling liability claims was unsatisfactory."[460] France called upon all states to recognize the importance of universalizing a civil nuclear liability regime.[461] The European

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[454] *Convention on the Physical Protection of Nuclear Material*, 29 September 2010 http://www.iaea.org/Publications/Documents/Conventions/cppnm_status.pdf

[455] *Measures to strengthen international cooperation in nuclear, radiation, transport and waste safety* (GC(54)/RES/7), September 2011 http://www.iaea.org/About/Policy/GC/GC54/GC54Resolutions/English/gc54res-7_en.pdf

[456] Meetings, conferences and symposia, IAEA, http://www-ns.iaea.org/meetings/default.asp?tme=rit&yr=2011&s=10&l=79&submit.x=11&submit.y=17

[457] Statement by CARICOM, October 2010, http://www.reachingcriticalwill.org/political/1com/1com10/statements/4Oct_CARICOM.pdf

[458] Statement by CARICOM, May 2010, http://www.un.int/jamaica/NPTReviewConf2010.htm

[459] Slovenia: Act on Liability for nuclear Damage, Treaty No. 77/2010, Sweden: The act on liability and compensation passed by the Swedish parliament in June 2011 gives full liability to the operator of a nuclear facility. It entered into force in January 2011.

[460] *IAEA GC(54)/OR.3*, December, 2010, page 2, http://www.iaea.org/About/Policy/GC/GC54/GC54Records/English/gc54or-3_en.pdf

[461] IAEA GC(54)/OR.3, December, 2010, http://www.iaea.org/About/Policy/GC/GC54/GC54Records/English/gc54or-3_en.pdf

Union (EU) explained it was examining the various legal regimes in the area of nuclear liability within the EU and possible improvements at the European level.[462]

While national legislation for civil nuclear liability regimes for 189 states parties to the NPT is difficult to access and examine within the scope of this report, we have chosen to look at the main international instruments for civil nuclear liability. With regards to such international civil liability regimes, moderate progress has been achieved.[463]

Attack against nuclear installations

The 2011 IAEA General Conference considered agenda item 24 entitled "Prohibition of armed attack or threat of attack against nuclear installations, during operation or under construction". The General Conference noted GC(XXIX)/RES/444 and GC(XXXIV)/RES/533, which noted that "any armed attack on and threat against nuclear facilities devoted to peaceful purposes constitutes a violation of the principles of the United Nations Charter, international law and the Statute of the Agency," and a thorough discussion was made on all aspects of the issue. Member states recognized the importance attached to safety, security, and physical protection of nuclear material and nuclear facilities and, in that regard, expressed their views on the importance they attached to the protection of nuclear installations. They also noted the need to have the Agency involved in early notification and assistance in cases of radioactive release from nuclear installations.

This action also includes a reference to "threat of attack" on peaceful nuclear facilities. The Israeli government has recently been suggesting that Israel considers launching a military attack on Iran's nuclear facilities. Iran, however, maintains its nuclear programme is for peaceful purposes. Since Israel is not a party to the NPT, the 2010 NPT Action Plan does not impose any obligations on it. However, representatives from the current US administration and its military have also indicated that a military intervention is a possible option on the table. Any such action would be in violation of action 64, not to mention international law more generally.

[462] IAEA GC(54)/OR.5, December, 2010, http://www.iaea.org/About/Policy/GC/GC54/GC54Records/English/gc54or-5_en.pdf

[463] Adherence to the nuclear liability regimes:

- 1960 Paris Convention, 1964 Additional Protocol, 1982 Protocol and 2004 Protocol - Changes since May 2010: Norway (signed 2004 protocol: 26 November 2010).
- Vienna Convention on Civil Liability for Nuclear Damage - Changes since May 2010: Kazakhstan (entry into force: 29 June 2011), Saudi Arabia (entry into force: 17 June 2011).
- Protocol to amend the Vienna Convention on Civil Liability for Nuclear Damage - Changes since May 2010: Kazakhstan (entry into force: 29 June 2011), Montenegro (entry into force: 4 June 2011), Poland (entry into force: 21 December 2010), Saudi Arabia (entry into force: 17 June 2011).
- Convention on Supplementary Compensation for Nuclear Damage - Changes since May 2010: India (signature: 27 October 2010).
- 1963 Brussels Supplementary Convention, 1964 Additional Protocol, 1982 Protocol and 2004 Protocol: no progress since May 2010.
- Joint Protocol Relation to the Application of the Vienna Convention and the Paris Convention: no progress since May 2010.

The nuclear fuel cycle

Action 58: Continue to discuss further, in a non-discriminatory and transparent manner under the auspices of IAEA or regional forums, the development of multilateral approaches to the nuclear fuel cycle, including the possibilities of creating mechanisms for assurance of nuclear fuel supply, as well as possible schemes dealing with the back-end of the fuel cycle without affecting rights under the Treaty and without prejudice to national fuel cycle policies, while tackling the technical, legal and economic complexities surrounding these issues, including, in this regard, the requirement of IAEA full scope safeguards.

Low Enrichment Uranium Bank

On 3 December 2010, the IAEA BoG agreed to establish a nuclear fuel bank, endorsing a long discussed proposal without a dissenting vote from any of the 35 members.[464] This new plan will set up a reserve of low-enriched uranium (LEU) under IAEA control. The tally marked a shift from the vote a year earlier on another fuel bank proposal, authorizing Russia to set up a fuel reserve at the Angarsk site in Siberia.[465]

In 2006, the Nuclear Threat Initiative (NTI), a private US organization, pledged $50 million for such an IAEA LEU bank to secure LEU supplies on the condition that IAEA member states donate another $100 million and that the IAEA BoG approve the plan. Pledges from the US, the EU, Kuwait, the UAE, and Norway have been contributing to meet the $100 million goal.[466] So far, Kazakhstan is the only country that has declared an interest in hosting the bank.[467]

On 27 November 2009, the IAEA BoG approved the initiative of the Russian Federation to establish a reserve of LEU for the supply of LEU to the IAEA for its member states. The fuel bank's operator, Rosatom, announced on 1 December 2010 that the fuel bank stores 120 tonnes of low-enriched uranium.[468]

Nuclear Fuel Assurance

The United Kingdom put forward a proposal during the IAEA BoG meeting in March 2011 aiming to assure the availability of nuclear fuel. It includes that a supplier state promise "not to interrupt the supply of enrichment services (to a recipient state) for non-commercial reasons."[469] Unlike the IAEA LEU bank in Angarsk, this proposal does not include the stockpiling of fuel. Instead supplier and recipient come to a contractual agreement guaranteeing an uninterrupted supply. The IAEA BoG adopted the proposal on 10 March 2011.[470]

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[464] During voting, 28 countries supported the plan and 6 abstained. Pakistan was absent.
[465] During voting, 8 countries voted against the plan and 3 abstained.
[466] Donor pledges: European Union: up to €25 million, Kuwait: US$10 million, Norway: US$5 million - paid in full, United Arab Emirates: US$10 million, United States: US$49 540 000 - paid in full, Nuclear Threat Initiative: US$50 million.
[467] D. Horner, "IAEA Board Approves Fuel Bank Plan", *Arms Control Today*, January 2011
[468] Factsheet: IAEA Low Enriched Uranium Reserve, IAEA, http://www.iaea.org/Publications/Factsheets/English/iaea_leureserve.html
[469] "UN atomic watchdog approves nuclear fuel assurances proposal", *Nuclear Power Daily*, 10 March 2010.
[470] Board of Governors Closes March Deliberations, IAEA, 10 March 2011

Reaching Critical Will

THE 2010 NPT ACTION PLAN MONITORING REPORT

With the support of the Swiss Federal Department of Foreign Affairs (MFA), Reaching Critical Will of WILPF and the Geneva Centre for Security Policy (GCSP) initiated a joint project on monitoring the level of implementation of the 64 actions adopted at the 2010 NPT Review Conference.

The report is aimed at providing a platform for discussion about the degree of implementation and operationalisation of the action plan.

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