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The Verification Research, Training and Information Centre is an independent, not-for-profit non-governmental organization. Our mission is to support the development, implementation and effectiveness of international agreements and related regional and national initiatives. We focus on agreements and initiatives in the areas of arms control, disarmament and the environment, with particular attention to issues of monitoring, review and verification.

VERTIC conducts research and analysis and provides expert advice and information to governments and other stakeholders. We also provide support through capacity building, training, legislative assistance and cooperation.

We engage closely with governments, policy-makers and international organizations, as well as with the private sector and technical, academic and non-governmental communities worldwide.

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Editor: Larry MacFaul

Design & Layout: Rick Jones, Studioexile

VERTIC Development House
56–64 Leonard Street
London EC2A 4LT
United Kingdom

Phone: +44 (0)20 7065 0880

Fax: +44 (0)20 7065 0890

E-mail: info@vertic.org

Website: www.vertic.org

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About the paper

VERTIC has conducted a survey of International Atomic Energy Agency (IAEA) member states to provide a more detailed and standardised assessment of views on an agency role in disarmament verification. The survey examines views on the steps the agency should take to equip itself for this role, and the types of support member states are prepared to give towards this end.

The questions it raises present member states with an opportunity to consider their own views on the IAEA's role in verifying nuclear disarmament. In doing so, member states can identify which aspects of this role interest them most, and which aspects concern them most, thereby guiding any domestic or international efforts to explore disarmament verification in greater depth. The answers to these questions can also identify areas of agreement and disagreement among member states regarding the agency's role in nuclear disarmament verification. This can help guide the IAEA Secretariat as it formulates its next medium term strategic plan, which will enter into force in 2018.

The VERTIC survey was developed and reviewed in collaboration with several experts, distributed to all member states, and analysed according to statistical sampling techniques. This paper discusses the context behind this survey, the factors influencing its development, and the conclusions that can be drawn from its results.

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1. Introduction

Article VI of the Nuclear Non-Proliferation Treaty (NPT) requires all its parties to pursue negotiations in good faith on effective measures relating to nuclear disarmament. Since the treaty's entry into force, parties have continued to debate what constitutes such measures and how they should be implemented.

What consensus exists on this issue can be found in final documents produced by NPT Review Conferences, and in particular the final document from the conference held in 2010. In this document, parties to the NPT commit to apply the principle of *verifiability* to the implementation of treaty obligations. Parties agreed on the importance of supporting cooperation among governments, the United Nations, other international and regional organisations, and civil society, aimed at developing efficient capabilities for verifying nuclear disarmament.

The International Atomic Energy Agency (IAEA) plays a central role in verifying states' non-proliferation commitments under the NPT. The organisation may come to play a similar role in developing and implementing capabilities for verifying nuclear disarmament. The IAEA consists of 164 member states. It verifies the non-proliferation commitments of 180 countries. The agency has a statutory mandate to apply safeguards on request to any unilateral or multilateral arrangements regarding a state's activities in the field of atomic energy. This includes those related to nuclear disarmament.

The IAEA Department of Safeguards has highlighted its role in verifying nuclear disarmament within its Long-Term Research and Development Plan (2012-2023). One of the department's overarching strategic objectives is to 'contribute to nuclear arms control and disarmament, by responding to requests for verification and other technical assistance'. It hopes to meet this goal by developing concepts and approaches, safeguards and detector equipment, information technology and procedures, analytical services, new mandates, and training.

IAEA member states will play a vital role in shaping the IAEA's ability to verify nuclear disarmament. Technical and financial support from member states will decide the sophistication and readiness of the IAEA's disarmament verification capabilities. Political support from member states within the IAEA Board of Governors and General Conference will also decide how and when such capabilities might be applied.

Although NPT parties agree on the importance of supporting cooperation aimed at developing verification capabilities for nuclear disarmament, it is not clear whether they (or those IAEA member states that are not party to the NPT) agree on the precise role of the IAEA in this endeavour. Member state views on the scope and

shape of the IAEA's role in verifying nuclear disarmament are vague. Moreover, their capacity to engage with this issue can be limited by a lack of domestic expertise on verification.

VERTIC has conducted a survey of IAEA member states to provide a more detailed and standardised assessment of views on an agency role in disarmament verification. The survey examines views on the steps the agency should take to equip itself for this role, and the types of support member states are prepared to give towards this end. It was developed and reviewed in collaboration with several experts, distributed to all member states, and analysed according to statistical sampling techniques. The context behind this survey, the factors influencing its development, and its results are discussed below.

2. The IAEA and Nuclear Disarmament Verification

2.1 Background

The IAEA was established with the objective of accelerating and enlarging the contribution of atomic energy to peace, health and prosperity throughout the world. The organisation seeks to achieve this through several means. The IAEA coordinates peaceful nuclear research and it develops and promotes nuclear safety standards. The agency also establishes and administers ‘safeguards’, at the request of any state, to nuclear activities.

The most prominent example of such safeguards are those implemented through the NPT. These require non-nuclear-weapon states (NNWS) to accept safeguards with the IAEA on all nuclear materials and activities to verify their peaceful nature. Beside these NPT safeguards, the IAEA’s statutory mandate to apply safeguards on *any* nuclear activities in a state (on request) allows the agency to verify a range of activities relating to nuclear disarmament. This platform has allowed the IAEA to move beyond its core activities of safeguarding the peaceful uses of nuclear materials. It has been involved in the verified dismantlement of nuclear weapons and closure and destruction of clandestine weapon programmes. The agency has also worked on the verified disposition of classified forms of military plutonium. It has done so in response to requests from disarming states (for example, South Africa) and from the UN Security Council (for example, in Iraq).

Each of these cases presented the IAEA with unique verification challenges that required unique technical and procedural solutions. Many of these solutions, such as enhanced provision of information, increased access, and greater use of modern technologies, have been adapted to the IAEA’s non-proliferation efforts. These solutions can be called on again to verify future cases of nuclear disarmament.

The IAEA Department of Safeguards anticipates new verification challenges associated with nuclear disarmament. The department aims to develop concepts and approaches, safeguards and detector equipment, information technology and procedures, analytical services, new mandates, and training applicable to the task.

This work is conducted through the agency’s sub-programme 4.2 (‘other verification activities’), which is carried out through the broader nuclear verification programme (Major Programme 4). This sub-programme was created in 2011, and included only one project that aimed to prepare for the abandonment of the DPRK nuclear programme. Since then, this sub-programme has expanded to include a project relating to the verification

of excess weapons plutonium subjected to IAEA safeguards by the US and Russia. According to the agency's programme and budget, no further expansion of this sub-programme is envisioned for 2016-2017. The regular budget for this sub-programme in 2015 is approximately €537,000, and is expected to fall by 15.8 per cent in 2016 to approximately €452,300. This will be supplemented by approximately €180,000 of extrabudgetary contributions towards the verification of excess weapons plutonium.

Reaching the IAEA's R&D objectives requires member state support. By the end of 2013, 20 member states and the European Commission gave their support to the IAEA's Development and Implementation Support Programme for Nuclear Verification 2012-2013. This contribution, both in cash and in kind, was made through Member State Support Programmes (MSSPs).

2.2 Political guidance on disarmament verification

According to the agency's statute, most substantive decision-making power resides with its Board of Governors. Every year in September, the entire membership also meets for a General Conference. This meeting discusses any questions or matters arising with the agency's activities under its statute. At the conference, members give some political guidance as to what they would want their organisation to focus on. In latter years, there has been a limited yet materially important debate on the role of the agency in disarmament verification. The most recent contribution to the debate can be found in the 2014 safeguards resolution. The document makes clear that the agency, 'must remain ready to assist, in accordance with its Statute, with verification tasks under nuclear disarmament.'

Discussions on nuclear disarmament have been a regular feature since the organisation's inception. In recent years, statements made by IAEA member states suggest that there is a desire to highlight and clarify the scope of the agency's role in verifying nuclear disarmament, and the steps it should take to maintain its ability to fulfil this role. As noted above, the agency is called on, from time to time, to engage in disarmament verification missions, and this has occurred without much dispute. The main question at hand appears to be whether the organisation should have a more central and regular role in future disarmament verification efforts.

In 2009, US President Obama gave a speech on nuclear matters—including on disarmament—in Prague, Czech Republic. This speech galvanised those nations and organisations seeking deep and verifiable cuts of the world's nuclear stockpiles. That same year, Egypt took the floor at the General Conference lamenting the agency's 'continued failure' to support the international community in bringing about nuclear disarmament. It highlighted that the organisation set itself a goal to contribute to such efforts in its Medium Term Strategy for 2006-2011.¹

At the subsequent IAEA General Conference, in 2010, Egypt took the floor again. The Egyptian representative noted increasing interest in nuclear disarmament catalysed by the Prague speech. However, it remarked ‘that trend had not [. . .] been accompanied by action to boost the Agency’s activities in support of nuclear disarmament’.

By 2011, other states were joining Egypt in expressing their support for the IAEA’s role in verifying nuclear disarmament. Cuba argued that ‘the agency’s role in verification regarding nuclear disarmament should be strengthened’. Brazil also submitted an amendment to the annual Safeguards resolution noting ‘in furthering the establishment of safeguarded worldwide disarmament, non-proliferation and disarmament efforts, including nuclear verification, are mutually reinforcing’. The addition was dropped without much debate. Nevertheless, its submission marks an important turning point for the agency’s treatment of the disarmament verification debate. From 2012 to the present day, the safeguards resolution has become the focus of a concerted effort to recognise the IAEA’s role in verifying nuclear disarmament. During this time, the annual resolution has contained a preambular paragraph ‘welcoming the work the Agency has undertaken in verifying nuclear material from dismantled nuclear weapons’.

From 2013, the resolution’s preamble also recalls ‘the IAEA Statute and in particular Article III.B.1’. This preambular paragraph highlights that ‘the Agency shall conduct its activities [. . .] in conformity with the policies of the United Nations furthering the establishment of safeguarded worldwide disarmament.’ That same year, Sweden stated, ‘credible nuclear disarmament requires robust verification schemes.’ It continued to note, ‘that the IAEA should continue to play a role in the field, given its mandate and its wide range of expertise and experience.’ By 2014, support for such recognition allowed Brazil to propose the operative paragraph to the safeguards resolution mentioned above, on behalf of 21 member states.²

This history suggests that support for the IAEA’s role in verifying nuclear disarmament is becoming more audible among the agency’s member states.³ However, it says little about how the IAEA should prepare for this role. In 2014, Brazil suggested that the IAEA Secretariat ‘ensure sustainable in-house capacity to fulfil this responsibility’. Brazil’s suggestion was not included in the final resolution.

Furthermore, this history gives little indication of the capacity and interest of all member states to engage with and support the IAEA’s efforts to fulfil its broader verification responsibilities. The records of the 2014 General Conference demonstrate that there was very little debate on Brazil’s proposal. This level of debate could be an indication of a lack of awareness among members regarding the challenges and opportunities an IAEA role in verifying disarmament might present.

This raises a number of research questions:

- What range of nuclear disarmament activities do member states think the IAEA should be involved in verifying?
- What capacities do member states think the IAEA should develop to support such verification?
- What interest do member states have in engaging with issues relating to an IAEA role in verifying nuclear disarmament?
- Do member states think any alternative international organisations should have a role in verifying nuclear disarmament?

These questions present member states with an opportunity to consider their own views on the IAEA's role in verifying nuclear disarmament. In doing so, member states can identify which aspects of this role interest them most, and which aspects concern them most, thereby guiding any domestic or international efforts to explore disarmament verification in greater depth. The answers to these questions can also identify areas of agreement and disagreement among member states regarding the agency's role in nuclear disarmament verification. This can help guide the IAEA Secretariat as it formulates its next medium term strategic plan, which will enter into force in 2018.

3. Surveying IAEA Member States

A structured and uniform survey presents a powerful method to investigate these research questions, beyond studying countries' public statements to date. First, a standardised set of multiple-choice questions produces responses from states that can be easily compared with one another, and, if the survey is repeated, compared over time, allowing for the evolution of views to be tracked. Second, a single uniform survey can be distributed to all IAEA member states simultaneously—increasing the diversity of potential respondents. Nevertheless, opting to conduct a survey involves confronting a number of challenges.

3.1 Survey design

A survey is unavoidably restrictive. A limited number of questions can be asked, so these questions must focus on key issues. Furthermore, these questions need to be detailed enough to give useful answers, but must also be understandable to all IAEA member states, irrespective of their level of engagement to date on the issue of nuclear disarmament verification. The questions must also be presented in a way that does not 'lead' respondents to any particular response. To achieve this, VERTIC considered the type of content, level of detail and complexity that should be appropriate for respondents. This involved developing a limited number of core themes into a short set of concise and straightforward questions. These core themes included:

- The IAEA's role in verifying nuclear disarmament
- Member state interest in the issue and preparedness activities
- Additional international options

A quantitative metric system for responses (for example, a ranking of 1-5 from 'strongly disagree' to 'strongly agree') was rejected in favour of a qualitative set of multiple-choice answers. These included 'yes', 'no', 'no view', 'under consideration', and 'not yet considered'. These answers only had to relate to the views of member states, rather than their formal positions, since these may not have been considered or settled in many member states. The survey contained additional space for member states to provide an elaboration of their views where they felt necessary.

VERTIC distributed a draft of the survey to a number of external technical experts and diplomats for review. To ensure the survey met good practice standards in its methodology, VERTIC also contracted the services of a professional survey company to examine the survey questions, respondent engagement strategy, and the analysis of results. A copy of the final survey can be found in Annex 1.

3.2 Survey distribution

It is unlikely that all 164 members of the IAEA have both the willingness and resources to complete a survey on the agency's role in verifying nuclear disarmament, at least on its first iteration. The ability to draw reliable and accurate conclusions on the views of the agency's membership depends on gaining responses from a representative sample of states.

The opinions of nuclear-armed states are particularly important, but such states may be uncomfortable or unwilling to share their views on this topic. Many non-nuclear-weapon-states may have little capacity to give in-depth consideration to the issues in the survey. It might be that the only states both willing and able to complete a survey could be those with an existing interest in the issue.

While the risks of such a 'selection' bias are unavoidable, VERTIC aimed to compensate for them by encouraging responses from a diverse array of states (including nuclear-armed states). To achieve this, VERTIC circulated the survey in standardised electronic and paper forms to all member states, and engaged with potential respondents in person when opportunities arose, and remotely for other cases. Member states were also able to submit their responses on the condition that they would be presented anonymously (referring only to broad indicators of their circumstances, such as diplomatic or geographical groupings). The survey was also accompanied by a guidance document, which explains the background and context of the survey, its aims, terminology, and the methodology behind its creation and ultimate analysis. A copy of this guidance document, which was circulated in 2014, can be found in Annex 2.

3.3 Survey analysis

Sampling techniques allowed VERTIC to extrapolate the limited number of survey responses received to draw hypotheses as to the possible view of the entire IAEA membership. These techniques rest on an assumption that the responses reflect a representative sample of IAEA member states. As discussed above, receiving such sample is challenging. IAEA member states vary considerably in their familiarity with nuclear issues, their interest in IAEA verification, their resources to complete surveys, and their desire to contribute towards a better understanding of member state views on IAEA verification of nuclear disarmament.

VERTIC received a total of 15 responses to its survey. These included respondents from the Middle East, North America, South America, Asia, and Europe (from where the majority of respondents came). A majority of respondents were also members of diplomatic groupings such as the Non-Aligned Movement (NAM), the League of Arab States, the Non-Proliferation and Disarmament Initiative (NPDI), the New Agenda Coalition (NAC), and the European Union (EU). No responses were received from nuclear-armed states. As such, responses reflected a geographically and diplomatically representative sample of non-nuclear-weapon state (NNWS) members of the IAEA.

Recognising this, the proportion of respondents that selected a certain answer can be extrapolated out to a hypothesis of what proportion of non-nuclear-armed members of the IAEA would have selected that answer. The specificity of such a hypothesis depends on a pre-determined level of desirable confidence in this hypothesis. This level of confidence is often expressed as a 'confidence level', and is set at 95 per cent (reflecting a requirement that such a hypothesis would be correct 95 per cent of the time).⁴

By accepting a low confidence level, a highly specific hypothesis can be drawn (for example, exactly 18 out of 20 respondents would choose the same answer, every now and again). Requiring a high confidence level generates more significant conclusions, but with less specificity (for example, five to 15 respondents out of 20 would choose the same answer, almost all the time). A table presenting the results of this statistical extrapolation can be found at www.vertic.org.

4. Survey Results

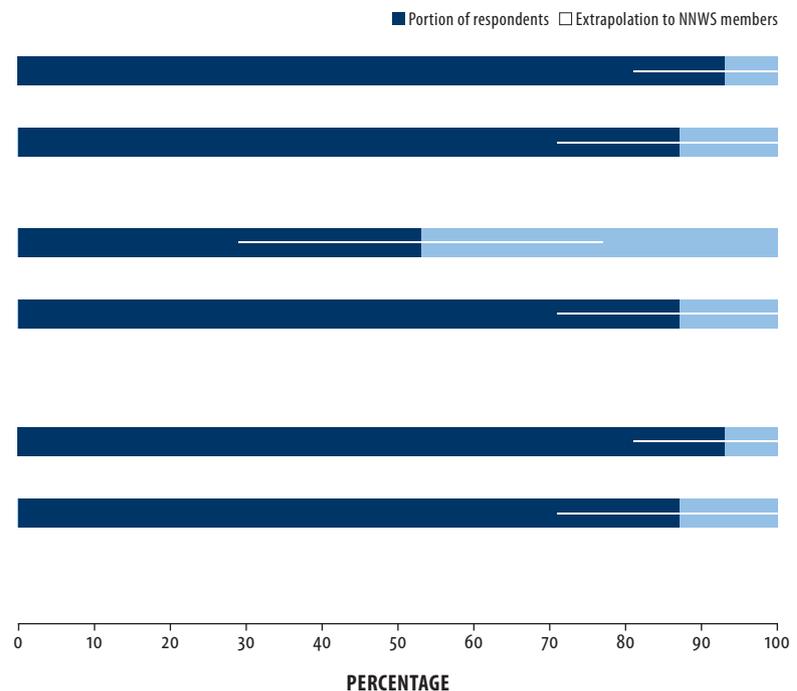
4.1 The scope of the IAEA's role in verifying nuclear disarmament

The five NWS define nuclear disarmament as ‘the process leading to the realization of the ultimate goal of a world without nuclear weapons and any measure contributing hereto’. This definition suggests that nuclear disarmament involves a complex array of activities, rather than a single activity. These activities could involve the dismantlement of nuclear warheads, the disposition of weapons-usable special fissionable material recovered from nuclear weapons, the reversal of nuclear weaponisation activities, and the ultimate safeguarding of remaining peaceful activities.

Chart 1 Which of the following disarmament steps do you consider that the IAEA should be involved in verifying?

QUESTION

- 2a. Application of safeguards to all non-sensitive forms of nuclear material in former nuclear-armed states?
- 2b. Decommissioning of enrichment and reprocessing facilities used in weapons production, or their conversion to non-military purposes
- 2c. Decommissioning of warhead delivery systems, or their conversion to non-nuclear roles
- 2d. Dismantlement of nuclear warheads and other nuclear explosive devices, and disposition (destruction/storage/recycling for other uses) of weapons-grade nuclear material in sensitive forms
- 2e. Disposition of weapons-grade nuclear material in non-sensitive form
- 2f. Cessation of nuclear weaponisation research and development and associated capabilities, including decommissioning, conversion or removal of facilities and non-nuclear items specifically involved in production of nuclear weapons

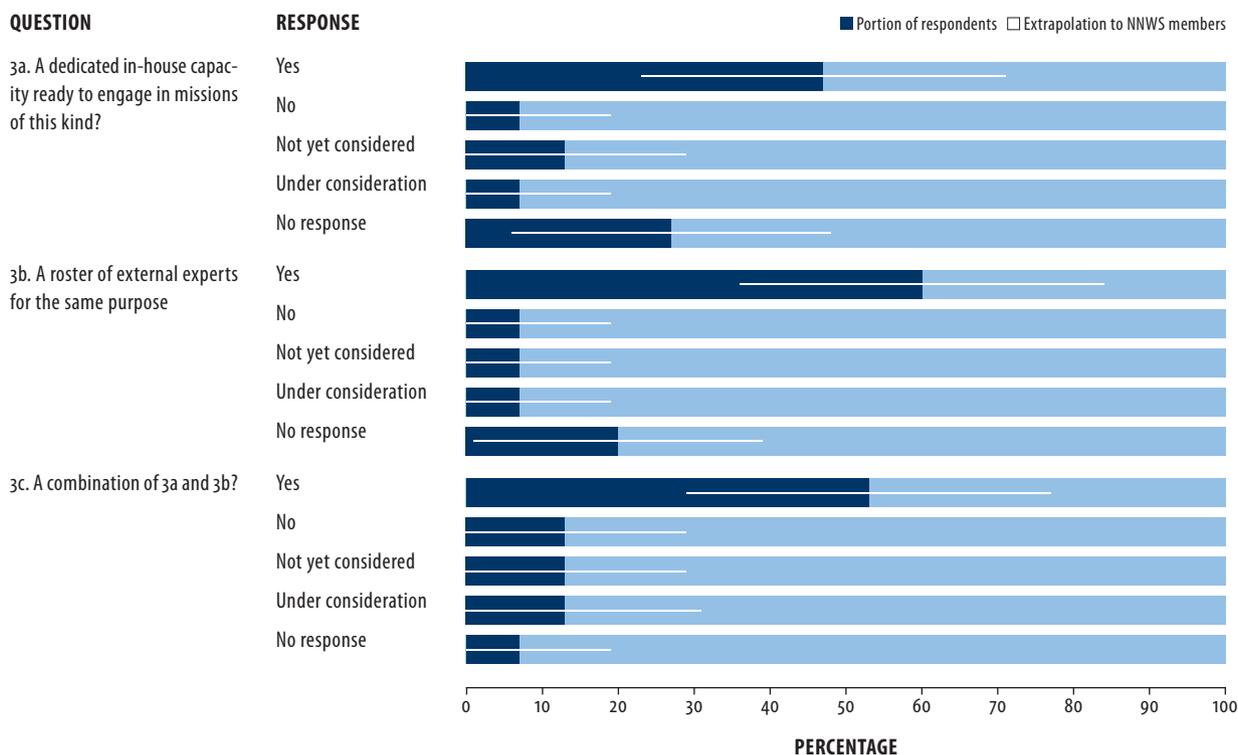


With this in mind, it is important to consider the extent to which member states envision the IAEA verifying the above activities. Similarly, it is important to consider how member states expect the IAEA to prepare for, and ultimately carry out, such verification. The first section of the survey sought to gain an understanding of member state views on these issues by asking respondents to consider:

1. their overall support for an active role for the IAEA in verifying nuclear disarmament
2. their support for an active IAEA role in verifying specific nuclear disarmament activities
3. the type of capability the IAEA should maintain to carry out such verification
4. the personnel the IAEA should use to verify specific proliferation-sensitive disarmament activities

There is strong support among NNWS members for an ‘active role’ for the IAEA in verifying future cases of nuclear disarmament. No respondents rejected such a role for the IAEA, and those that did not

Chart 2 Does your country consider that the IAEA should maintain, for the purpose of any verification missions addressing the dismantlement of nuclear warheads and weapons programmes?



explicitly support it were currently considering their views on the matter. This suggests that at least 71 per cent of non-nuclear-armed member states would support an active role for the IAEA in verifying future cases of nuclear disarmament.

There is strong support among non-nuclear-armed member states for a broad role for the IAEA in verifying future cases of nuclear disarmament. At least 81 per cent of non-nuclear-armed member states would support IAEA verification of non-sensitive weapons-grade fissile materials and the application of safeguards to disarmed states. At least 71 per cent of these states would also support IAEA verification of nuclear warhead dismantlement, the disposition of sensitive weapons-grade fissile materials, the decommissioning of military fissile material production facilities, and the cessation of nuclear weaponisation activities

Member states are uncertain whether the IAEA should develop an in-house capacity to verify nuclear disarmament, a roster of external experts for this purpose, or a combination of both. While more respondents supported rather than rejected these suggestions, a significant proportion was unable to decide one way or another. As such, it is difficult to draw any useful conclusions as to the view of the IAEA membership on this issue at present.

The majority of NNWS members would support the involvement of IAEA personnel from NNWS in the verification of nuclear warhead dismantlement, if suitable systems are developed to prevent the spread of proliferative information. While a small portion of respondents had not yet considered this issue, none rejected such involvement. At least 61 per cent of non-nuclear-armed member states would reject limiting such involvement to IAEA personnel from NWS with appropriate clearances from their home nation.

4.2 Interest in IAEA preparedness activities

It is clear that while there is general support for a broad and active role for the IAEA in verifying nuclear disarmament, member states are less certain as to how the agency should prepare for such a role. There have been few opportunities for the majority of member states to explore these issues in depth, and the historical record suggests that discussions on the topic at the IAEA General Conference have been infrequent.

With this in mind, the survey aimed to understand the extent to which member states want to engage on this issue more substantially than they do currently. It also sought to understand exactly how member states hoped to engage on this issue within the framework of the IAEA, and how their capacity to engage on this issue could be strengthened. It did this by asking member states:

1. Whether their country would like to participate in capacity building, development, and training activities on multilateral approaches to nuclear disarmament verification?
2. Whether their country felt it was important to conduct research into issues associated with a broad and active IAEA role in nuclear disarmament verification?
3. Whether their country felt that they should be involved in such research?
4. Whether their country would be willing to publicly encourage or support a broader and more active role for IAEA verification of nuclear disarmament?
5. What activities should be undertaken by the IAEA Secretariat and its policy-making organs to facilitate a discussion of the agency's role in verifying nuclear disarmament?
6. What support their country would be willing to give to the IAEA to build its capacity to verifying nuclear disarmament?

Nearly all NNWS members would feel that exploring the IAEA's role in verifying nuclear disarmament is important, and would like to engage on the topic in greater depth. No respondent rejected the importance of this issue, or research activities such as practical analysis, studies, and exercises to investigate it.

Despite strong support for an IAEA role in verifying nuclear disarmament, some NNWS members have yet to consider if and how they should publically encourage this role (beyond the encouragement given

Chart 3 Would your country like to see one or more of the following steps addressing the potential role of the IAEA in disarmament verification?

QUESTION

- 9.a IAEA director-general report
- 9.b Agenda item for the IAEA General Conference
- 9.c Agenda item for the IAEA Board of Governors
- 9.d Referenced in the annual resolution on IAEA safeguards.
- 9.e Dedicated resolution to be debated at an IAEA General Conference
- 9.f IAEA 'long-term plan' specifying roles, capacity-building and resource requirements for nuclear disarmament verification.

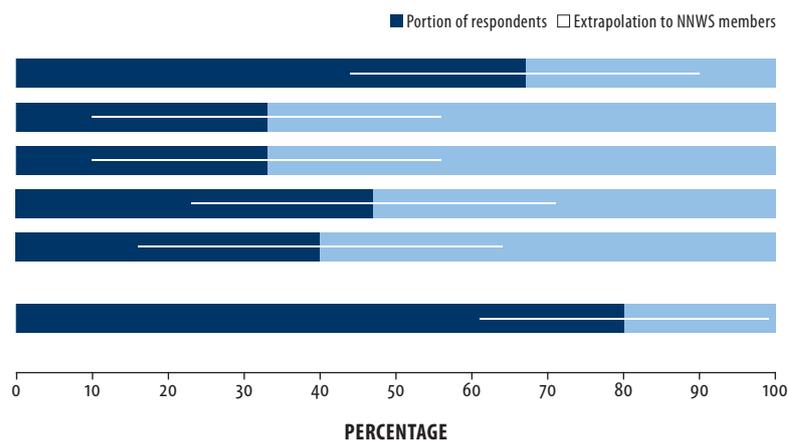
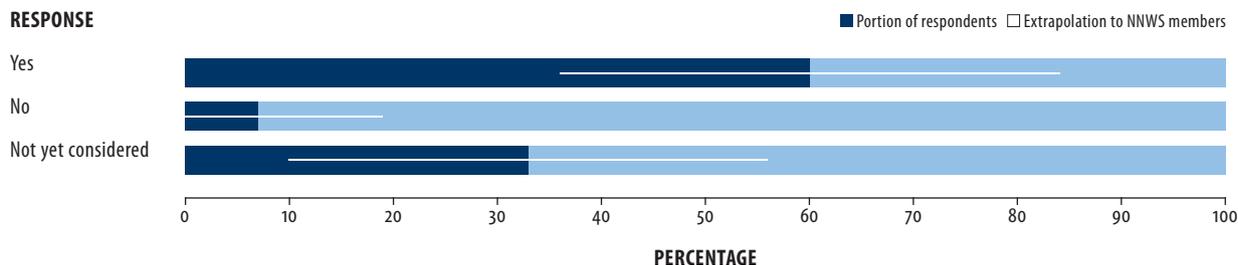


Chart 4 Would your country be willing to publicly encourage or support a greater role for the IAEA in disarmament verification, for example through a country statement to the IAEA General Conference?



through previous General Conference Resolutions). When asked whether they would be prepared to do this, one-third of respondents had yet to consider the issue. As such, it is hard to predict how IAEA member states will demonstrate their support for an agency role in verifying nuclear disarmament.

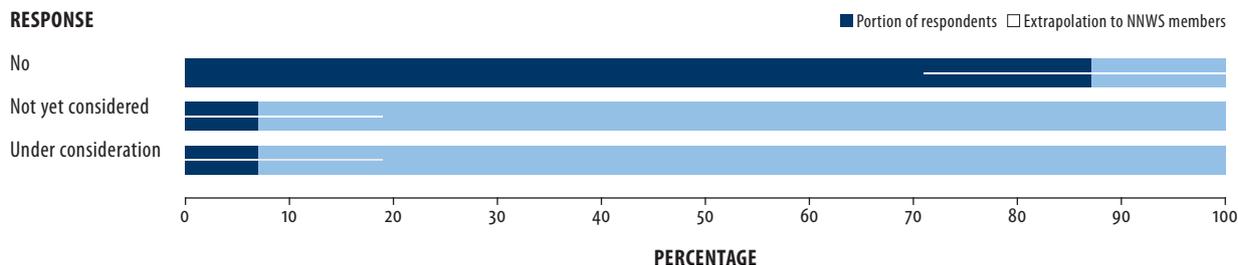
There is disagreement among NNWS members of the IAEA on how the agency and its policy-making organs should explore the agency's role in verifying nuclear disarmament. None of the five options given for furthering discussion of this issue received unanimous support among respondents. However, 80 per cent of respondents supported the creation of a 'long-term plan' specifying roles, capacity-building and resource requirements for nuclear disarmament verification. This suggests that at least 61 per cent of NNWS members would support such a plan.

Few IAEA member states would rule out supporting the IAEA's capability to verify nuclear disarmament through the provision of expertise or finance. The majority of respondents were either considering this issue or had yet to consider it. This suggests that a significant portion of member states do not yet have a clear position on how to support the IAEA's capability to verify nuclear disarmament. However, those respondents that were able to answer did so primarily in the affirmative. None ruled out the provision of expertise, and only one ruled out the provision of funding.

4.3 Additional international options

The largest reductions in nuclear weapons to date have been made by the US and Russia under the Strategic Arms Reduction Treaties (START). These were verified bilaterally, with no involvement from the IAEA. As such, it is worth considering whether IAEA member states feel that the agency is in fact best suited for verifying

Chart 5 Does your country consider that a new international body dedicated to verifying nuclear disarmament should be established, outside the IAEA?



nuclear disarmament. Future steps towards nuclear disarmament could be verified bilaterally, or by an alternative multilateral arrangement or institution.

Aside from comments supporting the START process, IAEA member states have said little on the subject of alternative multilateral options for disarmament verification. What discussion exists on this topic is reflected in a set of Working Papers submitted by the Non-Aligned Movement (NAM) to the 2015 NPT Review Conference process. These papers call for ‘the establishment by the 2015 Review Conference of a standing committee to ‘monitor and verify’ steps taken by NWS towards nuclear disarmament. While the rest of the Review Conference did not adopt these calls, it raises questions regarding whether other international bodies should complement or replace the IAEA’s role in verifying nuclear disarmament. As such, member states were asked:

1. Does your country consider that a new international body dedicated to verifying nuclear disarmament should be established, outside of the IAEA?
2. Does your country consider that nuclear disarmament verification should have no involvement by inter-governmental organisations whatsoever?

Very few NNWS members currently feel that a new international body should be created to verify nuclear disarmament. None of the respondents thought that creating such a body was necessary, including those respondents from the Non-Aligned Movement. However, almost one-third of respondents were unable to give a response at this time—making it challenging to hypothesise about the settled views of all NNWS members.

5. Conclusions

Statements to the IAEA General Conference (discussed in section 2.2) suggest there is a desire to highlight and clarify the scope of the agency's role in verifying nuclear disarmament, and the steps it should take to maintain its ability to fulfil this role. These statements also demonstrate clear support for the IAEA's role in verifying nuclear disarmament. It is less clear from these statements whether this support extends to a *broad* IAEA role in verifying nuclear disarmament.

VERTIC carried out a survey between 2014 and 2015 to assist in this debate by generating more clarity and detail on member state views. The results from the survey suggest that nearly all NNWS members of the IAEA feel that the agency should have a broad role in verifying nuclear disarmament. As discussed in section 4.1, survey respondents this role should extend from applying safeguards in a disarmed state through verifying nuclear warhead dismantlement, ceasing nuclear weaponisation activities, and disposing nuclear materials.

The survey also suggests that there is broad support for IAEA personnel from NNWS to play an active role in verifying the dismantlement of nuclear warheads if proper information control systems can be put in place. As discussed in section 4.1, At least 61 per cent of non-nuclear-armed member states would reject limiting such involvement to IAEA personnel from NWS with appropriate clearances from their home nation. The UK-Norway Initiative is at present exploring systems to prevent the spread of proliferative information through the verification of nuclear warhead dismantlement. In this sense, the IAEA should prepare itself to play a role in verifying almost all aspects of nuclear disarmament.

There is little desire among IAEA Member states to set up a new stand-alone multilateral institution to verify nuclear disarmament. As discussed in section 4.3, no survey respondents thought that creating such a body was necessary. If parties to the NPT wish to pursue multilateral approaches to verifying nuclear disarmament, the IAEA remains the most obvious multilateral body through which to achieve this.

Opinions are split over how the IAEA should prepare for such roles, and are similarly split over how this issue should be explored within the IAEA. However, as discussed in section 4.2, most member states would welcome a more detailed 'long-term plan' specifying the agency's requirements in this area. Furthermore, section 4.2 demonstrates that member states are keen to build capacity among themselves, so they are better prepared to engage with this issue. They can do this domestically and can also reach out to initiatives that are currently working to develop a range of resources and solutions on this and related issues. These initiatives include:

- The Verification Research, Training, and Information Centre (VERTIC) project on multilateral verification of nuclear disarmament. This project produces seminars exploring historic cases of disarmament verification, workshops to develop and explore hypothetical disarmament verification agreements, and simulations to explore the verified disarmament of hypothetical nuclear weapon programmes.
- The US Department of State and the Nuclear Threat Initiative (NTI) have created an International Partnership for Nuclear Disarmament Verification (IPNDV). This seeks to assess and, potentially, develop approaches to address monitoring and verification challenges across the nuclear weapons lifecycle.
- The UK-Norway Initiative continues to explore information barrier and managed access concepts for nuclear warhead dismantlement verification. The Initiative announced in 2015 that it will seek to work with additional parties during its next programme of activities.

This survey has provided an initial examination of IAEA member state views on an agency role in verifying nuclear disarmament. A more definitive picture of what capabilities the IAEA should maintain, and how member states should cooperate to support this, is desirable. Repeating this survey can help achieve this. A full copy of the survey and its guidance documents can be found in annexes 1 and 2, below, along with contact details for member states that wish to express their views on the agency's role in verifying nuclear disarmament.

Annex 1

Survey of IAEA Member State Views on an Agency Role in the Verification of Nuclear Disarmament: Questionnaire

Country Name

- If you would like your answers to the questions below to not be attributed to your country in any VERTIC reporting, please tick this box.

Section 1: The IAEA'S Role

The IAEA's verification activities typically involve the application and monitoring of 'safeguards' on the countries' nuclear programmes. In the past, however, the IAEA has carried out missions to verify aspects of nuclear disarmament in countries such as South Africa, Iraq and Libya as well as having examined options for verifying sensitive forms of fissile material.⁵ This section poses questions on the desirability of a greater role for the IAEA in nuclear disarmament verification.

1. Does your country consider that the IAEA should have an active role in verifying future cases of nuclear disarmament?

- Yes
 No
 Not yet considered
 Under consideration
 No view

Other comments

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2. Which of the following disarmament steps do you consider that the IAEA should be involved in verifying?
(Please tick as many as apply from the list below.)

- Application of safeguards to all non-sensitive forms of nuclear material in former nuclear-armed states;
- Decommissioning of enrichment and reprocessing facilities used in weapons production, or their conversion to non-military purposes;
- Decommissioning of warhead delivery systems, or their conversion to non-nuclear roles;
- Dismantlement of nuclear warheads and other nuclear explosive devices, and disposition (destruction/storage/recycling for other uses) of weapons-grade nuclear material in sensitive forms;
- Disposition of weapons-grade nuclear material in non-sensitive form;
- Cessation of nuclear weaponisation research and development and associated capabilities, including decommissioning, conversion or removal of facilities and non-nuclear items specifically involved in production of nuclear weapons;

Other activities?

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3. Does your country consider that the IAEA should maintain, for the purpose of any verification missions addressing the dismantlement of nuclear warheads and weapons programmes:

a. A dedicated in-house capacity ready to engage in missions of this kind?

- Yes
- No
- Not yet considered
- Under consideration
- No view

Other comments

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b. A roster of external experts for the same purpose?

- Yes
- No
- Not yet considered
- Under consideration
- No view

Other comments

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c. A combination of the above?

- Yes
- No
- Not yet considered
- Under consideration
- No view

Other comments

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d. Other?

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4. If the IAEA is involved in verifying the dismantlement of nuclear warheads and weapons programmes, should:

- a. Only IAEA personnel who are nationals from nuclear-weapon states and hold appropriate weapon clearances in their home countries be engaged in direct verification activities?

- Yes
- No
- Not yet considered
- Under consideration
- No view

Other comments

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b. Other IAEA personnel who are nationals of non-nuclear-weapon states can be involved in the field and in information analysis, if suitable systems are developed to ensure proliferation sensitive information is not released to them?

- Yes
- No
- Not yet considered
- Under consideration
- No view

Other comments

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Section 2: Interest in Issue and Preparedness Activities

This section asks respondents about their level of engagement in the issue of disarmament verification, as well as their current openness to exploring the role of the IAEA as a disarmament verification authority. It furthermore asks what kind of resources—in terms of human and financial resources, if any—respondents would be willing to contribute in order to boost the disarmament verification capacity of the IAEA.

5. Would your country like to participate in capacity building, development and training activities on nuclear disarmament verification issues including technology, technical activities and procedures, policy and law? *Such activities will deepen the level of knowledge and expertise among stakeholders and increase the number of countries with the capacity to engage in disarmament verification issues and activities.*

- Yes
 No
 Not yet considered
 Under consideration
 No view

Other comments

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6. Does your country consider investigations into the potential roles and activities of the IAEA in disarmament verification to be important? *Such activities can include practical analysis, studies and exercises for cost and capability assessments, development of technical verification procedures, monitoring of State and other stakeholder views, and other engagement with IAEA and member states' diplomatic and technical personnel.*

- Yes
 No
 Not yet considered
 Under consideration
 No view

Other comments

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7. Does your country consider it important to be involved in discussions on the IAEA's role in disarmament verification?

- Yes
- No
- Not yet considered
- Under consideration
- No view

Other comments

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8. Would your country be willing to publicly encourage or support a greater role for the IAEA in disarmament verification, for example through a country statement to the IAEA General Conference?

- Yes
- No
- Not yet considered
- Under consideration
- No view

Other comments

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9. Would your country like to see one or more of the following steps addressing the potential role of the IAEA in disarmament verification (tick all that apply):

- IAEA director-general report
- Agenda item for the IAEA General Conference
- Agenda item for the IAEA Board of Governors
- Referenced in the annual resolution on IAEA safeguards.
- Dedicated resolution to be debated at an IAEA General Conference
- IAEA 'long-term plan' specifying roles, capacity-building and resource requirements for nuclear disarmament verification.

10. Would your country be prepared in the future to contribute either of both of the following to boost the IAEA's capacity to engage with nuclear disarmament verification?

a. Funding

- Yes
- No
- Not yet considered
- Under consideration
- No view

Other comments

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b. Expertise

- Yes
- No
- Not yet considered
- Under consideration
- No view

Other comments

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Section 3: Additional International Options

The above questions explore options for a more formalised and routine role for the IAEA in disarmament verification. This section explores additional or alternative arrangements in the international sphere for verifying nuclear disarmament. It considers the possibility of forming a new international body dedicated to nuclear disarmament verification, and for no intergovernmental involvement in nuclear disarmament verification at all.

11. Does your country consider that a new international body dedicated to verifying nuclear disarmament should be established, outside of the IAEA?

- Yes
- No
- Not yet considered
- Under consideration
- No view

Other comments

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12. Does your country consider that nuclear disarmament verification should have no involvement by intergovernmental organisations whatsoever? If so, please explain in the box below which arrangements your country might support instead. *These arrangements may include unilateral declarations, bilateral verification (i.e. one state verifying another) or a multilateral process of verification involving several governments. Please also indicate which particular disarmament steps these arrangements may apply to.*

- Yes
- No
- Not yet considered
- Under consideration
- No view

Other comments

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Annex 2

Survey of IAEA Member State Views on an Agency Role in the Verification of Nuclear Disarmament: Guidance Document

1. Overview

This survey seeks to gather official views of member states of the International Atomic Energy Agency as to the potential role of the IAEA as a verification authority for nuclear disarmament, and on increasing the capacity of the agency and its member states to engage in disarmament verification issues and activities. It also considers whether alternative arrangements might be appropriate. The survey is being run by VERTIC as part of a project funded by the Norwegian government that is investigating the technical and political issues associated with multilateral approaches to nuclear disarmament verification.

By identifying and collating member state views, we hope to establish a deeper understanding of states' interests, concerns and level of familiarity on this issue. This will help to enhance work in this field by clarifying priorities and shaping work activities into the future. We recognise that many countries may not have specific positions on the IAEA's role in disarmament; as such we are interested in *views*, or at least an indication as to the status of consideration of this issue.

The aim of this survey is therefore to explore member state:

- Willingness and capacity to explore and pursue the multilateral verification of disarmament agenda;
- Willingness and capacity to support a role for IGOs, and in particular the IAEA, in multilateral disarmament verification;
- Levels of knowledge on disarmament and verification; and
- Views on the prioritisation of IAEA tasks.

Those familiar with the IAEA and this issue area may already have some understanding of this issue. However, using a systematic and structured approach to gathering state views allows for a thorough, unbiased and detailed appraisal that will be important for enabling informed and sustainable progress to be made in the disarmament verification field. In order to establish a broad baseline of views, we have also collected public statements relevant to disarmament verification made by member states to date in the IAEA forum and elsewhere.

2. Results, data handling and confidentiality

We hope countries will be keen to participate in this survey. Results will be fed back to member states (with provisions for anonymity where requested) in the first quarter of 2015 and we hope that by carrying out this survey we will be able to inform and contribute to the continuing debate among IAEA parties as to the appropriateness of its engagement with disarmament verification. This survey also offers all states an opportunity to air their views on this issue on an equal platform, outside of negotiating bodies. All states answers will be given equal consideration in VERTIC's analysis.

Results from the survey will be collected, analysed and presented in the form of a short briefing paper. Analysis will be carried out according to indicators such as bloc membership, presence of significant nuclear activities within a state, nuclear weapon-holding status, world region, GDP per capita and so on. Results will be presented along with short explanatory text and accompanying graphics. This document will be distributed to all Vienna missions of IAEA member states (as noted, in the first quarter of 2015).

We understand, however, that countries may not be comfortable making their views known to other member states on the issue under examination. The survey therefore begins with a box in which states can request for their answers to be non-attributable to them in reporting by VERTIC. Countries that choose to respond anonymously in this fashion will be included in the analytical process, but their specific responses will not be attributed to them. We are furthermore happy to address any concerns states may have over confidentiality.

3. VERTIC's project

The project under which this survey is being conducted has been running since 2011 and will continue until at least mid-2015. It is forward-looking in that it seeks to propose and develop ground-breaking practical solutions to disarmament verification questions, while also building on the work of past initiatives—such as that on nuclear warhead dismantlement verification run between the UK and Norway over recent years. This survey is being conducted in that fashion. It addresses a potential *future* role for the IAEA in disarmament verification, but asks also what consideration, if any, should be given *now* to preparing the agency for such tasks.

The work of our and other initiatives in this area has led to a steady rise in the state of knowledge regarding nuclear disarmament verification. VERTIC's current project seeks to address the issue in a more comprehensive manner than has previously been undertaken. It looks at multiple facets of the issue, from technical and logistical challenges (particularly with regard to proliferation and security concerns), to designs of models, concepts and possible verification protocols.

It also investigates who might be best-suited to conducting disarmament verification missions, what kind of capacity and development activities might be required to deepen levels of expertise and involve more countries, and what institutional and international arrangements could facilitate disarmament verification in the long term. The accompanying survey is, therefore, only one facet of work on this issue being conducted by VERTIC. We envisage that it will be conducted again in the period between 2015 and 2020.

4. Defining disarmament verification

‘Disarmament verification’, in this context, is used as an umbrella term covering verification of any or all of the following range of activities:

- The application of safeguards to all non-sensitive forms of nuclear material in former nuclear-armed states;
- The decommissioning of enrichment and reprocessing facilities used in weapons production, or their conversion to non-military purposes;
- The decommissioning of warhead delivery systems, or their conversion to non-nuclear roles;
- The dismantlement of nuclear warheads and other nuclear explosive devices, and disposition (i.e. destruction/storage/recycling for other uses) of weapons-grade nuclear material in sensitive forms;
- The disposition of weapons-grade nuclear material in non-sensitive form; and
- The cessation of nuclear weaponisation research and development and associated capabilities, including decommissioning, conversion or removal of facilities and non-nuclear items specifically involved in production of nuclear weapons.

Please note that in the context of this survey, disarmament refers to *any* country disarming, whether alone or with others as part of a pact. It is not focused specifically at NPT nuclear-weapon states, non-NPT weapon states, or others. Rather we are looking at all possible disarmament scenarios and initiatives—whether unilateral, bilateral or multilateral; voluntary or forced. Please note also that we use the term ‘sensitive’ to refer to nuclear material to which access may be restricted due to proliferation concerns and/or states’ own national security restrictions.

5. Survey details

The survey is short, containing 12 questions. Questions have a ‘Yes/No’ answer formulation, with additional options for ‘Not yet considered’, ‘Under consideration’ and ‘No view’. Most questions pose a single query, while some have a list of options against which to answer Yes/No etc. All questions also contain a box underneath that respondents may use to elaborate on their answer or to add a clarification, if they wish. We would encourage respondents to add as much information as they feel relevant.

The survey methodology has been reviewed by a professional survey company to confirm that it meets good practice standards. It is being circulated by email to the Vienna missions of all IAEA member states, and we can also send hard copies if requested. *We would be grateful if member state delegations can return the survey to us by October 2014.*

6. Issue background: the IAEA and disarmament

In terms of the underlying rationale for this questionnaire, the IAEA statute provides a mandate for the agency to conduct its activities in accordance with ‘policies of the United Nations furthering the establishment of safeguarded worldwide disarmament and in conformity with any international agreements entered into pursuant to such policies.’ The safeguards resolution adopted at the 2013 IAEA General Conference highlights this article of the IAEA statute. In addition, member states have, either individually or through country group positions, recognised the role of the IAEA in nuclear disarmament verification activities.

Over the past 25 years, the IAEA has been involved in verifying aspects of nuclear disarmament on several occasions. In the early 1990s, the IAEA was tasked with confirming that South Africa had disarmed its nuclear arsenal. The 1990s also saw the IAEA conduct disarmament verification activities in the field in Iraq, an activity that was also briefly resumed in late 2002. In addition, the IAEA has also carried out disarmament verification-related activities in Libya in the mid-2000s.

The IAEA’s role in Iraq was determined by specific UN Security Council resolutions and characterised by complex institutional arrangements and relations with other international bodies and governments. Similar complexities applied to the IAEA’s activities in Libya, and also to IAEA involvement in denuclearisation ambitions for North Korea.

Aside from its work in the field, from 1996 to 2002 the IAEA was involved in research into how it could verify classified forms of fissile material—a task closely associated with nuclear disarmament—and the organisation is expected to serve as the verification authority for the US-Russian Plutonium Management and Disposition Agreement (PMDA).

Of these six examples, three took place in post-conflict environments (Iraq, twice, and Libya) while two (South Africa and the PMDA) were not. For its part, North Korea remains a special case. These differences aside, important lessons on how to manage disarmament verification activities can be learned from each of the examples in terms of how an intergovernmental organisation—in this case the IAEA—organises its missions, selects its personnel for field activities and other tasks, and gathers, shares and stores information. Lessons can also be learned regarding the kinds of relationships the IAEA may have with other intergovernmental organisations and governments involved in disarmament verification efforts, and how working practices and confidence in the missions may be affected by such arrangements.

The IAEA's involvement in the above examples has been ad hoc due to the sporadic nature of instances of disarmament to date and the widely differing circumstances of each mission. This survey, and VERTIC's wider project, are investigating how the IAEA can plan for a more routine and formalised role in disarmament verification. It also considers how to deepen the level of knowledge and expertise among stakeholders and increase the number of countries with the capacity to engage in disarmament verification issues and activities.

Such investigations and activities should help to define and equip an international body with the capability and confidence from member states to engage in disarmament verification activities into the long-term. It will be important to have such verification capacity, endowed with a strong level of confidence and assurance, ready for deployment when disarmament activities move forward.

The accompanying questionnaire therefore addresses the suitability of the IAEA to engage in these, and other, disarmament-related verification roles, as well as what in the way of preparatory work should be set in motion now so that the agency, and the member states that support it, are well-prepared if called upon to carry out disarmament verification in the future. The questionnaire also considers what non-IAEA-related arrangements might be suitable.

Endnotes

- 1 See Medium Term Strategy 2006–2011, pp. 17 and 19. Contributing to nuclear disarmament remains a mid-term strategic goal for the agency; see Medium Term Strategy 2012–2017, pp. 1 and 6.
- 2 These member states were: Algeria, Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Egypt, Malaysia, Mexico, New Zealand, Nicaragua, Norway, Peru, Philippines, Singapore, South Africa, Switzerland, Uruguay, and the Bolivarian Republic of Venezuela
- 3 This trend extends beyond the IAEA, with groups of NPT NNWS (such as the New Agenda Coalition and the Non-Aligned Movement – representing a total of 124 states) reiterating their support in Working Papers submitted to the 2015 NPT Review Conference Process.
- 4 A 95 per cent confidence level is most commonly used in social sciences.
- 5 This survey uses the term ‘sensitive material’ to refer to material forms to which access and information is restricted under national security measures and/or for non-proliferation purposes.

