



# Food-for-Thought Paper: Transparency, Verification, and Confidence- Building in the Context of Nuclear Disarmament

Working Group 1: Monitoring and Verification Objectives  
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## Introduction

This paper explores the role of transparency in the context of nuclear disarmament. Transparency involves the appropriate disclosure of credible information in a range of contexts.

This paper canvasses what transparency is and why it matters for nuclear disarmament. The paper considers some key characteristics of transparency measures, identifying two broad categories—formal and informal—and discussing the important contribution of each. The paper notes who will have access to information disclosed under transparency measures will vary with the context; explores the role of transparency in confidence-building and verification; and acknowledges some of the constraints on transparency. The paper concludes that identifying and implementing optimal transparency measures will be critical to overcoming the challenges posed by nuclear disarmament verification, and suggests that attention should turn to how to apply the concept of transparency to each step of nuclear disarmament verification, commencing with warhead dismantlement.

## What Is Transparency?

Transparency is at its core a simple concept. It involves the appropriate disclosure of credible information. For some, such disclosure counts as transparency whether done voluntarily or as part of a legally binding verification regime. Others may define transparency more restrictively.

Transparency is an important concept in international security. An enhanced level of transparency in armaments contributes greatly to confidence-building and security among States. It can help reduce misunderstandings and create an environment of predictability and trust. Transparency has also become linked with the concept of accountability. In the context of disarmament, effective transparency measures can play the role of an accountability mechanism.

## Why Transparency Matters

Transparency and verification are clearly deeply intertwined. Action 2 of the 2010 Nuclear Non-Proliferation Treaty (NPT) Action Plan acknowledged transparency and verification as two of the three principles of nuclear disarmament (the third being irreversibility). Under Action 2, NPT States parties committed to apply all three principles in relation to implementing their NPT obligations on nuclear disarmament.<sup>1</sup> The principle of transparency in fact underpins the other two principles. Without transparency, nuclear disarmament could neither be verified because there would be insufficient credible information for verification to be meaningful, nor would States parties to the NPT have complete confidence that nuclear disarmament measures had been accomplished in an irreversible manner.

Transparency is thus essential for nuclear disarmament. Transparency, meaning disclosure of credible information regarding nuclear weapons and capabilities, is a precondition for further progress on nuclear disarmament and its verification.

## Types and Key Characteristics of Transparency Measures

Transparency can be regarded as encompassing a wide range of measures. Any given transparency measure can be assessed according to the interplay of several distinct characteristics, each of which has its own spectrum.

### KEY CHARACTERISTICS OF TRANSPARENCY MEASURES (each with its own spectrum)

Voluntary (non-binding)	—————>	Legally binding obligation
Increased confidence as goal	—————>	Verification as goal
Low cost	—————>	High cost
Less formal	—————>	More formal
Nature/extent of disclosed information decided solely by disclosing State prior to any treaty	—————>	Nature/extent of disclosed information determined by treaty obligations

Although these characteristics are distinct, they are mutually related. For example, a relatively high cost is often (though not always) involved if verification is the goal.

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<sup>1</sup> Action 2 of the 2010 NPT Action Plan is as follows: “All States parties commit to apply the principles of irreversibility, verifiability and transparency in relation to the implementation of their treaty obligations.”

Two broad categories of transparency measures emerge from an examination of the relationships among the characteristics described above. As a convenient shorthand, this paper refers to those categories as “formal transparency measures” and “informal transparency measures.”

*Formal transparency measures* can be characterized as involving highly detailed information disclosed at relatively high cost. They tend not to be voluntary. Instead, they would generally have arisen from a legally binding obligation as part of an arms control agreement’s verification regime, and to have the goal of assuring others of treaty compliance.

*Informal transparency measures*, by contrast, are more likely to involve information provided voluntarily at relatively low cost for the purpose of general confidence-building (for example, in order to reduce misunderstandings and to create an environment of predictability and trust).

Of course, this dichotomy is not the full picture. For example, a given transparency measure may display a number of characteristics of what is generally the more formal side of the spectrum (the right column in the above diagram)—for example, entailing high-cost disclosure under a legally binding treaty obligation, with the nature and extent of disclosed information determined by that treaty obligation. But that very same transparency measure might in one or more other respects exhibit characteristics at the less formal side of the spectrum (the left column in the above diagram), such as having the goal of increased confidence. Also, some aspects of transparency are not easily depicted by the formal/informal dichotomy. For example, information disclosed under transparency measures may be made publicly available in some cases, whereas in other cases access to disclosed information may be far more restricted. Despite these limitations of the dichotomy, in some settings it can be helpful to conceive of transparency measures as broadly divided into formal and informal categories.

Information disclosed through transparency measures may be about strategic goals, doctrines, intentions, capabilities, or deployments. Typical formats encompass public statements, military doctrines, posture reviews including plans for modernization and downsizing, country reports, official notifications of stockpiles, operational status of nuclear components, and information released as part of a bilateral or multilateral agreement (for example, as part of data exchange provisions or opening facilities for familiarization visits or to inspectors).

Information may be disclosed by States along a spectrum of scenarios: on a voluntary and unilateral basis, or pursuant to politically binding commitments, or pursuant to legally binding obligations.

Agreed outcomes of NPT Review Conferences are significant because they affect how NPT obligations are interpreted. Examples of such agreed outcomes include the 2010 NPT Action Plan. Although not legally binding in their own right, agreed outcomes of NPT Review Conferences have a special significance to the extent that they constitute a subsequent agreement or practice within the meaning of Article 31(3)(a) or Article 31(3)(b) of the Vienna Convention of the Law of

Treaties 1969.<sup>2</sup> This is relevant in considering outcomes of NPT Review Conferences regarding transparency and related issues.

## The Joint Contribution of Formal and Informal Transparency Measures

Both formal and informal measures are important elements of the confidence-building toolkit. Informal transparency measures can serve to underpin progress on verification. One example of an informal transparency measure that can underpin verification is information provided to the legislature of a nuclear weapon State (NWS) about that State's nuclear weapon capabilities and holdings. Such information adds to the pool of available data against which information disclosed under verification regimes can be cross-checked. And the International Partnership for Nuclear Disarmament Verification (IPNDV) itself provides an example of a fairly informal verification-related initiative that enhances transparency and builds confidence by facilitating flows of credible information about how States can best cooperate to facilitate nuclear disarmament.

Verification as a formal transparency measure provides a high degree of confidence regarding the correctness and completeness of certain specific information. It can provide more certainty and is therefore an essential part of any nuclear disarmament agreement. As nuclear weapon stockpiles are reduced, the demands on verification will grow.

Increased certainty, however, comes at a price and the cost of verification can be high, so verification is not always the most efficient or even effective tool to build confidence. Informal transparency measures have an important and complementary role of building trust and reducing tension, especially as parties are working through the technical and/or political challenges of effective verification.

Monitoring and verifying nuclear disarmament obligations may be highly challenging or virtually impossible in the absence of credible baseline information (for example, on the numbers and types of nuclear warheads and on the material inventory of a State subject to inspection). Most arms control and disarmament agreements therefore contain provisions for initial disclosure of information upon a State becoming party to the agreement, and also provisions for subsequent, periodic information disclosure by that same State. Only with the initial or baseline inventory can nuclear disarmament verification proceed.

The need for credible and specific information will only grow as nuclear disarmament progresses. When we reach the "minimization" point where nuclear weapons are reduced to very low

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<sup>2</sup> Vienna Convention on the Law of Treaties 1969:

"Article 31 – General Rule of Interpretation ...

3. There *shall* be taken into account, together with the context:

(a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;

(b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;" (emphasis added)

numbers, the international community will need technical and systematic mechanisms to detect and monitor smaller items and quantities of nuclear material. Such mechanisms are indispensable for reaching and maintaining a world free of nuclear weapons with high confidence.

Monitoring and verifying dismantlement and disposition of nuclear weapons will need to be complemented by measures that give assurance that no undeclared production of nuclear weapons or nuclear materials is being conducted. Such monitoring and verifying would be highly challenging or virtually impossible without a high degree of “formal” transparency on the numbers and types of nuclear warheads and on materials. Formal transparency measures are thus indispensable for nuclear disarmament verification.

Informal (generally voluntary) transparency measures outside of agreements or treaties, prior to any formal agreement, can also facilitate verification. First, such informal transparency measures can establish confidence among States and create favorable conditions for States to negotiate and conclude agreements with more intrusive verification measures. Second, they can contribute to establishing data consistency over time. Informal transparency measures are thus not only indispensable but can serve as an enabling factor for verification. Some States indeed unilaterally and informally provide information on their nuclear arsenals and material holdings. For example, the United States reported to the 2015 NPT Review Conference that its total stockpile of active and inactive nuclear warheads was 4,717 as of September 30, 2014.<sup>3</sup>

The NPT is currently the only framework in which NWS have committed to providing greater transparency about their nuclear arsenals. Further discussion is needed on what kind of information should be provided under this mechanism.

## **Who Has Access to Information Under Transparency Measures?**

One key question in any specific instance of transparency concerns transparency—to whom will information disclosed under transparency measures be provided? In some cases, disclosure may be made publicly. In treaty-mandated verification regimes, disclosure will in some cases be more restricted. Because not all verification regimes share identical verification objectives, differing functions and capabilities are needed across regimes.

One example is the regime established by the Comprehensive Nuclear-Test-Ban Treaty (CTBT). Neither the International Data Centre (IDC) nor the Technical Secretariat of the CTBT Organization (CTBTO) is empowered to draw conclusions as to the nature of any suspicious incident. It is for Member States to make such judgments and take any relevant action. Based on this general principle, the IDC collects the data and the Preparatory Commission for the CTBTO

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<sup>3</sup> This report was updated on January 11, 2017, by the White House *Fact Sheet: The Prague Nuclear Agenda*, available at <https://obamawhitehouse.archives.gov/the-press-office/2017/01/11/fact-sheet-prague-nuclear-agenda>. According to this Fact Sheet, “As of September 2016, the U.S. active stockpile of nuclear warheads consisted of 4,018 warheads.”

makes it available to Member States of the treaty. All CTBT Member States are granted equal access to all verification-related information.

By contrast, the implementation of International Atomic Energy Agency (IAEA) Safeguards involves the IAEA not only collecting information but also evaluating Safeguards activities and drawing Safeguards conclusions. Because it is the IAEA rather than Member States that draws a Safeguards conclusion for each State with a Safeguards agreement in force, it is logical that the extent of verification-related information disclosed to third parties should differ from what would occur in the CTBT context. Information made known to the IAEA under Safeguards agreements need not be disclosed to all NPT parties or to all IAEA Member States.

## **Transparency Measures as Confidence-Building Measures**

In relation to arms control and disarmament, transparency has often been discussed in the context of confidence building among States. It is true that transparency measures can be expected to build confidence among States. Transparency measures form important elements of the confidence-building toolkit, and are regarded as a subset of confidence-building measures (CBMs). For example, in identifying several CBM categories in a 2001 article, Ambassador Piet de Klerk (later co-chair of IPNDV Working Group 1) has described “information measures” and “notification measures” as being both CBMs and “transparency measures.”

In order to meet the challenge of eliminating nuclear weapons, a strong foundation of confidence must be built. This has several dimensions. Confidence among NWS is important, and here the “P5” dialogue can help reduce tensions and promote communication. Confidence between NWS and non-nuclear weapon States (NNWS) is also crucial: the NPT relies on confidence in the implementation of both non-proliferation and disarmament obligations as mutually reinforcing processes, and the IPNDV is one means of developing broad-based relationships between NWS and NNWS. Confidence among NNWS also matters: non-proliferation is in the interest of NNWS. Some degree of confidence is necessary between the inspected and inspecting parties in relation to verification activities. In this regard, the UN High-level Fissile Material Cut-off Treaty Expert Preparatory Group is working to increase transparency and confidence among States, in discussions about a future treaty’s verification regime. The format of the Preparatory Group is especially conducive to frank and open discussions on sensitive issues that may not otherwise occur, even in the context of a negotiation. Finally, there must be confidence in the nuclear non-proliferation and disarmament regime itself, with the NPT at its heart.

When confidence falters, it not only makes progress harder but threatens to unravel hard-fought progress already made. Although transparency can help build confidence, lack of confidence can affect transparency negatively. This is because, in times of political tension, States tend to view transparency as inimical to security. This is a paradox because transparency is an effective tool in times of political tension. Efforts to promote transparency measures involve a process whereby confidence gradually increases and facilitates more advanced steps.

The NPT has long recognized that nuclear disarmament and achieving the peace and security of a world without nuclear weapons require openness and cooperation, and affirmed the importance of enhanced confidence through increased transparency and effective verification.

National reporting by States on issues relevant to nuclear disarmament is a significant example of transparency and CBMs. One helpful classification of CBMs identifies five types: information measures, notification measures, communication measures, access measures, and constraint measures. This typology was set out in 2001 by IPNDV Working Group 1 co-chair Piet de Klerk, who suggested that information measures and notification measures both constitute “transparency measures.” Reporting is an example of both an information measure and a notification measure that can help build confidence. It is a practical and effective tool to achieve greater transparency.

Reporting has been a method for strengthening accountability since the Preparatory Committee for the 1985 NPT Review Conference first invited the nuclear-weapon States to “provide information relevant to the implementation of various articles of the Treaty, including especially article VI,” as mentioned in the Final Document of the 1985 NPT Review Conference (NPT/CONF.III/64/I). Numerous transparency arrangements exist in other forums, such as the 1998 IAEA Guidelines for the Management of Plutonium (INFCIRC/549).

“Information” provided by the NWS at the 1995 NPT Review and Extension Conference, where the NPT’s indefinite extension was discussed and agreed upon, was quite significant in terms of its scope and contents. Subsequently, however, even though “regular reporting” on the implementation of article VI was included as one of the 13 practical steps at the 2000 NPT Review Conference, actual reporting by the NWS was sporadic and informal. Against this backdrop, the 2010 NPT Review Conference agreed upon the need for a standard reporting form. The Action Plan included significant actions (especially 20 and 21) on reporting by States parties on their implementation of the Action Plan and of its predecessor documents.

Transparency has also played an important role in strengthening the NPT review process itself, important for maintaining confidence in the nuclear non-proliferation and disarmament regime. Strengthening the review process was first agreed upon at the 1995 Review and Extension Conference as an integral part of the indefinite extension of the Treaty. The essential significance of this issue was that it ensured, among other things, accountability, in particular of NWS, in exchange for indefinitely extending the Treaty.

Reporting is an effective instrument both for providing greater transparency on nuclear disarmament activities and for greater accountability as a part of the strengthened review process. Indeed, “regular reports” were agreed upon at the 2000 and 2010 Review Conferences “within the framework of the strengthened review process,” which demonstrates the relationship between reporting and strengthening the review process.

Action 20 of the 2010 NPT Action Plan calls for “regular reports” not just by the NWS, but by all States parties to the NPT, and not just on nuclear disarmament, but on all three pillars of the Treaty. We note, however, the special responsibility of the NWS to report on their nuclear disarmament activities and the fulfilment of their obligations and commitments under the Treaty.

Although the submission of NWS reports in 2014 and 2015 were an important first step, these reports were based on a “common framework” rather than on a “standard reporting form.” This makes it difficult to benchmark performance and to gauge progress in future reports. In order to build confidence, enhance accountability and strengthen the NPT review process, the NWS should agree on a standard reporting form, and continuously work to improve the quantity and quality of the information provided. This would not only be consistent with action 21 of the 2010 NPT Action Plan, but would improve the transparency of the NWS reports by making the information more accessible.

The 12 countries of the Non-Proliferation and Disarmament Initiative (NPDI) have provided a draft standard nuclear disarmament reporting form with specific items on which the NWS could provide information, including the quantity, types, and status of nuclear warheads and their delivery systems.<sup>4</sup> The NPDI has also provided a draft reporting template for NNWS to use to fulfil their action 20 commitment of the 2010 NPT Action.<sup>5</sup>

## How Transparency Can Contribute to Verification

In addition to the role of transparency as confidence-building measures, transparency plays an essential role in verification by providing the means of achieving greater assurance that compliance with commitments is actually occurring. This latter contribution of transparency measures is also a core attribute of verification mechanisms.

The 2010 NPT Action Plan acknowledged that “nuclear disarmament and achieving the peace and security of a world without nuclear weapons [would] require openness and cooperation” and affirmed “the importance of enhanced confidence through increased transparency and effective verification.”<sup>6</sup> By Action 19, the NPT State Parties agreed on the importance of cooperation aimed at increasing confidence, improving transparency, and developing efficient verification capabilities related to nuclear disarmament.

Transparency has multifaceted roles in the verification context. As noted above, information disclosed through transparency measures in the context of arms control and disarmament can

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<sup>4</sup> Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, *Transparency of Nuclear Weapons: The Non-Proliferation and Disarmament Initiative*, NPDI Working Paper NPT/CONF.2015/PC.I/WP.12 (Vienna, Austria: April 20, 2012), available at <http://www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/prepcom12/documents/WP12.pdf>.

<sup>5</sup> 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, *Transparency by Non-Nuclear-Weapon States Parties: Joint working paper submitted by the members of the Non-Proliferation and Disarmament Initiative (Australia, Canada, Chile, Germany, Japan, Mexico, Nigeria, Netherlands, Philippines, Poland, Turkey and United Arab Emirates)*, NPDI Working Paper NPT/CONF.2015/WP.17 (New York, March 20, 2015), available at <http://www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2015/documents/WP17.pdf>.

<sup>6</sup> 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, Volume I, NPT/CONF.2010/50 (Vol. I) (New York, 2010), Action 2, at F. “Other measures in support of nuclear disarmament”, i, available at [http://www.un.org/ga/search/view\\_doc.asp?symbol=NPT/CONF.2010/50\(VOL.I\)](http://www.un.org/ga/search/view_doc.asp?symbol=NPT/CONF.2010/50(VOL.I)).



encompass a wide range of information types (e.g., strategic goals, doctrines, intentions, capabilities, and deployments) and disclosure formats (e.g., public statements, reports, official notifications, reporting on stockpiles, etc.). Also significant is the frequency or regularity of information disclosure: the more frequently information is provided, the more transparent the process will be.

When the content and/or extent of disclosed information is subject to verification, there is a direct verification element and the goal is a high degree of confidence regarding the correctness and/or completeness of specific information. In such cases, transparency (in the sense of information disclosure) is a prerequisite for verification. Where information disclosed is subject to a verification regime, the extent to which it provides greater assurance of compliance with commitments will depend upon the extent to which the disclosed information is verified.

However, information provided by transparency measures (and indeed the act of disclosure itself) need not necessarily be subject to verification. Even where information disclosed is not subject to verification, or where a practice of information disclosure does not stem from a verification mechanism, the information or practice may nevertheless contribute to verification outcomes. It might complement an existing verification mechanism. Alternatively, it might assist States to reach a future point where it becomes possible to establish a verification mechanism where none had existed.

Some examples follow of how “non-verification” information disclosure practices (as a form of transparency) can contribute to verification:

- (1) *Information provided by a State in a wider disarmament context* where not subject to verification (e.g., strategic goals, doctrines, intentions, capabilities, etc.): Such disclosure may verify or confirm declarations and reports provided by the relevant State under a verification mechanism. This would complement that mechanism and enable an inspecting party to verify more effectively;
- (2) *Transparency regarding procedural details of on-site inspections (OSIs)*: Increased awareness of what OSIs involve could help both to build confidence and to facilitate verification;
- (3) *Transparency on the part of an inspecting party* itself: This would help gain trust in that inspecting party’s independence and objectivity—not only from parties to the relevant verification mechanism, but perhaps also from third parties having an interest;
- (4) *Commercial satellite imagery and other open source information* relevant to verification: Technological developments make information more readily available and thus enable greater transparency, which can help satisfy verification requirements. Analysis of commercial satellite imagery or other open source information can inform assessments regarding whether there is compliance with the obligations of an agreement.

The role of transparency measures is subject to continuous change. Rapid progress in information and communication technologies continues to cause significant changes in available methods of data collection and analysis. For example, the concept of societal verification has been the subject of helpful academic discussion and study as an interesting area of possible future, additional effort.

## **Constraints on Transparency**

It must be kept in mind that transparency in the area of nuclear weapons has its limits. Disclosure of certain proliferation-sensitive information may be incompatible with NPT obligations, namely under Article I and Article II. It is absolutely necessary to identify which types of information are not to be disclosed in order to avoid infringement of non-proliferation obligations.

National security is also a factor that puts constraints on transparency. Disclosure of certain types of information may confer an undue military advantage on other States. In some cases, uncertainty resulting from secrecy of information may be regarded by States an important part of strategy.

Risks of nuclear terrorism must be taken into account. Certain types of information should not be made available to terrorists. It must therefore be asked which types of information should be protected to prevent terrorists from gaining access to nuclear materials, technology, or facilities.

Other constraints may be related to commercial sensitivities. There are types of information that require protection because disclosure would have adverse implications for commercial interests or intellectual property.

## **Conclusion**

This paper has pointed to the critical role of transparency in building confidence about, and verifying, irreversible nuclear disarmament. National security and non-proliferation concerns present some constraints on transparency. However, the international community's efforts toward overcoming the technical and other challenges posed by nuclear disarmament verification will be heavily reliant on the identification and implementation of optimal transparency measures. The next phase of such international efforts could address how to apply the concept of transparency to each step of nuclear disarmament verification, commencing with warhead dismantlement.

## **About IPNDV: The International Partnership for Nuclear Disarmament Verification**

The International Partnership for Nuclear Disarmament Verification (IPNDV), is an ongoing initiative that includes more than 25 countries with and without nuclear weapons. Together, the Partners are identifying challenges associated with nuclear disarmament verification, and developing potential procedures and technologies to address those challenges. Learn more at [www.ipndv.org](http://www.ipndv.org).

### **About Working Group 1: Monitoring and Verification Objectives**

Throughout Phase I, the IPNDV Monitoring and Verification Objectives Working Group has examined key objectives for monitoring and verifying the dismantlement of a nuclear weapon, including the information, skills and expertise needed to support this process. This group is co-chaired by The Netherlands and the United Kingdom.