Conference on Disarmament

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Letter dated 22 June 2015 from the Secretary-General of the United Nations addressed to the President of the Conference on Disarmament transmitting the report of the Group of Governmental Experts established by resolution 67/53 to make recommendations on possible aspects that could contribute to but not negotiate a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices[1]

In accordance with paragraph 4 of General Assembly resolution 67/53, I have the honour to transmit to you, in your capacity as President of the Conference on Disarmament, the report of the Group of Governmental Experts established by that resolution to make recommendations on possible aspects that could contribute to but not negotiate a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices.

The Group of Governmental Experts met in four sessions of two weeks each, in 2014 and 2015, under the chairmanship of Her Excellency Ms. Elissa Golberg (Canada) who submitted the report of the Group of Governmental Experts to me in May 2015.

I wish the Conference on Disarmament productive consideration of the report.

(*Signed*) BAN Ki-moon

[1] Issued as a document of the General Assembly under symbol A/70/81, dated 7 May 2015.

Summary

The present report of the Group of Governmental Experts, established on the basis of General Assembly resolution 67/53, outlines the details of the Group's deliberations, characterizes the range of expert views on aspects of a treaty — notably in relation to the dynamic correlation between a future treaty's scope, definition, verification requirements and associated legal obligations and institutional arrangements — and presents the Group's conclusions and recommendations.

The Group reaffirmed that a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices should be legally binding, non-discriminatory, multilateral and internationally and effectively verifiable, and that document CD/1299, and the mandate contained therein, remains the most suitable basis on which future negotiations can commence without further delay in the Conference on Disarmament and, as noted in that report, allows negotiators to raise for consideration all aspects of a treaty, including its scope.The Group agreed that such a treaty could contribute practically to achieving a world without nuclear weapons, to non-proliferation in all its aspects and, more broadly, to enhancing global security.

Experts agreed that their report, and the deliberations which underpin it, can serve as a valuable reference for States and should be a useful resource for negotiators of a future treaty. It identifies areas of convergence and divergence on key treaty aspects, including where a spectrum of views may exist and where further technical and/or scientific work can be pursued that may assist negotiators.

Contents

Foreword by the Secretary-General

The Group of Governmental Expertsestablished by the General Assemblyin its resolution 67/53, to make recommendations on possible aspects that could contribute to but not negotiate a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices met in Geneva in four sessions of two weeks each, in 2014 and 2015.

The Group heard presentations fromexperts on a range of potential aspects of a future treaty and also consideredthe views conveyed to the Secretary-Generalin replies received from17 States not members of the Group and from the European Union (see A/68/154 and Add.1).There was wide agreement that a future treaty should remain a priority of the international non-proliferation and disarmament community.

The report of the Group indicates a number of issues on which the views of most, if not all, of the experts were quite similar.There were also issues where several differing perspectives were shared and a few where positions diverged significantly.

By undertaking a fact-based and policy-neutral analysis of all aspects of a future treaty, the report of the Group constitutes an added value to the work of subsequent negotiators of a treaty.

The Group has identified the Conference on Disarmament as the venue of choice for future negotiations. Once again, I urge the Conference to adopt, without further delay, a balanced programme of work that would allow an early commencement of negotiations in light of the useful conclusions of the Group.

I take this opportunity to thank the Chair, Ambassador Elissa Golberg (Canada), and all the experts for their diligent work, which will be a useful resource for future negotiators.

Letter of transmittal

I have the honour to submit herewith the report of the Group of Governmental Expertstasked to make recommendations on possible aspects that could contribute to but not negotiate a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices on the basis of document CD/1299 and the mandate contained therein.The Group, which the Secretary-Generalappointed pursuant to paragraph 3 of General Assembly resolution 67/53, comprised the following experts:

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The Group was ably assisted bystaff of the United Nations Secretariat, led by Ivor Fung, and received valued expert technical advice and support from Mark Finaud and Pavel Podvig of the United Nations Institute for Disarmament Research (UNIDIR).The Group, which was unusually large to be inclusive and best account for equitable geographic representation, met in Geneva over eight-weeks during 2014 and 2015 under the auspices of the United Nations.

The Group was established to create a space where serious, substantive discussion on all possible elements of a treaty could occur, notably in the absence of negotiations having thus far commencedat the Conference on Disarmament, despite this being the overwhelming will of the States Members of the United

Nationsfor the past 20 years. The Group succeeded in its task, conducting a robust, fact-based assessment, where no issue was off the table. The commitment to genuine dialogue apparent among its unique membership is a model for other multilateral nuclear non-proliferation and disarmament forums.

The Group's report aims to inform negotiators of a treaty, including by outlining considerable areas of convergence and on how they might address divergent perspectives. It also identifies issues where further technical/scientific work can be pursued or where ancillary confidence-building measures and/or evolutionary clauses could be developed that might assist negotiators.Ideally, the report will enjoy a wide readership and foster greater understanding of the key issues at play.

The continued value of this treaty, one that remains a logical counterpoint to the Comprehensive Nuclear-Test-Ban Treaty, has been amply demonstrated by the Group's work.We can only hope that the renewed interest and momentum generated by the work of the Group — which was evident not least in the briefings the Chair provided to the Conference on Disarmament and the General Assembly — will translate into action and the commencement of negotiations without further delay.

I have been asked by the Group to submit to you, on its behalf, the present report, which was adopted unanimously.

(*Signed*) Elissa **Golberg**
Chair of the Group

I. Introduction and background overview

1. Recognizing the essential role of fissile material in the manufacture of nuclear weapons or other nuclear explosive devices, the international community has long sought to negotiate a treaty that would ban its production for such purposes as a means to promote international nuclear disarmament and nuclear non-proliferation. In fact ,the first references to the value and need for such a treaty date back more than 60years, and since then this message has continued to be broadly and regularly reinforced. The need to ban the production of fissile material for nuclear weapons or other nuclear explosive devices was recognized, inter alia, by the General Assembly at its first special session devoted to disarmament (1978) and in numerous General Assembly resolutions, including resolution 48/75 L (1993), which called for a "non-discriminatory, multilateral and internationally and effectively verifiable treaty". The Conference on Disarmament agreed to this mandate in the report of its Special Coordinator of 24 March 1995 (CD/1299), which was subsequently reaffirmed in the decisions of the Conference to establish subsidiary bodies to negotiate such a treaty in 1998 and 2009.In 2000, States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons called for the negotiation of such a treaty at the Conference on Disarmament, "taking into consideration both nuclear disarmament and nuclear non-proliferation objectives" as part of its 13 practical steps, a call that was renewed inaction 15 of the 2010 action plan on nuclear disarmament adopted by the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons.[1]

2. In 2012, consistent with the goal of encouraging constructive forward momentum on the issue, and acknowledging that the Conference on Disarmament had yet to commence such negotiations, the General Assembly, in its resolution 67/53,requested the Secretary-General to establish a group of governmental experts mandated to make recommendations on possible aspects that could contribute to but not negotiate a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices,[2]on the basis of document CD/1299 and the mandate contained therein. The Group of Experts met over four two-week sessions in Geneva during 2014 and 2015.Membership was comprised of experts from 25 States chosen on the basis of equitable geographic representation.

3. In accordance with General Assembly resolution 67/53, the Group operated on the basis of consensus and during its work, reflected on the report of the Secretary-General containing the views of Member States on this subject (A/68/154).The Grouptook into account past consideration of such atreaty, and also requested and received informal briefings from representatives of the International Atomic Energy Agency (IAEA), the Organization for the Prohibition of Chemical Weaponsand the Provisional Technical Secretariat of the Comprehensive Nuclear-Test-Ban Treaty Organization.A high degree of granularity and nuance was pursued by the Group, and emphasis was placed on the substantive legal and technical implications of different aspects of a treaty, while bearing in mind the wider context in which such an instrument would exist.

[1] See 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, vols. I-III (NPT/CONF.2010/50 (Vols. I-III)); (Vol. I), Part I, sect. E.

[2] Referred here after variously as "the treaty" or "a treaty" for the sake of simplicity and without prejudice to the treaty's final form.

The presentreport, which should be considered in its totality, therefore outlines the details of the Group's discussions, characterizes the range of expert views and presents the Group's conclusions and recommendations. Experts believe that their reflections can serve as useful "sign posts" for future negotiators of a treaty, without prejudice to national positions.

II. Treaty objectives

4. The Group highlighted the importance of identifying a clear object and purpose for the treaty, which would help guide negotiators in determining its scope, relevant definitions, verification requirements and associated legal obligations.

5. There was consensus that a treaty should establish a legally binding, non-discriminatory, multilateral and internationally and effectively verifiable ban on the production of fissile material for nuclear weapons or other nuclear explosive devices. Many[3]experts suggested that a ban, along with the verification provisions of the treaty, could contribute to nuclear non-proliferation and nuclear disarmament efforts, and lay a practical foundation for additional disarmament efforts.

6. Some experts argued that in addition to a ban on new production, a treaty should also seek to prevent any increase in the amount of fissile material assigned for use in nuclear weapons or other nuclear explosive devices. These experts also felt a non-increase could be achieved by including provisions prohibiting diversion, transfers and acquisition for proscribed purposes and, separately, by ensuring the irreversibility of current and future disarmament efforts.Other experts noted the complementary role of existing legal obligations in limiting such activities and thus argued explicit prohibitions were unnecessary as these concerns would be addressed by the treaty verification regime. Some argued the concept of non-increase would only be supported in a treaty that addresses pre-existing fissile material through the establishment of a baseline to assess diversion, and for some, as a benchmark for future reductions. Some experts suggested the concept of non-increase lacked clarity and could be difficult to reflect in a treaty, or only apply to future production.

7. For some experts, the treaty should, furthermore, also address past production of fissile material as defined in the treaty itself,in order to seek to reduce and/or eliminate pre-existing fissile material accessible for additional nuclear weapons or other nuclear explosive devices.In their view, absent such measures, a treaty would neither effectively and irreversibly advance nuclear disarmament nor provide adequate incentives to join the treaty.Other experts argued that such objectives did not correspond to their understanding of the mandates contained in General Assemblyresolution 48/75L and in document CD/1299, and could result in a treaty that would not achieve sufficient support or

[3] In order to ensure equitable geographic representation and diversity of views, the General Assembly, by its resolution 67/53, established an unusually large Group. which met for an extended duration. For this reason, combined with its desire to accurately convey the degree of granularity that characterized its discussions, the Group adopted an approach of reflecting the views of its members (i.e. "most", "many""some", "few"), which was not intended to be precedent-setting nor does it prejudice the consensus mandate that the Assembly conferred on the Group's work.

be effectively verifiable.They said that only future production of fissile material should be subject to the treaty. Some argued that past production is better addressed separately through voluntary measures and/or in the context of future disarmament negotiations.

8. When identifying the treaty's object and purpose, the Group noted that future negotiators would need to consider the interface with broader nuclear non-proliferation and nuclear disarmament efforts, which, for some experts, included consistency with existing legal obligations and instruments. Many experts stressed in this regard that a treaty should contribute to the implementation of the Treaty on the Non-Proliferation of Nuclear Weapons, including its article VI. For some experts, such atreaty should be seen as a transitional step, which would lead to eventual negotiation of a nuclear weapons convention.Others emphasized that it formed one part of a framework of interlocking measures to achieve nuclear disarmament. A few experts felt that a treaty should be seen in the context of efforts to promote international stability and should be based on the principle of increased and undiminished security for all.A few experts noted that, in view of existing moratoriums introduced by some major producers of fissile material and wide adherence to the Treaty on the Non-Proliferation of Nuclear Weapons,many benefits foreseen when such a treaty was proposed had already been achieved. Some experts thought that these latter benefits referred only to non-proliferation.Some experts believed a narrower approach to developing treaty objectives should be taken, focused on non-proliferation in all its aspects, consistent with General Assembly resolution 48/75L, and stressed the importance of a stand-alone instrument that includes a verifiable ban on the production of fissile material for nuclear weapons and other nuclear explosive devices.

III. General characteristics and basic principles of a treaty

9. The Group reaffirmed that document CD/1299 and the mandate contained therein remain the most suitable basis on which future negotiations should proceed at the Conference on Disarmament and, as noted in the Shannon report, would allow negotiators to raise for consideration all aspects of a treaty, including its scope.

10. Experts agreed that an internationally and effectively verifiable treaty is one that can provide credible assurance that all States parties are complying with their treaty obligations.Moreover, a treaty should observe the principle of non-discrimination, including through its provisions on scope, definitions and verification.Experts agreed that a treaty would be non-discriminatory if its obligations were applied equally to all States parties. Most experts recognized that the means (e.g. tools and techniques) by which these obligations are verified may vary according to the facilities located in any State party, including to account for sensitive information, but that to achieve a credible treaty such verification was necessary.Some experts believed that the non-discrimination principle should also aim to rectify perceived inequities under the Treaty on the Non-Proliferation of Nuclear Weaponswith regard to safeguards obligations.Others either did not agree that such inequities exist or suggested that a treaty that sought to remedy elements present in other existing treaties and regimes would necessarily be discriminatory.

11. There was strong support for advancing the principle of irreversibility in a treaty (i.e. a one-way street), whereby steps taken to place treaty obligated fissile

material and facilities that might be used to produce it under international verification cannot be reversed for the purposes of the treaty (subject to agreed termination criteria, such as irradiation of fissile material or decommissioning of a facility). Some experts also argued that irreversibility should apply to disarmament measures.

12. Many experts also saw value in the treaty's potential role in increasing transparency and confidence between States. Moreover, many experts felt that verification methods, tools and techniques developed and applied by the treaty could contribute to a broader disarmament verification methodology, as the obligations would be applied equally to all States parties, including those with currently unsafeguarded nuclear facilities.

IV. Consideration of possible treaty aspects and their dynamic interrelationships

13. Scope, definitions and verification are the main aspects of a treaty and, among them, dynamic interrelationships exist.The Group felt strongly that future negotiators would need to appreciate how a change in any one aspect affects the others. In addition to these treaty aspects, experts recognized the role that legal and institutional issues would play in effectively and efficiently achieving desired treaty objectives, including the extent to which they could contribute to the entry into force and universalization of the treaty.

A. Treaty scope

14. The Group agreed that the scope of a treaty should support its objectives and adhere to its basic principles. As described in section II above, it was clear a divergence of views existed along a spectrum on whether, and to what extent, a treaty deals with fissile material produced prior to the its entry into force.

15. Experts agreed that the treaty's scope must set out the legal obligations that States parties will be required to fulfil, and that these obligations should be formulated in terms of prohibited as opposed to permitted activities. The Group agreed that a treaty must prohibit the production of fissile material for nuclear weapons or other nuclear explosive devices. This would be the treaty's underlying obligation, applying consistently to all States parties in a non-discriminatory manner.

16. Furthermore, there was widespread agreement that the potential diversion of fissile material from non-proscribed uses, such as naval propulsion, posed a threat to the object and purpose of the treaty and the legal obligations noted in paragraph 15 above. Experts discussed different approaches to this issue, namely the inclusion of an explicit prohibition against the diversion of material, or dealing with it directly in the treaty's verification regime.

17. Many experts argued that a treaty's scope should contain additional relevant obligations. These could include an undertaking not to carry out all types of transfers of fissile material for nuclear weapons or other nuclear explosive devices. Similarly, the treaty could include a specific prohibition on the acquisition of fissile material and/or technology to produce fissile material for proscribed purposes, and from providing technical or other knowledge to assist other States in the production of material for these purposes. Some experts,

however, felt such additional prohibitions on future production were unnecessary as they would be covered in an effective verification regime.

18. To assist with its deliberations on scope, the Group examined various functional categories of fissile material and the verification implications for each, which could include, inter alia, national security, commercial proprietary and resource requirements for verification. The functional categories considered may serve as a useful reference for future negotiators to determine if, and to what extent, each could be included in a treaty.A few experts expressed reservations about the typology, signalling that it was premature given the divergent views on this issue.For all functional categories of fissile material examined below, experts recalled that both the scope of the treaty and its verification regime wouldbe linked to the definition of fissile material decided upon by the negotiators.

Fissile material produced after the entry into force of the treaty

19. Two categories of fissile material produced after entry into force were considered: material produced for civilian use and material produced for non-proscribed military use.

20. **Civilian use:** A treaty should not prohibit the production of fissile material for civilian use consistent with the obligations of State parties nor interfere in any other way with a State's right to peaceful uses of nuclear energy. Many experts agreed that the fissile material for civilian use and its production should be subject to verification under the treaty so as to deter and detect its diversion for proscribed use.

21. **Non-proscribed military use:** A treaty should not prohibit the production of fissile material for non-proscribed military purposes.This material would, however, be subject to the treaty and States parties would require credible assurance that such material is not diverted to proscribed use.Experts pointed to specific verification challenges, and the need to develop effective solutions to verify non-diversion given the sensitive nature of this material and the relevant activity itself.Some experts believed that this issue would benefit from further scientific and technical study.

Fissile material produced prior to the entry into force of the treaty

22. Experts also examined different categories of material produced prior to the entry into force of the treaty.Many experts argued that given the sizeable amounts of fissile material already possessed by some States, a ban on new production would be insufficient to achieve theobjectives of the treaty, and that past production should be addressed in some manner within the treaty's scope in order to prevent diversion to proscribed use and that it should have a greater disarmament effect in practice. As is described below, these experts fell along a spectrum with regard to the extent to which past production would be addressed. Among those who supported a treaty containing provisions on past production, there was acknowledgement that its verification may need to be managed differently than future production, and most recognized that it may not be viable to insist that all elements of past production be included in the treaty. Some experts proposed that reductions in existing fissile material stockpiles be addressed through parallel arrangements, additional protocols or voluntary measures that States could pursue during or subsequent to treaty negotiations (including within a set time frame).The usefulness of such separate initiatives was, however, questioned by some experts on the basis that they may not be verifiable. Some experts noted that their understanding ofGeneral Assembly

resolution 48/75Land document CD/1299 precluded the inclusion of past production in a treaty's scope. For this reason, these experts did not feel that the detailed review held by the Group of different categories of material produced prior to entry into force was necessary. Others believed the treaty should ban only future production, but allowed that document CD/1299 left the issue of past production to negotiators. They felt that the inclusion of past production could result in a treaty that would not achieve sufficient support, nor be effectively verifiable.

23. Some experts argued that all pre-existing fissile material, with the exception of that produced for nuclear weapons, would need to be declared and be subject to some form of verification. There was considerable debate over whether States with currently unsafeguarded facilities could accurately declare past production and whether it could be verified. Some experts highlighted the practical and technical challenges with accounting post facto for historical production spanning many decades and stressed that it may not be possible for them to provide a fully accurate accounting. These experts argued that declarations of past production, when coupled with an inability to verify them, could lead to misunderstandings and the potential for unsubstantiated allegations of non-compliance under the treaty.Other experts, however, stated that, notwithstanding these challenges, a commitment to make declarations would serve as an important trust and confidence-building measure among State parties. Some experts said that declarations and transparency on past production of fissile material would help establish a baseline to assess non-diversion and for future disarmament efforts, even if it was not possible to verify their completeness and correctness.

24. **Produced for nuclear weapons:**Without prejudice to existing nuclear disarmament obligations under other instruments, for some experts, all or part of material produced for nuclear weapons, except that in the weapons themselves, would fall within the scope of the treaty and should be covered by treaty provisions.A few experts argued that the material in the weapons themselves should be declared though not verified. Other experts stated that it was impossible to distinguish material in weapons from other material in classified form and that this, coupled with non-proliferation and security commitments, precluded effective verification and thus such material should not be subject to the treaty.A few experts suggested that all past production fell outside treaty scope.

25. **Excess to nuclear weapons requirements:**Some experts argued that, on a voluntary basis, a State party under the treaty could designate fissile material that had been produced for weapons purposes prior to entry into force as having been transferred to the civilian or non-proscribed military domain. Many experts referred to this as "excess material".Many experts argued that once such material was designated for either civilian or non-proscribed uses, a State should make such a declaration and the material would irreversibly be made subject to appropriate treaty verification.For some experts this would form the starting point of an inventory to which further material could be added. However, other experts pointed to potential verification challenges that could emerge as material declared excess can remain in sensitive form for some time. A few experts said that placing treaty obligations on excess material could serve as a disincentive for States to make such voluntary declarations and could be circumvented as such material would simply not be so designated. A few experts objected to the concept of excess material itself. Some suggested it should be omitted from the scope. Others indicated it may inadvertently confer legitimacy to continued acquisition and production of nuclear weapons, contrary to nuclear disarmament commitments undertaken by some States.

26. **Non-proscribed military use:** Taking into account the verification challenges posed by fissile material for non-proscribed military purposes outlined in paragraph 21 above, some experts argued that all fissile material produced for non-proscribed purposes prior to the entry into force of the treaty should be declared and technical or other means developed to verify non-diversion. Other experts suggested such material is beyond the scope of the treaty.

27. **Civilian use:** Many experts argued that a treaty should address the risk that pre-existing stocks of fissile material for civilian use could be diverted for proscribed purposes. Those experts considered that such material should be subject to verification under the treaty. The viability of this proposition was, however, questioned by those who said this material should not be subject to the treaty.

B. Treaty definitions

28. Experts agreed that a treaty should define, inter alia, fissile material, fissile material production and fissile material production facilities.Definitions should be practical, scientifically and technically accurate and tailored to the specific objectives of the treaty.In other words, treaty definitions would need to be crafted in a manner that clarifies the obligations of a treaty while allowing for viable implementation and verification.The Group recalled that, in view of their dynamic interrelationship, final definitions wouldhave an impact on treaty scope and the verification regime, with key elements of the latter requiring precise definitions to preclude variances in interpretation or in the implementation of obligations.

29. **Fissile material:**The Groupconsidered four possible definitions for fissile material, but did not exclude the possibility of others. They considered the advantages and drawbacks of these options, the common thread among which was that highly enriched uranium and separated plutonium are the materials that should be at the heart of this definition, given their weapons applicability. Thus, the Group considered definitions based on:

(a) The IAEA safeguards concept of special fissionable material, as outlined in article XX ofits statute, focusing on plutonium-239, uranium-233, uranium enriched in the isotopes 235 or 233 and mixtures containing one or more of the foregoing;

(b) The IAEA safeguards concept of unirradiated direct use material, focusing on plutonium containing less than 80 per cent Pu-238, and highly enriched uranium (containing 20 per cent or more of the isotope uranium-235 and/or uranium-233);

(c) A treaty-specific definition of weapons grade material containing 90 per centor more of uranium-235 or uranium-233 or plutonium containing more than 95 per cent of plutonium-239;

(d) A specific isotopic composition, to be determined during negotiations based on the scope and verification requirements of the treaty.

30. Some experts favoured the definition inarticle XX of the IAEA statute and argued that it was already entrenched and widely understood by States through implementation of comprehensive safeguards agreements. For them, this definition would ensure treaty credibility by providing a fuller picture of a State’s nuclear activities and thus allow for maximum assurance of compliance. However, other experts argued the definition was too broad; would require

extensive and complex verification, including of material that could not be directly used in nuclear weapons or other nuclear explosive devices; and would generate significant verification costs.Proponents of this definition responded that not all material captured by this definition would necessarily require the same level of verification.

31. Some experts preferred the unirradiated direct use material definition on the basis that it best accounts for those materials suited for use in nuclear weapons, and was therefore effectively positioned to meet treaty objectives. They also highlighted that this definition was based on a term used in IAEA safeguards and already understood by States. For other experts, this definition was either overly or insufficiently broad in covering the nuclear fuel cycle and use of nuclear material, thereby either decreasing the effectiveness of verification or increasing the verification burden, depending on the perspective.Some proponents of this definition recognized a potential need for limited verification or transparency measures for some material not covered by the definition.

32. A few experts advocated in favour of a treaty-specific definition of weapons grade material. They argued such a definition addressed material currently applicable to nuclear weapons and thus was practical, fit for the purpose of the treaty and could ensure cost-efficient verification without undermining treaty efficacy.In their view, no State with modern nuclear arsenals would use material of inappropriate quality to produce weapons, and the non-diversion of nuclear material inStates that are not parties to the Treaty on the Non-Proliferation of Nuclear Weaponsis already under IAEA verification.However, many experts believed this definition would lack credibility as it would not cover all material that has been or could be used in nuclear weapons or other nuclear explosive devices, and would leave open the possibility of evading the basic object and purpose of the treaty by producing weapons-usable material of slightly lower grade.

33. Finally, a few experts argued that a specific definition based on an isotopic composition would achieve the objective of banning the production of fissile material for nuclear weapons while avoiding unnecessary complications regarding legitimate uses of highly enriched uranium and plutonium.Agreement during negotiation would be needed on the exact isotopic concentration that proponents indicated would be close to that used in nuclear weapons and based on the scope and verification requirements of the treaty at the time of negotiation. In addition to technical factors, these experts felt the definition of fissile material should also take into account political, legal and scientific dimensions. However, many experts emphasized that this definition lacked precision, and suggested that defining a threshold close to the isotopic composition used in nuclear weapons could increase the risk that not all material usable in nuclear weapons would be covered.Such a definition might, in their view, undermine the long-accepted IAEA term for direct use material.

34. The Group agreed that each definition proposed would, to some extent, imply different types of verification tools, requiring different facilities or parts thereof to be declared, and have different implications for the intrusiveness and for cost-efficiency that States are prepared to accept with regard to a verification regime.

35. The Group explored the merits of including neptunium and americium in an eventual treaty definition of fissile material. While it was recognized that neither neptunium nor americium are currently used in nuclear weapons, some experts expressed concern that omitting these materials might create an incentive for their

use in the design of new weapons.Many experts felt that the inclusion of neptunium could be considered by negotiators, or a future treaty body, should developments warrant, noting that IAEA continues to monitor this issue, including through a voluntary reporting mechanism. With regard to the inclusion ofamericium, some experts argued it should be given the same consideration as neptunium, while others felt it should be omitted at this time, given its limited applicability to the production of nuclear weapons.

36. Most experts agreed that tritium, as it is not by definition a fissile material, should be excluded from the treaty. A few argued it remains an important component in many nuclear weapons and should therefore be considered for inclusion.

37. Many experts recognized the need for certain treaty definitions to be sufficiently flexible to account for future scientific and technical developments and saw value in an expedited technical amendment process that would allow States parties to review and revise definitions. However, some experts did not believe that the field would evolve quickly enough to merit special procedures for rapid updates. Some experts suggested the harmonization of a treaty's definitions with those of other existing international forums be considered, noting that the definition of fissile material chosen by negotiators could have implications not only for this treaty but also existing verification procedures under IAEA and potentially elsewhere.

38. **Fissile material production:** The Group recognized that a treaty would not ban the production of fissile material per se, but rather proscribe its production for use in nuclear weapons or other nuclear explosive devices.Many experts agreed on enrichment and reprocessing as the key production activities for the purposes of the treaty, and these would be the only activities defined as production. Some experts stated that the definition of fissile material production should be located earlier in the fuel cycle. Some experts took the view that a broader definition of fissile material production was needed encompassing other nuclear fuel cycle activities, including upstream of enrichment and reprocessing facilities, in part to achieve non-discrimination in the treaty.

39. **Fissile material production facilities:** This definition would depend on that selected by negotiators for fissile material production. Most experts agreed that enrichment and reprocessing facilities should be at its heart, with advocates of a narrower definition of production arguing that no other facilities need be included. Those favouring a broader definition, however, argued that facilities upstream of enrichment and reprocessing facilities (although not uranium mining and milling) should be included in the definition of production facilities. Those favouring a narrower definition raised concerns about the practicality and cost-efficiency of such an approach, which, in their view, would have only marginal value in demonstrating compliance by States parties with treaty obligations. Other experts countered that, depending on the options chosen, not every facility defined as a fissile material production facility, nor all the activities occurring in it, would need to be verified with the same frequency or intensity.

40. Some experts believed it might be necessary to define a fissile material-related facility as any facility handling fissile material, including storage or processing facilities (other than enrichment or reprocessing facilities); such facilities would necessarily be declared and monitored under the verification regime. Other experts observed that verification would follow the fissile material produced and that the facilities in which it was present need not be defined.

41. Some experts advocateda definition that would distinguish between industrial-scale and laboratory-scale facilities. Others said a treaty's definitions should capture all production facilities, irrespective of scale, to avoid a verification gap (i.e. through the cumulative production of small amounts of material at multiple facilities). Future negotiators would need to explore the benefits and drawbacks of either approach, notably the benefit to an efficient verification regime of defining a *de minimis* production capacity at which production facilities would become subject to verification, versus the risk of potential clandestine production of small quantities of fissile material.

42. The Groupexamined issues related to the operational status of facilities, including operating closed-down, shut-down, decommissioned and dismantled facilities.Experts diverged on whether the terms relating to facility status should be incorporated into the definition of fissile material production facilities, or whether they were better addressed through a treaty's verification regime or transparency measures outside the treaty.Some experts thought that a treaty should also define fissile material diversion, transfer and acquisition. For others, since the verification regime would deter and detect such activities, the terms need not be expressly defined in the treaty.

C. Treaty verification

43. The Group reaffirmed that a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices must, in accordance with document CD/1299, be non-discriminatory, multilateral and internationally and effectively verifiable. To experts, this meant the treaty would deter and detect non-compliance in a timely manner, provide credible assurance that States parties are complying with their treaty obligations and guard against frivolous and/or abusive allegations of non-compliance.Declared production and, for some experts, downstream and/orupstream facilities would be the focus of verification so as to ensure that diversion of fissile material to a prohibited activity is detected and deterred. Some experts noted that verifying the correctness and completeness of State party declarations would constitute an important factor in the effectiveness of the verification regime; that the regime should provide assurance that no undeclared fissile material production is occurring, and no undeclared fissile material production facilities exist. For a few experts the verification regime should address only declared production and facilities.

44. From a technical perspective, credible assurance wouldbe connected to the appropriate identification and consistent application of treaty verification measures. Experts noted that existing IAEA inspection goals (such as significant quantity, detection time and detection probability) may provide a useful reference point for treaty negotiators, but recognized that they wouldlikely need to be adjusted to suit the unique purpose and context of the treaty's verification regime. Other experts noted that verification of the treaty should not imply a mechanical application of existing verification procedures from other instruments and would need to be specific to this treaty.

45. There was strong support for a non-discriminatory verification regime, under which all States parties are subject to the same obligations. Most experts recognized that the requirements of a non-discriminatory treaty could be achieved even while tailoring verification methods, tools and techniques to facilities in a State party on the basis of specific verification objectives, contexts and challenges. A few experts stated that a verification standard specific to the treaty

should be agreed and that it should be applied in a non-discriminatory manner to all State parties, in particular those affected by the treaty's obligations and responsibilities. Others stressed that the IAEA verification standards should be integrated into the treaty as a means to facilitate non-discrimination. Some experts proposed an approach that applied both "light" and "heavy" touch verification (i.e. different levels of verification intrusiveness and frequency) to different fissile material production activities and facilities depending on the non-compliance risks associated with them.

46. The Group acknowledged that, in practice, a significant increase in verification requirements would occur in States currently with unsafeguarded facilities.Some experts believed the treaty's obligations would be met in non-nuclear weapon States parties to the Treaty on the Non-proliferation of Nuclear Weapons via their commitments under that treaty, by means of their comprehensive safeguards agreement.Other experts believed that, notwithstanding its voluntary nature in the context of the safeguards system related to the Treaty on the Non-Proliferation of Nuclear Weapons, non-nuclear-weapon Statesshould also be required to adopt an additional protocolin order to provide credible assurances that no undeclared production is taking place. Still others believed that for non-nuclear-weapon States, especially those without an additional protocol, credible measures similar, but not necessarily identical, to those contained in the additional protocol should be negotiated for treaty-specific purposes. Taking into account the principle of non-discrimination, some experts stressed that the same verification obligations should apply to all States.

47. Most experts agreed that a treaty's verification regime should seek to achieve a practical and sustainable balance between effective and resource-efficient verification acceptable to all States parties.And while the Group reinforced the need to develop a verification regime that is attentive to managing resources as cost effectively as possible, it cautioned that efficiency should not be understood to imply that effective verification activities would not be pursued owingto cost implications.Many experts felt that avoiding unnecessary duplication of existing international verification activities, where relevant to this treaty, could assist in this regard.

48. Experts considered the benefits and drawbacks of both focused and comprehensive approaches to treaty verification.

49. A focused approach would concentrate routine verification activities at enrichment and reprocessing facilities and at those downstream facilities that are processing or handling fissile material. Those favouring this approach spoke to its simplicity and resource efficiency. They argued that these facilities were most directly implicated in fissile material production. The verification of these facilities, coupled with monitoring of the use of fissile material produced, and supplemented by measures to detect possible undeclared production, would ensure against diversion for proscribed purposes. However, some experts considered this approach too narrow to provide for confidence of coverage under the treaty.

50. Under a comprehensive verification approach, in addition to that which is covered by the focused approach, verification activities would also cover most if not all of the nuclear fuel cycle. This would include upstream processing, which some experts pointed out would extend to other, less sensitive nuclear material.Power reactors and spent fuel would also be captured.Some experts felt that this approach would better meet treaty requirements, while others argued that

the limited risk of diversion of this material did not merit the more complex and costly verification required.

51. Given the diversity in views, some experts also considered that negotiators could adopt a hybrid approach, concentrating particularly on those areas of the nuclear fuel cycle where the degree of attractiveness for misuse is highest, should a party seek to violate its treaty obligations.

52. Some experts highlighted that the level of verification, if any, that should be conducted at a given fissile material production facility would also depend on its status, of which operating, shut-down, closed-down, decommissioned or dismantled were possible categories.

53. The Group recognized that a treaty's verification regime will have to take into account the concerns of States partiesregarding sensitive information, whether related to national security, non-proliferation or commercial proprietary reasons, in a manner that avoids compromising the credibility and efficacy of verification efforts. Many experts highlighted the need for greater clarity in order for all States parties to better understand where the limits to verification may stand, and emphasized that it was incumbent on aninspected State to nonetheless provide credible assurances to the international community by making best efforts to accommodate inspection requests and, if access could notbe provided without compromising sensitive information, to seek to resolve questions by other means. Some experts noted this may prove difficult in certain instances, given the classification of relevant information. Some experts agreed that effective solutions wouldneed to be developed, and suggested that useful models in this regard included a "black box" approach, focusing on limited verification of input and output and managed access procedures.Some experts felt that future negotiators could potentially benefit from further technical and scientific consideration of these issues.

54. Experts also discussed the implications of verifying material for non-proscribed military use (such as naval fuel) and associated facilities. Many experts felt that future production for non-proscribed military purposes should be verified in an appropriate manner, with some also arguing thatpast production declared for this purpose should be verified so as to preclude that it is used for proscribed purposes. As described inparagraph 53 above, useful models mentioned included a "black box" approach and, for some experts, procedures based on article 14 of the IAEA model comprehensive safeguards agreementand/or managed access.

55. Similarly, some experts suggested that a treaty would require the development of verification tools to address the sensitivity of verifying production facilities that existed in States with unsafeguarded facilities prior to entry into force, which are then designated for production for non-proscribed purposes.Others argued however, that the process of converting a facility from military to non-proscribed use does not require specific verification tools since both the facility, and the material it contains, would become subject to verification.

56. Despite the objections raised in paragraph 25 above regarding the concept of material in excess to nuclear weapons requirements, experts debated potential verification approaches to address it. Many experts agreed that such material would, once in non-sensitive form, become subject to the treaty in a manner equivalent to material produced for non-proscribed purposes. Some experts argued that verification should begin (and declarations be provided) at the point

when this material is declared excess, recognizing that special verification measures might be required given its sensitive nature. Other experts countered with regard to the complexities of verifying material at this early stage, and argued that verification could only begin once material has been converted to a non-sensitive form, composition and mass. Some experts also held the view that past production should remain outside the scope of a treaty that prohibits the production and not the possession of fissile material for use in nuclear weapons or other nuclear explosive devices.

57. Some experts argued that all past production of fissile material should be accounted for and verified under a treaty in order to provide a clear baseline on which to assess and verify treaty compliance. Many experts identified challenges to such an approach, with some arguing that verification of all past production may not be possible given the inability to determine a satisfactory historical accounting of the material originally produced. The Group discussed concerns about thedearth of efficient and effective technical means to conduct verification in States that are presently with unsafeguarded facilities, notably given proliferation and national security concerns, obligations under the Treaty on the Non-Proliferation of Nuclear Weapons prohibiting the transfer of sensitive information and the international community's lack of verification experience in military fuel cycle facilities.Also noted was the challenge of effectively and efficiently verifying large numbers of facilities or large-scale facilities, particularly those that are decades old and not designed to support monitoring. However, many experts argued that techniques could be developed to address these challenges.

58. **Declarations:**Experts agreed that to facilitate effective verification, States parties would be required to provide an initial declaration of fissile material production facilities and, for some experts, related downstream facilities handling fissile material and/or upstream facilities. They acknowledged, however, that the nature and content of such declarations would depend on the scope and definitions ultimately decided by negotiators. Some argued that all existing fissile material, including that produced prior to entry into force of the treaty, should be included, whereas others believed this would fall outside treaty scope.Experts discussed possible specific content for such declarations, including design information and status of facilities that produce fissile material, those that process and handle fissile materialand, if applicable, the inventories of fissile material contained therein. Initial declarations would be complemented by ongoing declaration requirements to capture the production of fissile material, plans to construct new facilities or changes the status of existing ones. Some experts also noted the importance of providing design information and future development plans in order to facilitate effective verification efforts.

59. **Verification toolbox:** The Groupagreed that a diverse verification toolbox would be necessary for the regime to provide credible assurance that States parties complied with their obligations and treaty verification requirements. Such a toolbox should include verification tools and techniques capable of supporting the verification standard agreed by States parties with respect to the implementation of their obligations. Most experts agreed that existing verification methods, tools and techniques employed in relevant multilateral or bilateral forums, most notably IAEA, but also, potentially, elements of those used by the Organization for the Prohibition of Chemical Weapons and the Provisional Technical Secretariat of the Comprehensive Nuclear-Test-Ban Treaty Organization, should likely form the core of the verification toolbox. Many experts felt that further study is needed in order to understand how they could

apply in this treaty context, with negotiators considering the unique circumstances in which they were developed and implemented. Theexisting verification methods used by IAEA, including a system of material accountancy and control, were seen by most experts as being highly relevant to a treaty's toolbox, notably as a means to verify the correctness and completeness of State declarations of fissile material production and facilities. Other experts felt that existing IAEA approaches to verification were inappropriate for the treaty and that the verification toolbox could be discussed in depth only after the scope of the treaty had beendetermined.Experts agreed that it is important to leave flexibility in the toolbox to account for future developments in verification technology and, for some experts, the requirements of ongoing and future disarmament efforts. For a few experts, any change in the verification toolbox would need to be approved by all States parties. Given the complexity and interrelated nature of these issues, some experts noted the importance of continued consideration of verification methods, tools and techniques to add value to future negotiations.

60. Many experts highlighted the need for tools to detect undeclared production and facilities in States that currently haveunsafeguarded facilities, and reflected on those presently employed byIAEA, although a few experts did not support the application of this concept to the treaty.A few experts believed that these States should adopt a comprehensive safeguards agreementand an additional protocol.Others highlighted that tools and techniques, similar to those contained in the model additional protocolcould be in place in order to provide credible assurances that no undeclared production is occurring in those States. Still, a few experts stressed that a verification regime fit for purpose should be negotiated for the treaty. Environmental sampling was also suggested by some as a relevant IAEA tool when applied in the appropriate context and locations, although some experts questioned its value in detecting undeclared activity in States that had been operating unsafeguarded facilities on a significant scale, not least due to false alarms potentially generated by past production. Some experts also noted that verification challenges could be met through other measures without risking the release of sensitive information. These issues are likely to be site specific and will likely be resolved on a case-by-case basis.

61. Most experts agreed that a treaty's verification toolbox should include provisions for non-routine inspections, including challenge inspections, as a means to detect and deter undeclared fissile material production. Experts noted the value in examining various approaches to a model for non-routine inspections in the treaty, including, inter alia, IAEA special inspections and complementary access provisions, thechallenge inspections procedures employed by the secretariat of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destructionand the provisions used by the Provisional Technical Secretariat of the Comprehensive Nuclear-Test-Ban Treaty Organization for on-site inspections. Experts noted that specific procedures would be needed to launch and carry out such non-routine inspections.

D. Legal and institutional arrangements

62. The legal and institutional arrangements of a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices will play an important role in ensuring its credibility within the international community. Experts agreed that these arrangements should be designed to

facilitate the treaty's effective implementation so that it may achieve its intended object and purpose.

63. The Groupcounselled that negotiators would therefore need to balance credibility and flexibility while keeping in mind the need for precise and practical approaches. It was widely noted that the legal and institutional arrangements of a treaty should take into account the current and evolving experience of other international treaties and institutions. To maintain the confidence of States parties, the Group felt the treaty's institutions would need to remain credible, including by being politically impartial and technically able and by applying resource-efficient techniques. Some experts recommended that future negotiators consider ways to promote adherence to the treaty in the design of legal and institutional arrangements by increasing trust and confidence in the treaty, including through incentives.

64. **Governance:**Experts agreed that a treaty should include the establishment of governance and decision-making mechanisms that would provide political oversight and conduct treaty-related decision-making, including on issues of resource allocation, non-compliance and verification. Such mechanisms should include a conference of States parties, an executive council of some form and a secretariat.Citing membership and mandate concerns, some experts advocatedan executive council, independent and unique to the treaty.Others felt that membership and mandate concerns could be addressed by establishing a separate treaty executive council within IAEA, while a few experts argued that the existing IAEA Board of Governors could fulfil this role, recognizing that it had assumed new responsibilities in the past.Many experts felt that additional consideration of the structure of these proposed mechanisms is desirable.

65. Some experts outlined the need for a treaty organization or secretariat, which would, at a minimum, provide support to the governance and decision-making bodies and manage administrative matters.It could also be tasked to monitor implementation of the treaty more broadly.There were differing perspectives on whether this entity should be independent and unique to the treaty or contained withinIAEA.Some experts argued that details relating to the functioning of the treaty organization/secretariat should not be elaborated in the treaty itself, but would be best determined by the States parties at subsequent meetings.

66. Some experts proposed that the conference of State parties meet annually and that it have decision-making authority on implementation of the treaty, as well as oversight of the executive council and secretariat.Some felt this should also be complemented by a regular cycle of review conferences while others felt that periodic meetings of the conference of States parties would suffice.

67. For experts, an international and effectively verifiable treaty would beone that involves credible multilateral verification.Negotiators wouldneed to determine whether verification responsibilities should be carried out byIAEA or be self-contained within the treaty organization/secretariat.Experts in favour of locating the verification body withinIAEA suggested it would avoid unnecessary duplication and ensure the consistent application of treaty obligations for the many States already under IAEA verification mechanisms, and could be accomplished through a formal cooperation mechanism.A structure similar to the Iraq Action Team withinIAEA was noted as a possibility.Resource implications and the depth of experience and established technical capabilities of IAEA were also cited as factors in favour of its selection as a verification body. Other experts, however, felt that the distinct purpose of the treaty, and potential for different

membership fromIAEA, argued in favour of a self-contained verification body situated within the treaty organization/secretariat, with legal authority and resources capable of verification and other implementation functions. They noted the limited IAEA experience with verification in States currently with unsafeguarded facilities, and the potential for proliferation of sensitive information (which other experts noted would exist irrespective of the body selected). For some experts, however, even if an independent verification body were pursued, it should be positioned to draw on the useful expertise and resources of IAEA.Experts noted that any role for IAEA would have implications for itscurrent functioning.

68. Drawing on lessons from existing arrangements in similar treaties, negotiators will need to consider how the structure and functioning of the verification regime should best be reflected in the text of a treaty. For example, some experts suggested that elaborate technical details could be integrated in parallel annexes or protocols (in a model similar to the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction or the Comprehensive Nuclear-Test-Ban Treaty) or in subsidiary arrangements outlined separately between the verification body and individual States parties, as in the case of IAEA safeguards.Caution was noted by some about being overly prescriptive, given the pace of technological change.Others highlighted that provisions on the protection of confidential information would be pertinent to treaty implementation.

69. **Compliance:**Experts agreed that States parties, whether through a conference of States parties or an executive council, should play the main role in assessing cases of non-compliance.For some experts both States parties and the verification body could have a role in invoking certain non-routine inspection rights, while for others such a role was limited to States parties. Experts noted the importance of establishing mechanisms within a treaty to reduce the probability and verify the credibility of non-compliance accusations that might be frivolous and/or abusive.

70. Experts agreed that a process would be needed to address allegations of non-compliance.Many experts saw value in using a cooperative approach in response to initial reports of non-compliance, which could serve as an incentive by ensuring the participation of involved parties.Some experts suggested negotiators might find value in examining existing models that use a cooperative approach, such as the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction, the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effectsand theComprehensive Nuclear-Test-Ban Treaty(consultation and clarification).Only where serious concerns are identified, and where cooperative deliberations are unproductive or inconclusive, would a finding of non-compliance be made. Some experts suggested assessments of non-compliance could be addressed within the conference of States parties.The executive council, an ad hoc committee or the conference on States parties, may have a role in each or any of these approaches.

71. The Group explored the benefits and drawbacks of having formal findings of non-compliance referred to the Security Council or the General Assembly. Experts discussed the institutional problems that could arise in a situation involving non-compliance by a permanent member of the Security Council.A few experts suggested that negotiators may wish to examine how the issue was

considered in the development of the Comprehensive Nuclear-Test-Ban Treaty.Some experts also proposed that the treaty should contain its own punitive measures (inter alia, suspension of membership from decision-making bodies), which could be imposed, as per procedures agreed in the treaty, prior and without prejudice to the penalties imposed by another principal organ of the United Nations.Finally, experts raised the potential of complications in dealing with non-compliance in States with existing IAEA obligations under multiple regimes, with possibly different executive bodies of divergent membership. Experts felt that these issues merited further consideration.

72. **Amendment and review:** A treaty should include practical amendment provisions to be pursued in conformity with international treaty law.Experts discussed different mechanisms for making amendments, which could include a referral mechanism to the conference of States parties, a review conference or an ad hoc amendment conference (called by two-thirds of the members of the conference of States parties).Some experts argued that given the potential ramifications of substantive treaty amendments, they should be adopted by consensus.Others argued that while consensus should be the goal, a treaty should adopt the practice of the most recent disarmament conventions and allow voting.The possibility of qualified voting was discussed.

73. Separately, many experts noted that depending on the detail contained in the treaty on issues such as verification, a dedicated and expedited process to address technical updates mightbe needed. This mechanism should be flexible and non-resource-intensive, with some experts proposing this task could fall to a review conference.

74. **Entry into force:** The Group felt that negotiators wouldneed to consider the range of options between overly restrictive entry into force provisions that could block its effective implementation and more permissive provisions that could undermine treaty credibility. Many experts felt that proposing a simple unqualified number of States necessary for ratification would affect the treaty's credibility and that entry into force should require ratification by a specified number of States with unsafeguarded facilities. Some experts pointed to the need to set out such provisions without conferring any unintended legal status. Other experts argued that legal status would be unique to the treaty and that it should not target any country or rely on categories of States contained in other treaties.Some experts argued that ratification by a certain number, or all, States with enrichment and reprocessing capabilities should be the criteria used for entry into force.Although the number of States falling into this category would be directly impacted by the treaty definition of fissile material production, some experts noted that it could be technically challenging to determine which States would fit in this category.Another approach would be to require a specific number of States from more than one of the categories noted above.Experts agreed that treaty universality would remain an important goal.

75. **Duration:** Many experts argued that indefinite duration of the treaty would preserve the irreversibility of measures taken under it.Some experts suggested that a treaty of long duration (such as 25 years), perhaps with renewal provisions, could achieve the same objectives.While many experts were confident that either indefinite or lengthy treaty duration would sustain disarmament momentum, some viewed the treaty as an interim step and expressed concern that a treaty with indefinite duration would reduce incentives and pressure to make progress on other disarmament commitments.

76. **Withdrawal:** Consistent with international law and notwithstanding efforts to ensure irreversibility, the Group agreed that parties to a treaty should have the right to withdraw, although given its potential strategic implications and the desire to prevent potential abuse, experts felt that conditions for withdrawal should be restrictive.For example, the treaty should require adequate advance notice for withdrawal, and members of the Group felt that States should remain responsible for commitments previously entered into on treaty obligated material, and for any violations that may have been committed prior to withdrawal.Some experts suggested that withdrawal by a State with currently unsafeguarded fissile material could risk undermining the object and purpose of a treaty, with a few indicating it should trigger its termination while others countered that such singling out was discriminatory.

77. **Other issues:**Experts recognized that other legal and institutional issues such as accession, reservations, depository, dispute settlement, etc. would benefit from further analysis.Some experts felt that legal and institutional issues are interrelated and should be addressed in an integrated manner.

V. Conclusions and recommendations

78. Given the dynamic and challenging contemporary global security environment, members of the Group believed firmly in the importance of ensuring continued international commitment and high-level attention to making practical progress on achieving a world without nuclear weapons and on non-proliferation in all its aspects.In this regard, the Group agreed that a treaty could contribute practically to this goal, and more broadly to enhancing global security.

79. The work of the Group represented the most thorough expert intergovernmental assessment to date of a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices. Given the depth of its exchanges, the Group has allowed for a better understanding of the potential architecture of a future treaty and has further clarified its various aspects.It also identified areas, including technical and scientific challenges to definitions, verification and scope, or on legal and institutional matters, which will have implications for future treaty negotiations.In this regard, it helped identify areas of potential convergence and divergence and where a spectrum of views may exist. The Group concluded its work with a fuller appreciation of the range of expert positions, including on issues that may pose challenges to negotiators.Without prejudice to national positions, the members of the Group are confident that this report and the deliberations which underpin it, can serve as a valuable reference for States and should be a useful resource for negotiators of a future treaty.

80. In addition, pursuant to its discussions, the Group recommends that:

- Future negotiators of a treaty take into account the work of the Group, as appropriate in their deliberations.
- In conveying the work of the Group to the Conference on Disarmament, the Secretary-General call upon the Conference to consider and fully examine the report of the Group. States members of the Conference on Disarmament are encouraged to include in their delegations technical experts, as may be required, to facilitate deliberations on issues identified in the report.

- The Secretary-General, building on the 2013 report on the treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices (A/68/154), seek the views ofthe States Members of the United Nations on the presentreport.
- States give due consideration to the report of the Group and the reportbe made available to the wider international community and civil society, for example on the websites of the United Nations and the Conference on Disarmament.

81. Finally, the Group has demonstrated through its significant analysis and thoughtful dialogue that the various perspectives of States on a treaty should not be an obstacle to commencement of negotiations.In accordance with General Assembly resolution 67/53, the Group considers that document CD/1299 and the mandate contained therein continues to provide the most suitable basis on which future negotiations can commence without further delay in the Conference on Disarmament and, as noted in the Shannon report, would allow negotiators to raise for consideration all aspects of a treaty, including its scope. In this regard, members of the Group believe that continued active support and leadership by theSecretary-General is important to maintain momentum.