

WMD COMPLIANCE & ENFORCEMENT SERIES

PAPER ELEVEN



WMD COMPLIANCE AND ENFORCEMENT IN A CHANGING GLOBAL CONTEXT

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ABBREVIATIONS AND ACRONYMS

BOG	Board of Governors (IAEA)
BTWC	Biological and Toxin Weapons Convention
CBM	Confidence-building measure
CSA	Comprehensive safeguards agreement
CSP	Conference of the States Parties (OPCW)
CWC	Chemical Weapons Convention
DAT	Declaration Assessment Team (OPCW)
EU	European Union
FFM	Fact-finding Mission (OPCW)
IAEA	International Atomic Energy Agency
IIT	Investigation and Identification Team (OPCW)
JCPOA	Joint Comprehensive Plan of Action
JIM	Joint Investigative Mechanism (United Nations–OPCW)
NAM	Non-Aligned Movement
NNWS	Non-nuclear weapon States
NPT	Non-Proliferation Treaty
NSG	Nuclear Suppliers Group
NWS	Nuclear weapon States
OPCW	Organisation for the Prohibition of Chemical Weapons
UNSGM	United Nations Secretary-General’s Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons
WMD	Weapons of mass destruction
WTO	World Trade Organization

FOREWORD

Treaties on weapons of mass destruction (WMD) do not operate in a vacuum. They are shaped by several factors including exogenous events, new technologies, domestic politics and changes in the wider geostrategic context. Understanding these changes is therefore important in seeking to make sense of compliance and enforcement in treaties such as the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the Biological and Toxin Weapons Convention (BTWC), and the Chemical Weapons Convention (CWC).

This report provides a forthright assessment of WMD compliance and enforcement in a changing global context. It explores the impact of great power rivalry on treaties and the scope for the WMD regimes to adapt in an evolving geostrategic context. In doing so, it provides valuable insights into past challenges and future possibilities for treaty regimes. The report has been written by three scholars with considerably expertise on arms control and disarmament agreements. Like all the contributions in the WMD Compliance and Enforcement series, the authors' views are their own.

James Revill
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SUMMARY

- The regimes for the control of weapons of mass destruction (WMD) are essential ingredients of the global order. Yet this order is currently in transition: the bipolarity of the Cold War has given way to a more complex, multipolar world order characterized by conflicts of interest, national egotisms and great power competition rather than cooperative security. This competition brings with it rising strategic uncertainties which endanger stability. Rapid technological developments and the unforeseeable consequences of the current Covid-19 pandemic multiply these uncertainties.
- To address these issues, this report assesses the viability and sustainability in a changing geostrategic context of the compliance and enforcement measures of the three main WMD regimes: the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the Biological and Toxin Weapons Convention (BTWC), and the Chemical Weapons Convention (CWC). It does this by drawing on earlier reports in the WMD Compliance and Enforcement series to advance a forward-looking approach.
- The report begins by outlining four broad yet interlinked approaches to arms control and disarmament: legally binding measures; politically binding measures; normative-aspirational measures; and governance measures involving non-State actors. In the past, States have used different combinations and sequences of tools from these different approaches in the pursuit of arms control and disarmament objectives. Presently, key bilateral or plurilateral legally binding treaties are being abandoned in favour of more informal, less binding normative approaches – if any approach at all. Normative-aspirational approaches can be of value, particularly in uncharted areas that are hard to tackle with traditional instruments. Yet they are limited as a standalone tool. Legally binding instruments remain indispensable for constraining WMD. Ultimately, the most appropriate type of measure for a given problem in a given situation is an issue of function, not principle, and requires united political will.
- The toolbox for ensuring compliance with the non-proliferation obligations under the NPT is in relatively good shape. However, there is room for improvement in detecting and controlling weaponization activities that go beyond the original functions of the International Atomic Energy Agency (IAEA). In addition, improved verification technology and digital analytical techniques could enhance the Agency's power to determine non-compliance. Enforcement remains a weak spot. Divisions in the IAEA Board of Governors and the United Nations Security Council can impede determined reactions to non-compliance.
- The norm against biological weapons appears strong. However, BTWC States parties are fundamentally divided on compliance politics and the Convention would face significant difficulties in the event of an allegation of non-compliance. Accordingly, States might consider whether alternative tools, such as criminal law measures, could and should play a role in ensuring compliance with the BTWC.
- The norm against chemical weapons appears bruised but intact. However, the CWC regime is facing a severe crisis, with competing geostrategic interests resulting in the polarization of the Organisation for the Prohibition of Chemical Weapons (OPCW). Its member States need to overcome the current polarization and agree upon a

determined response to treaty violations. In addition, the OPCW's routine verification operations need to be adapted to changing chemical industry and research landscapes.

- These WMD-related regimes have largely functioning compliance and enforcement systems that have proved capable of adaptation. However, these systems have struggled in the absence of unity among the regimes' membership, but particularly in circumstances of great power division. At present, the role of arms control and disarmament in maintaining and stabilizing order is perceived as a lesser priority to great powers than strengthening their positions in the ongoing rivalry. Ultimately, the emergence, existence, viability and success of arms control and disarmament measures do not depend on their type or structure. Rather, they depend on wilful agency. United memberships and committed great powers make a regime resilient to challenges. In contrast, a divided membership and great power competition may push a regime to ineffectiveness, agony and decay.

1. INTRODUCTION: WMD REGIMES IN AN AGE OF GREAT POWER RIVALRY AND GROWING UNCERTAINTIES

The regimes to prohibit or constrain weapons of mass destruction (WMD) are pillars of the global order.¹ They serve two common goods. First, they help curb the consequences of war by limiting the availability of the most destructive weapons that humankind has invented. Second, they help preserve peace by reassuring States that their neighbours do not pursue the possession of, and would thus not use, these weapons. This reassurance assists in building mutual confidence, mitigating distrust and addressing the security dilemma at large.

The global Covid-19 pandemic has demonstrated the importance of cooperative approaches to addressing global challenges. Cooperative approaches to addressing the global challenge of WMD could have ensured that these regimes remain in good shape. But, on the contrary, these regimes seem to be in trouble, and many observers have highlighted the urgent need for them to be restabilized or strengthened and given an enhanced capability to react to serious violations of their rules in a determined and effective manner.² Ensuring, and eventually enforcing, compliance is an essential requirement for these agreements to fulfill their function for global security. However, the effectiveness of the regimes' tools cannot be taken for granted.

The current regimes are products of the Cold War and the period immediately after. In this bipolar world and its aftermath, arms control and disarmament measures emerged that were rooted in cooperation between the United States of America and the Soviet Union and later the Russian Federation. These regimes built on mutual insight into the national interest in the common good.³ They emerged in an era whose distribution of power and interests has passed. Like the bipolar order, the sense of shared interests has also evaporated. This is compounded by growing uncertainties due to great power rivalry, technological change, the Covid-19 pandemic and domestic politics.

Today's world is witnessing growing power rivalry among three great powers, the United States, China and the Russian Federation, with the latter leaning to China – despite some

1 W. Walker, *A Perpetual Menace: Nuclear Weapons and International Order*, 2012, <https://doi.org/10.4324/9780203239124>.

2 E.g. D.G. Kimball, "Addressing the NPT's Midlife Crisis", *Arms Control Today*, vol. 50, no. 1, Jan./Feb. 2020, <https://www.armscontrol.org/act/2020-01/focus/addressing-npt-midlife-crisis>.

3 A.L. George, "Incentives for U.S.–Soviet Security Cooperation and Mutual Adjustment", in A.L. George, P.J. Farley and A. Dallin (eds.), *U.S.–Soviet Security Cooperation*, 1988, pp. 641–654.

conflicting interests – to balance the United States.⁴ India, an emerging power, shares the United States' concerns about China given its geographical closeness, territorial disputes and competition for regional influence, and it keeps a close eye on its nuclear-armed and China-friendly neighbour, Pakistan. These powers are all locked in an armament competition that includes a nuclear component. In this competition, the boundaries between theatre and globe, tactical and strategic, conventional and nuclear are increasingly blurred.⁵ This blurring raises strategic uncertainties which erode the formerly cherished goal of stability.

These uncertainties are multiplied by rapid technological developments. Emerging technologies, such as nanotechnology, bioengineering, 3D printing, and information technology – with its creation of virtual worlds beside the real one – exacerbate the sense of strategic uncertainty and unpredictability. The uncertainties are further compounded by new players, including the growth of powerful private technological companies around the world that can play an outsized role in affecting the balance of power.

The pandemic has accelerated the transition to an increasingly complex and fragmented world order. It has increased great power competition between the United States and China. The pandemic may affect the balance of resources by harming the economies of some rivals while maintaining, or even affording advantage to, the economies of others. It may strengthen the stability of governments that perform well during the crisis or exploit the pandemic to enhance their domestic control, while undercutting the stability of others. It may deepen tensions through “blame games” or competition over the resources needed to contain the pandemic. For some time, the impact on the power game and thus the shaping of the global order will be marked by “unpredictability bordering on chaos”.⁶

Domestic considerations further exacerbate this situation. Playing on national pride by appearing “tough”, for example through pursuing an “America First” policy, may mobilize some domestic support around leaders. However, unlike in the past when national interest and multilateralism (including multilateral regimes governing WMD) were to some extent viewed as mutually supportive, in the current context the leaders of powerful States tend to see national and international interests in opposition. The Russian Federation is arguably focused on underwriting its claim to a seat at the table of great powers alongside

4 For our purposes, we understand as “great powers” States that are leading in economic strength measured by gross national product (GNP), territorial extension, population, technological development, military posture including possession of nuclear weapons, capability to yield political, economic, cultural and military influence far beyond their own region, and institutional embedding, notably in the United Nations Security Council – and have a willingness to use all these assets to make an impact on the rest of the world. Measured by these criteria, China and the United States are top with the Russian Federation following at some distance. Other powers may be rising (e.g. India, Brazil) or declining (e.g. the United Kingdom, France), but none among them can match the big three now or the near future. See 21st Century Concert Study Group, *A Twenty-First Century Concert of Powers: Promoting Great Power Multilateralism for the Post-Transatlantic Era*, Peace Research Institute Frankfurt (PRIF), 2014, https://www.hsfk.de/fileadmin/HSFK/hsfk_downloads/PolicyPaper_ATwentyFirstCenturyConcertofPowers.pdf, Chapter 4.

5 H. Müller, C. Rauch and I. Wurm, “Introduction: Risks of Great Power Conflict in the 21st Century”, in H. Müller and C. Rauch (eds.), *Great Power Multilateralism and the Prevention of War: Debating a 21st Century Concert of Power*, 2018, <https://doi.org/10.4324/9781315206790>, pp. 3–25.

6 S. Lodgaard, “International Order, Arms Control and Disarmament”, UNIDIR commentary, 20 Aug 2020, <https://www.unidir.org/commentary/international-order-arms-control-and-disarmament>.

more resource-rich peers through modern military power and geostrategic activity. China appears to be working to restore its past position as the “Middle Kingdom” and is loath to curb this ambition by submitting itself to constraints. Multilateral arms control regimes take second place to these wider – and increasingly nationally orientated – priorities and cast doubt over the sustainability of the WMD treaties.

1.1 REPORT OBJECTIVES AND OUTLINE

This is not to say that WMD regimes have completely lost their value. However, great power support for maintaining and stabilizing WMD regimes competes with their growing need to strengthen their position in ongoing rivalries. Thus, where powerful States should unite to uphold regimes, they may become split by divisive interests. This leaves the functioning and robustness of WMD regimes vulnerable. Of particular concern is how compliance with norms and rules can be ensured. While compliance and enforcement of WMD regimes has always been fraught with difficulty, this is currently exacerbated by shifting great power relations and a possible retreat to national solutions.⁷

This study assesses the compliance and enforcement mechanisms of three treaties – the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT), the 1972 Biological and Toxin Weapons Convention (BTWC) and the 1993 Chemical Weapons Convention (CWC) – in terms of their viability in this changing geostrategic environment. The report begins in chapter 2 with an outline of different approaches to arms control and disarmament, paying specific attention to four broad yet interlinked approaches that States and stakeholders have taken in the past: legally binding measures, politically binding measures, normative-aspirational measures and governance approaches involving non-State actors.

Taking each regime in turn, chapters 3–5 then look at the original compliance and enforcement systems and their evolution through crucial events and experiences. In each case, a forward-looking approach is used to assess how the regime will function under the current conditions of great power rivalry and enhanced uncertainty, before considering how its effectiveness could be enhanced, drawing on the panoply of tools and approaches to arms control and disarmament. The report offers brief conclusions in chapter 6.

Three caveats should be highlighted. First, the report does not deal with compliance in general but focuses on core treaty undertakings. Any international treaty will impart a panoply of obligations upon its States parties – for example, turning in periodic reports, granting visas to inspectors and so on – which are meaningful to the general functioning of treaties, but not essential for their survival.⁸ The most essential undertaking, of course, is abstaining from attempts to obtain the weapons prohibited or controlled by the respective treaty. How well the regimes are equipped to uphold this undertaking against attempts to breach it under present international circumstances is the focus of

⁷ While we recognize other current challenges (Covid-19, technological change, etc.), the focus of the paper is on power-related issues.

⁸ A. Chayes and A.H. Chayes, *The New Sovereignty: Compliance with International Regulating Agreements*, 1995.

the following sections.

Second, it is contested within the NPT whether the undertaking of the nuclear weapon States (NWS) to pursue nuclear disarmament is of equal importance to the obligation on non-nuclear weapon States (NNWS) to renounce nuclear weapons. The authors believe that it is. However, we observe that the NPT does not include a mechanism to ensure compliance with this disarmament obligation equivalent to the (however complicated) mechanism that addresses the basic, non-proliferation undertaking of NNWS. It is thus not a subject of our inquiry. However, at times in the past, perceived non-compliance with the disarmament obligation has compromised or even prevented a strengthening of compliance and enforcement of the non-proliferation obligation. It also motivated many of the NNWS parties to create the Treaty on the Prohibition of Nuclear Weapons (TPNW).⁹ But this, again, is not the focus of this study.

Third, and most important, the WMD regimes are not machines that automatically produce a certain outcome. They provide structured opportunities which can be used or not by States to realize both national and collective objectives. Their norms are meant to influence the behaviour of members and direct parties towards cooperative or even collective security, but they cannot ensure this. Their success depends on the willingness of their members, notably the most powerful ones, to observe their undertakings, to watch over compliance by their co-members, to react to indications of non-compliance, and to use the tools which the regimes offer to restore compliance by States that had violated their obligations. The political will of the States is a prerequisite for making the compliance and enforcement toolbox work. They do not work by themselves.

⁹ H. Müller and C. Wunderlich, "Nuclear Disarmament without the Nuclear-Weapon States: The Nuclear Weapon Ban Treaty", *Dædalus*, vol. 149, no. 2, spring 2020, pp. 171–189, https://doi.org/10.1162/DAED_a_01796.

2. APPROACHES TO ARMS CONTROL

Typically, measures and tools developed to uphold international security and protect humanity from WMD-related disaster are based on consensual normative understandings and embedded in cooperative security regimes. Traditionally, these regimes came in the form of formal legally binding treaties, negotiated under the auspices of the United Nations.¹⁰ However, legally binding measures were also complemented by – and built upon – other interlinked and mutually reinforcing forms of political or normative constraints on arms and their deployment.

At the beginning of the 2000s, Larsen observed arms control to be “in a period of transition” and assumed the replacement of legally binding treaties with more informal approaches.¹¹ To some extent this has become manifest in the policies of powerful States. However, since the early 2000s, arms control and disarmament also appear to have lost their central status in the security doctrines of major States and are increasingly regarded as detrimental to national interests. As such, rather than a substitute, normative approaches are perhaps the last resort of desperate attempts to prevent a world of chaotic arms races through at least some rules and restraint.

Today’s arms control and disarmament architecture is therefore characterized by an increasingly fragile, dynamic interplay of soft and hard law. The following typology is an attempt to make sense of this architecture by dividing it into four categories or approaches that overlap and interconnect. While some distinctions are blurred by their nature, it is nonetheless useful to categorize our thinking about arms control.¹²

2.1 LEGALLY BINDING MEASURES

Legally binding measures often result from protracted deliberations. States negotiate the meaning of norms, often (though not always) resulting in the convergence and codification of mutual expectations of appropriate behaviour in the form of legally binding treaties (see table 1 for some examples). For example, many scholars regard the 1972 Biological and Toxin Weapons Convention (BTWC) as the formal legally binding codification of a long-standing norm against the hostile use of biology. When States legally commit to complying with the terms of such an agreement, they are bound by international law that rests on norms of appropriate conduct and is based on the expectation of reciprocal compliance.

Legally binding measures in which States denounce or constrain WMD affect States’ national security. To facilitate reciprocal compliance, legally binding measures largely require clarity on prescribed, proscribed and permitted behaviours as well as the availability

10 Examples include the NPT, the BTWC and the CWC as discussed here, but also the 1976 Outer Space Treaty, the 1971 Seabed Treaty, the 1996 Comprehensive Nuclear-Test-Ban Treaty (CTBT), and the Treaty on the Prohibition of Nuclear Weapons.

11 J.A. Larsen, “An Introduction to Arms Control”, in J.A. Larsen (ed.), *Arms Control: Cooperative Security in a Changing Environment*, 2002, pp. 11–12.

12 Norms, that is shared expectations about proper state conduct, are at the heart of all efforts to regulate the means of warfare and, if institutionalized, may take the form of legal norms.

of measures to react to violations. Formal legal agreements enhance the probability that these conditions will be met.¹³ Treaties also usually contain detailed and explicit provisions, for example subjecting State parties to reciprocal transparency and verification measures, and procedures for amendment, revision or withdrawal. These agreements are commonly backed up by formal procedures which, in the case of non-compliance, allow other State parties recourse to various legal measures to remedy the situation.

Treaties further provide institutional mechanisms to help clarify ambiguous norms and rules, such as standing commissions and review conferences. Often, these provisions rest on implementing and supervisory organs such as the International Atomic Energy Agency (IAEA) or the Organisation for the Prohibition of Chemical Weapons (OPCW), whose staff are not bound by national instructions and can thus act impartially.¹⁴ In rule of law States, a ratified treaty provides the legal basis for domestic practices which affect the rights of citizens. Without this basis, the entry of inspectors or other compulsory changes in operational procedures would fail in constitutional courts.

TABLE 1. *Illustrative examples of legally binding measures*

<ul style="list-style-type: none"> • Joint Comprehensive Plan of Action (2015) • Biological and Toxin Weapons Convention (1972) • Geneva Protocol (1925) 	<ul style="list-style-type: none"> • Chemical Weapons Convention (1993) • Nuclear Non-Proliferation Treaty (1968) • IAEA safeguards agreements • Security Council resolution 1540 (2004)
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For constraining WMD, legal instruments will remain indispensable; they cannot be replaced. However, they take time to emerge, are difficult to adapt to rapidly changing circumstances and sudden crises, and cannot bind non-State actors beyond the control of governments. Furthermore, some States will remain reluctant to bind themselves legally to a treaty. Yet they may be willing to experiment with norms in circumstances where discarding them is not too difficult and costly. Accordingly, States and scholars have sought other ways to pursue arms control and disarmament objectives where legal approaches, temporarily or in the long term, do not look promising.

2.2 POLITICALLY BINDING MEASURES

Politically binding measures need neither formal negotiation nor codification in written form, and often come without provisions for verification or enforcement. WMD regimes have employed multiple politically binding measures to complement their legal core. These measures can be either unilateral or mutually agreed. Examples range from action plans to export control groups (see table 2 for further examples).

Politically binding measures have demonstrated considerable flexibility in dealing

13 D. Shelton, "Introduction: Law, Non-Law and the Problem of 'Soft Law'", in D. Shelton (ed.), *Commitment and Compliance: The Role of Non-Binding Norms in the International Legal System*, 2003, pp. 1–18, <http://doi.org/10.1093/acprof:oso/9780199270989.003.0001>, p. 10.

14 T. Findlay, *The Role of International Organizations in WMD Compliance and Enforcement: Autonomy, Agency, and Influence*, WMD Compliance & Enforcement Series no. 9, UNIDIR, 2020, <https://doi.org/10.37559/WMD/20/WMDCE9>.

with challenges not foreseen by the erstwhile negotiators of legally binding measures. Moreover, even without legal effect, politically binding approaches can still affect State behaviour or augment legally binding measures.¹⁵

TABLE 2. *Illustrative examples of politically binding measures*

<ul style="list-style-type: none"> • BTWC confidence-building measures • Unanimous decisions of Review Conferences • Export control arrangements (e.g. Nuclear Suppliers Group, Australia Group) 	<ul style="list-style-type: none"> • 2003 CWC Plan of Action Regarding the Implementation of Article VII Obligations • Reagan–Gorbachev statement (1985) • Democratic People’s Republic of Korea–United States Agreed Framework (1994) • United States President Richard Nixon’s renunciation of biological weapons (1969)
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Usually, States can more easily enact politically binding measures and modify such measures when needed. Moreover, they grant the parties more freedom of action. While non-compliance is not subject to legal enforcement, politically binding agreements, such as unanimous Review Conference decisions, must be implemented in principle in order for compliance to be reciprocated; deviations often require thorough justification or reframing of the original commitment.¹⁶ As such, embedding politically binding measures in broader regimes may enhance compliance.¹⁷ The risk of non-compliance might also be mitigated by consultation processes or mechanisms for dispute resolution as well as transparency.¹⁸

Politically binding approaches are essential when a new norm is not yet widely accepted as they can help sensitize stakeholders to issues (as was the case with the 1984 statement by United States President Ronald Reagan and Soviet leader Mikhail Gorbachev) and potentially aid in the negotiation of more effective legally binding treaty measures. Indeed, non-legally binding norms are often connected to hard law and can serve as precursors of international customary and treaty law. Alternatively, politically binding measures can fill legal gaps and can eventually form State practices that are used to interpret treaties.¹⁹ If broadly accepted and referred to, even a non-binding norm may gradually become obligatory and, in time, legally binding in the form of customary international law.

15 Examples include the role of unanimous resolutions by the United Nations General Assembly, measures of self-restraint, codes of conduct, preambles of treaties or final documents of conferences.

16 The unjustified violation of politically binding measures in the past two decades is an indicator of the disintegration of multilateralism.

17 E. Brown Weiss, “Conclusions: Understanding Compliance with Soft Law”, in D. Shelton (ed.), *Commitment and Compliance: The Role of Non-Binding Norms in the International Legal System*, 2003, pp. 535–556, <http://doi.org/10.1093/acprof:oso/9780199270989.003.0010>, p. 537.

18 Dispute-resolution mechanisms might even take legal form, e.g. arbitration or adjudication. We thank James Revill for pointing this out.

19 D.L. Shelton, “International Law and ‘Relative Normativity’”, in M.D. Evans (ed.), *International Law*, 4th edn, 2014, pp. 137–165, p. 161.

2.3 NORMATIVE-ASPIRATIONAL MEASURES

Given the stagnation of legally binding arms control and disarmament, some researchers and practitioners have turned their attention to normative-aspirational measures.²⁰ Norms are defined here as “shared (social) understandings of standards for behavior”.²¹ These shared standards of appropriate conduct are at the heart of the WMD regimes either in the form of moral principles appealing to a broader sense of responsibility – such as the preambles of the three treaty documents – or codified as legal obligations binding upon States.²² Therefore, the turn to a “newer, normative approach” proposed in 2019 by Christopher Ford, United States Assistant Secretary of State, as an alternative to “traditional”, “legal-regulatory” approaches is confusing.²³ Different types of norm have been and remain crucial for all efforts to regulate the means of warfare: legal, political and normative measures are intimately connected.

Developing more informally normative-aspirational measures is nevertheless reasonable to overcome the present stalemate in arms control. Moreover, normative measures may have particular utility in unchartered, hard-to-define problem areas, such as cyber or outer space, that are hard to tackle with more formal, legally binding tools. These measures may also help achieve at least some progress in the nuclear field. Examples of normative-aspirational measures in the three regimes can be found in table 3.

TABLE 3. *Illustrative examples of normative-aspirational measures*

<ul style="list-style-type: none"> • Regimes on nuclear restraint and responsibility • Hague Code of Conduct against Ballistic Missile Proliferation • Hague Ethical Guidelines (on the practice of chemistry) 	<ul style="list-style-type: none"> • InterAcademy Partnership (IAP) Statement on Biosecurity • Codes of conduct on nuclear responsibilities
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There are good reasons to turn to non-binding approaches in times when formal agreements are out of reach. Sometimes it may even be advisable not to prematurely harden measures. For example, experience from the nuclear security sector shows that,

20 See for example A. Ford, Assistant Secretary, United States Bureau of International Security and Nonproliferation, “Rules, Norms, and Community: Arms Control Discourses in a Changing World”, Remarks at the European Union Conference on Nonproliferation, Brussels, 13 December 2019, <https://2017-2021.state.gov/rules-norms-and-community-arms-control-discourses-in-a-changing-world/>.

21 A. Klotz, “Norms Reconstituting Interests: Global Racial Equality and U.S. Sanctions against South Africa”, *International Organization*, vol. 49, no. 3, 1995, pp. 451–478, <https://doi.org/10.1017/S0020818300033348>, p. 451.

22 H. Müller, “Where It All Began”, in H. Müller and C. Wunderlich (ed.), *Norm Dynamics in Multilateral Arms Control: Interests, Conflicts, and Justice*, <http://www.jstor.org/stable/j.ctt46n7ks.5>, 2013, pp. 1–19.

23 C.A. Ford, Assistant Secretary, United States Bureau of International Security and Nonproliferation, “Rules, Norms, and Community: Arms Control Discourses in a Changing World”, Remarks at the European Union Conference on Nonproliferation, Brussels, 13 December 2019, <https://2017-2021.state.gov/rules-norms-and-community-arms-control-discourses-in-a-changing-world/>.

*the hard/binding pole of cooperative measures should be preferred at the end of a successful process to install new norms, not at its outset. As much as legally shaped norms are valuable, good practice is valuable as well.*²⁴

Yet informal normative-aspirational approaches are no panacea on their own. Differences in the meaning and application of these norms will arise that need to be settled among committed States. What counts as compliance and what counts as a violation will be contested, even for norms based on loose agreements and without formal apparatus. Any norm is meant to bind committed actors since commitment opens mutual expectations. Their flexibility is thus not unlimited, and they are susceptible to interpretation, contestation, change and dispute that can be difficult to resolve in the absence of legally or politically binding tools, such as consultations or dispute-resolution mechanisms.

2.4 OTHER GOVERNANCE MECHANISMS INVOLVING NON-STATE ACTORS

In practice, a variety of stakeholders are involved in ensuring WMD compliance and enforcement.²⁵ Indeed, contemporary, State-centric, top-down approaches, including legally binding treaties, have long been supplemented by multi-layered governance frameworks and “network governance” involving governmental and non-governmental actors alike.²⁶ This section seeks to capture some of the measures that can be undertaken by non-State actors as part of a wider governance approach to arms control and disarmament.

Civil society actors have initiated norm-building processes and work to uphold established norms in all the regimes under scrutiny in this paper. They engage in the “naming and shaming” of non-compliant behaviour and in applying social pressure to encourage actors to comply with legal obligations through, for example, publicized monitoring of compliance.²⁷

In addition, open source or citizen verification can be a useful tool to detect suspicious behaviour and contribute to treaty verification.²⁸ For example, an opposition group acting as a whistle-blower revealed the clandestine enrichment programme of the Islamic Republic of Iran, and the Institute for Science and International Security has acted as a watchdog for Iranian compliance with the 2015 Joint Comprehensive Plan of Action (JCPOA) using open sources. However, many of these roles are effective only in societies

24 H. Müller et al., Global Non-proliferation “Clubs” vs. the NPT, Report no. 2014:4, Swedish Radiation Safety Authority (SSM), 2014, <https://www.stralsakerhetsmyndigheten.se/en/publications/reports/non-proliferation/2014/201404/>, pp. 101–102.

25 J. Revill et al., Compliance and Enforcement: Lessons from across WMD-Related Regimes, WMD Compliance & Enforcement Series no. 6, UNIDIR, 2019, <https://doi.org/10.37559/WMD/19/WMDCE6>, p. 22.

26 F. Lentzos, Hard to Prove: Compliance with the Biological Weapons Convention, Policy brief, King’s College London, August 2013, <http://www.filippalentzos.com/wp-content/uploads/2014/10/Hard-to-Prove-Compliance-with-the-Biological-Weapons-Convention.pdf>, pp. 4–5.

27 Examples include the NPT Action Plan Monitoring Reports that are provided by the James Martin Center for Nonproliferation Studies (CNS) or Reaching Critical Will.

28 E.g. the Open Nuclear Network (<https://oneearthfuture.org/open-nuclear-network>) or Bellingcat (<https://www.bellingcat.com/>).

with free speech, free media and the dependency of governments on voters. Autocracies are much less susceptible to non-governmental pressure.

TABLE 4. *Illustrative examples of measures involving non-State actors*

<ul style="list-style-type: none"> • Open source/citizen verification (e.g. Open Nuclear Network) • Industry engagement (e.g. OPCW–International Council of Chemical Associations (ICCA) Joint Steering Committee) • Academic engagement (e.g. Australia Capital City Road Shows) • Research funding criterion for consideration of dual-use risks 	<ul style="list-style-type: none"> • Institutional codes and regulations (e.g. Indonesian Academy Code of Conduct on Biosecurity) • Educational resources (e.g. Bradford Disarmament Research Centre (BDRC) dual-use education material) • Screening of publications for sensitive content
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Another key actor, industry, is simultaneously a risk and a potential contributor to compliance. Companies are subjected to the law and are thus controllable by governments. Governments as well as international organizations charged with verification usually cooperate closely with industry on relevant technical, legal and political issues. One example is the partnership between the chemical industry and OPCW bodies. This collaboration is mutually advantageous: it helps raise awareness of CWC regulations and may “support the adoption of self-regulatory governance mechanisms to ensure ‘deep’ compliance”.²⁹

²⁹ R. Trapp, Compliance Management under the Chemical Weapons Convention, WMD Compliance & Enforcement Series no. 3, UNIDIR, 2019, <https://doi.org/10.37559/WMD/19/WMDCE3>, p. 29.

3. THE NUCLEAR WEAPONS REGIME

The Non-Proliferation Treaty (NPT) differs from the Biological and Toxin Weapons Convention (BTWC) and the Chemical Weapons Convention (CWC) in that it does not categorically prohibit a class of weapons. It prohibits the proliferation of nuclear weapons, and it obliges all parties, including nuclear weapon States (NWS), to negotiate towards nuclear disarmament. The non-proliferation obligation is bound to a compliance and enforcement procedure while the disarmament obligation is not. This inequality causes tensions among the parties and can, at times, diminish their support for enforcement measures. This was notably more recently when certain NWS unilaterally denied their commitment to disarmament steps agreed in 1995, 2000 and 2010.

To better understand how different approaches to arms control have been applied in the nuclear regime and the wider implications of geostrategic change, this chapter begins (in section 3.1) with an overview of the original compliance and enforcement mechanisms of the NPT regime. It then (in section 3.2) considers how these have worked in practice and how they led to adaptations in the regime. Attention then turns (in section 3.3) to the current state of the regime and the implications posed by the current great power rivalry. The chapter concludes (in section 3.4) with an evaluation of the need for and probability of regime adaptation.

3.1 COMPLIANCE AND ENFORCEMENT IN THE ORIGINAL CONCEPTION

The NPT has been in force since 1970 and currently has 191 parties.³⁰ The Treaty prohibits the acquisition of nuclear weapons by non-nuclear weapon States (NNWS). Nuclear weapon States shall not assist nuclear proliferation and shall pursue nuclear disarmament. Fissile material and nuclear technology transfers require verification by the International Atomic Energy Agency (IAEA) on items imported by the recipients. All parties are obliged to cooperate in the peaceful uses of nuclear energy.

Under the treaty, NNWS must conclude a comprehensive safeguards agreement (CSA) with the IAEA. The model agreement (INFCIRC/153 (Corrected)) requires the IAEA Director General to report, on the basis of the inspectorate's findings, to the IAEA Board of Governors (BOG) – the IAEA's supreme operational decision-making organ – whether all fissile material in a State is accounted for and in peaceful uses. If the Director General reports possible non-compliance, the BOG will call upon the State to take remedial action. If the matter cannot be settled, the BOG may report the case to all IAEA members, the United Nations Security Council, and the United Nations General Assembly. The IAEA may also consider terminating technical aid to – and suspending membership rights and privileges of – the State in question. The Security Council can stay inactive, demand further clarification, or declare a threat to peace and international security and impose mandatory remedial action under Chapter VII of the United Nations Charter. These decisions are subject to the veto of each permanent member of the Security Council.

³⁰ The party status of the Democratic People's Republic of Korea is contested (see below).

3.2 COMPLIANCE CRISES AND THE ADAPTATION OF THE REGIME

The NPT is an example of a legally binding treaty. Although such treaties are typically slower to adapt, adaptation is possible and is certainly evident in the evolution of this regime. The first adaptation followed the 1974 nuclear explosion by India (which is not an NPT party). This event focused attention on unintended contributions by nuclear suppliers to proliferation and led to the formation in 1975 of the Nuclear Suppliers Group (NSG) outside the NPT. The NSG and its guidelines for transfers proved an important instrument for preventing proliferation and providing information that helps suppliers and the IAEA identify suspicious procurement activities.³¹

As discussed in earlier papers in this series, since 1974 there have been eight cases when States were found to be in non-compliance with their safeguards agreement. These cases were not handled according to a procedural blueprint. Three (Republic of Korea, Egypt, Romania) were solved in “management style” through friendly cooperation between the IAEA and the respective States. Four (Iraq, Democratic People’s Republic of Korea, Syrian Arab Republic, Islamic State of Iran) were tackled through a combination of confrontation and cooperation; three of these four are still outstanding. One, Libya, falls in-between. The following sections provide a brief outline of these eight cases focusing first on those managed cooperatively, before turning to confrontational cases and then adaptations to the compliance and enforcement instruments.³²

3.2.1 Cooperative management

The three cases that were tackled through cooperative management, as well as the Libyan case, did not lead to adaptations. The Republic of Korea (in 2004) and Egypt (in 2004–2005) had failed to report small amounts of fissile material and related activities as required. In the Republic of Korea, this was due to unauthorized decisions by scientists in a nuclear laboratory. In Egypt, IAEA staff were alerted by Egyptian scientists’ publications and found administrative sloppiness over an extended period of time. Both cases were settled by communications between Agency and State. The BOG took note of the related Director General reports and did not report to the United Nations Security Council or General Assembly.

In the Romanian (1992) and Libyan (2003) cases, the governments themselves admitted to maintaining clandestine nuclear weapon programmes. The Government of Romania revealed activities by the former dictator, Nicolae Ceaușescu. The Libyan leader, Muammar Gaddafi, uncovered his own past wrongdoings. While governmental change and the new leadership’s interest to be accepted as a reliable partner triggered the Romanian admission, Libya’s return to compliance was motivated by effective sanctions imposed

31 Nuclear Threat Initiative (NTI), “Nuclear Suppliers Group”, 14 July 2020, <https://www.nti.org/learn/treaties-and-regimes/nuclear-suppliers-group-nsg/>.

32 For the following, we draw on two excellent studies: T. Findlay, Proliferation Alert! The IAEA and Non-Compliance Reporting, Belfer Center for Science and International Affairs, October 2015, <https://www.belfercenter.org/publication/proliferation-alert-iaea-and-non-compliance-reporting>; and O. Heinonen, IAEA Mechanisms to Ensure Compliance with NPT Safeguards, WMD Compliance & Enforcement Series no. 2, UNIDIR, 2020, <https://doi.org/10.37559/WMD/19/WMDCE2>. While the text that follows gives a crisp summary of the cases, these two studies give comprehensive accounts, including complete references to original documents.

for terrorist actions. Libya started negotiations with the United States and the United Kingdom in 1998–1999 and had addressed the WMD issue before the United States–British invasion of Iraq in 2003, or the interception of a ship carrying nuclear-related contraband in.³³ The IAEA closed the Libyan file in 2008, returning to a routine CSA. The BOG reported both cases to the United Nations Security Council with the proviso “for information only”, implying that the Council need not act. Indeed, the Council did not address the matter except by lifting sanctions on Libya.

3.2.2 Confrontation and cooperation

In Iraq and the Syrian Arab Republic, the IAEA initiated compliance procedures after the results of non-compliance were eliminated by military action: in Iraq in 1991 with a Security Council mandate to liberate Kuwait from Iraqi annexation; in the Syrian Arab Republic by an Israeli Air Force attack in 2007.

Allied forces destroyed known Iraqi nuclear sites in the Gulf War. Intelligence gained before and during the war revealed locations that had never been reported to the IAEA. Security Council resolution 687 (1991) established a strict WMD inspection and dismantlement regime as one of the armistice conditions. The IAEA was tasked with identifying all activities, facilities, equipment and material related to Iraq’s nuclear weapon programme, and with dismantling and removing any residues. It then provided a long-term monitoring plan to prevent reconstitution of prohibited activities.

The IAEA team proceeded steadily despite Iraq’s resistance, procrastination and concealment. In 1998, the United States and the United Kingdom, frustrated because other permanent Security Council members refused to increase pressure, requested that IAEA inspectors leave Iraq and conducted a short bombing campaign. The inspectors did not return until Security Council resolution 1441 (2002) ordered Iraq to admit inspections immediately. In parallel, the United States and the United Kingdom deployed significant military capabilities around the Persian Gulf. This forced Iraqi President Saddam Hussein to concede; the IAEA then returned to Iraq but found no evidence of a nuclear weapon programme. The United States and the United Kingdom went to war nonetheless – lacking confidence in the most intrusive verification system ever. But their own teams could only confirm the IAEA’s findings: Iraq had been disarmed. The BOG and the Security Council closed the Iraq nuclear file in 2005. The experience in Iraq led to significant adaptations of the nuclear regime, as discussed further below.

In 2007, the Israeli Air Force destroyed a plutonium-production reactor complex, under construction with assistance from the Democratic People’s Republic of Korea. The Syrians then razed and rebuilt the location. Despite requesting access, IAEA safeguards staff could not access the site after the Israeli attack and conduct the appropriate sampling and analysis procedures in order to develop a complete picture. The BOG reported the Syrian Arab Republic’s non-compliance to the United Nations Security Council. However, it made only weak attempts to make the Government of the Syrian Arab Republic cooperate. The

33 Nuclear Threat Initiative (NTI), “Libya: Nuclear”, January 2015, <https://www.nti.org/learn/countries/libya/nuclear/>.

Syrian Arab Republic had emerged as a key regional ally of the Russian Federation, which, along with China, opposed serious enforcement measures. The case is still pending.

The Democratic People's Republic of Korea is the only case in which procedures initially followed the IAEA blueprint. During the first inspection, in 1992, almost seven years after NPT ratification, the IAEA applied new verification techniques and discovered discrepancies between national reports on reprocessing and the inspectors' independent findings. The Democratic People's Republic of Korea refused to complete its declaration on materials and facilities. It also blocked the special inspection that had been requested by the Director General and was supported by a BOG resolution after the United States had presented intelligence on clandestine reprocessing activities in the country. Instead, the Democratic People's Republic of Korea first gave the required three-month notice of its withdrawal from the NPT, and then "suspended" the withdrawal one day before the end of the notice period. This inhibited the IAEA's safeguards activities. After the BOG reported the Democratic People's Republic of Korea's non-compliance to the United Nations Security Council in April 1993 (with China voting no on the BOG resolution), it took a month to produce a resolution due to disagreements among the members.

Two other instruments were created to restore compliance by the Democratic People's Republic of Korea with NPT safeguards obligations. The United States negotiated a bilateral Agreed Framework in 1994, which provided for political normalization, economic aid and the gradual return to compliance. However, the IAEA was never able to fully verify this. The agreement collapsed in 2002 when the United States presented evidence of an undeclared enrichment facility. The Democratic People's Republic of Korea then declared its "immediate" withdrawal from the NPT, and the IAEA found it to be in a state of non-compliance as declared by the BOG.

In 2003, the Six-Party Talks between the Democratic People's Republic of Korea, the United States, China, the Russian Federation, Japan and the Republic of Korea were initiated. These were shown to have failed when the Democratic People's Republic of Korea tested its first nuclear explosive device, in 2006. Afterwards, the Six-Party Talks, bilateral diplomacy with the United States, freezes of nuclear activities and selected IAEA verification activities developed in ups and downs. Non-compliance with Security Council resolutions was demonstrated by nuclear weapon tests in 2009, 2013, 2016 and 2017. Security Council resolutions incrementally imposing sharper sanctions followed each test.³⁴ Disunity among Security Council members meant that these sanctions remained too weak to change the country's course.

In 2002, the National Council of Resistance of Iran – an Iranian opposition coalition based in France and Albania, whose main member group, Mujahedin-e Khalq, also operates in the Islamic Republic of Iran – denounced the Iranian construction of an enrichment facility

³⁴ See Security Council, S/RES/1718, 2006, [https://undocs.org/S/RES/1718\(2006\)](https://undocs.org/S/RES/1718(2006)); S/RES/1874, 2009, [https://undocs.org/S/RES/1874\(2009\)](https://undocs.org/S/RES/1874(2009)); S/RES/2087, 2013, [https://undocs.org/S/RES/2087\(2013\)](https://undocs.org/S/RES/2087(2013)); S/RES/2094, 2013, [https://undocs.org/S/RES/2094\(2013\)](https://undocs.org/S/RES/2094(2013)); S/RES/2270, 2016, [https://undocs.org/S/RES/2270\(2016\)](https://undocs.org/S/RES/2270(2016)); S/RES/2321, 2016, [https://undocs.org/S/RES/2321\(2016\)](https://undocs.org/S/RES/2321(2016)); S/RES/2356, 2017, [https://undocs.org/S/RES/2356\(2017\)](https://undocs.org/S/RES/2356(2017)); S/RES/2371, 2017, [https://undocs.org/S/RES/2371\(2017\)](https://undocs.org/S/RES/2371(2017)); S/RES/2375, 2017, [https://undocs.org/S/RES/2375\(2017\)](https://undocs.org/S/RES/2375(2017)); and S/RES/2397, 2017, [https://undocs.org/S/RES/2397\(2017\)](https://undocs.org/S/RES/2397(2017)).

and plutonium-production reactor. IAEA diplomacy persuaded the Islamic Republic of Iran to apply the Additional Protocol. From 2003 on, three members of the European Union (EU) – France, Germany and the United Kingdom (the E3) – and shortly afterwards the EU High Representative for Foreign Affairs and Security Policy, entered talks with the Government of the Islamic Republic of Iran to reach a settlement. In 2006, the United States, China and the Russian Federation joined the E3/EU, to form the E3/EU+3 talks. Over several years, the Islamic Republic of Iran oscillated between cooperation (more transparency, suspension of sensitive activities) and confrontation (denial of information, procrastination, resumption of suspended activities, construction of new facilities). After disagreement between the E3/EU and the United States was resolved by fresh information on past Iranian nuclear weapon activities, the IAEA BOG referred the case to the United Nations Security Council in 2006.

The first Security Council resolution, in December 2006, demanded that the Islamic Republic of Iran suspend all enrichment and reprocessing activities and imposed sanctions on transfers in support of the Iranian nuclear programme. Responding to the Islamic Republic of Iran's refusal and to IAEA reports on continued lack of cooperation, in 2007–2010 the Security Council adopted three more resolutions imposing sanctions. They targeted the financial assets of institutions and individuals involved in the programme (March 2007) and prohibited the transfer of dual-use goods to the Islamic Republic of Iran (March 2008). Subsequent Security Council sanctions from June 2010 prohibited the transfer to the Islamic Republic of Iran of all military goods as well as new Iranian foreign investment and access to Iranian accounts.

After government changes in Tehran and Washington, new negotiations between the E3/EU+3 paved the way for a "road map" to clarify outstanding issues between the Islamic Republic of Iran and the IAEA in 2014. This was followed by agreement of the Joint Comprehensive Plan of Action (JCPOA) in 2015, which is discussed further below.

3.2.3 Regime adaptation

Some of these eight non-compliance cases have led to significant adaptations in the nuclear regime. This is particularly true for the insights gained from Iraq. In particular, the realization that the CSA system was toothless against clandestine activities led to the most significant adaptation: the IAEA was authorized to use information beyond that supplied by the inspected State. Such information included reports by whistle-blowers, non-governmental organizations (NGOs) and journalists, commercial satellite pictures, and member States' intelligence. Based on this experience, the safeguards system was complemented with the legally binding Additional Protocol, which afforded the IAEA broader information, access to sites not indicated by the inspected State and the use of new technologies. The NSG also enlarged the scope of export controls to include dual-use technology. This combination of legal and politically binding measures enhanced the IAEA's capacity to discover clandestine activities.

Two instruments created to restore the Democratic People's Republic of Korea's compliance with NPT safeguards obligations are also of note. The first concerns the politically binding

Agreed Framework, negotiated bilaterally with the United States. The framework led to a gradual return to compliance – even though the IAEA was never able to provide full verification. The second concerns a series of measures: the start of the Six-Party Talks in 2003, bilateral United States–Democratic People’s Republic of Korea diplomacy, freezes of nuclear activities and selected IAEA verification activities. These measures could, however, not restore compliance. Neither could Security Council sanctions, which remained too weak to change the course of the Democratic People’s Republic of Korea due to disunity among Council members.

The case of the Islamic Republic of Iran illustrates how legally binding measures can be forged between States in conditions of unity yet weakened in periods of disunity. The JCPOA represents a legally binding measure made mandatory by the Security Council.³⁵ The agreement put constraints on Iranian enrichment and other sensitive activities, and imposed a tough verification and transparency regime, including supervision of certain dual-use equipment useful for nuclear warhead development. The agreement installed a dispute-settlement process, in which Western parties held a majority, and a “snap-back” mechanism to re-impose United Nations sanctions should non-compliance occur. The Islamic Republic of Iran obtained peaceful nuclear cooperation, the gradual lifting of sanctions and permission for low-level enrichment. This solution, however, did not end controversies over the Islamic Republic of Iran’s regional policies and missile programme, two major interests of the United States. Also, the file on previous weaponization efforts remained open. While the Islamic Republic of Iran observed the terms of the JCPOA, the United States Administration of President Donald Trump was dissatisfied and withdrew from the agreement in 2018.

In summary, compliance crises could be easily solved when the government in default of an important undertaking was willing to return to compliance in a short space of time (Romania, Republic of Korea, Egypt, Libya). Solutions short of the use of military force were impossible when the government in question was determined to push forward with the weapon programme or was unwilling to cooperate fully with the IAEA (Iraq, Syrian Arab Republic). The application of military force, however, was avoided when the government in question enjoyed a degree of support from a great power or significant retaliatory options (Democratic People’s Republic of Korea). In this case, a solution could not be achieved despite much diplomatic effort. The Iranian case shows that solutions were impossible to achieve when the two governments involved in the dispute were not willing to compromise (Islamic Republic of Iran and United States, 2004–2010), or one government whose compromise was needed refused (United States 2003, 2018–2020, Islamic Republic of Iran 2009–2013). Notably for compliance crises in strategically important regions, the state of great power relations has inevitably had a significant impact.

35 Security Council, S/RES/2231, 2015, [https://undocs.org/S/RES/2231\(2015\)2231](https://undocs.org/S/RES/2231(2015)2231). The JCPOA is attached to this resolution as Annex A.

3.3 CURRENT STATE AND THE INFLUENCE OF GREAT POWER RIVALRY

The non-compliance cases of the Islamic Republic of Iran, the Democratic People's Republic of Korea and the Syrian Arab Republic are still unresolved.³⁶ The IAEA remains active, but with limited powers; the Democratic People's Republic of Korea and the Syrian Arab Republic refuse to cooperate; the Islamic Republic of Iran has deviated incrementally from the JCPOA in response to new United States sanctions. China had accepted some sanctions against the Democratic People's Republic of Korea but objected to harsher punitive measures on its regional ally.³⁷ The Russian Federation protected the Syrian Arab Republic from having to reveal the full truth of its nuclear project. Finally, the Trump Administration's determination to force policy or regime change on the Islamic Republic of Iran, unsupported by its Western allies and by other permanent members of the United Nations Security Council, threatens to eliminate the reasonably successful control and transparency of Iranian activities.

All three great powers are competing more openly in pursuit of their national interests as narrowly defined strategically, and this has brought them into more open contestation in East Asia (China and the United States) and the Middle East (the Russian Federation and the United States). Without a greater measure of accord among them, which would visibly manifest itself through a greater degree of agreement in the United Nations Security Council, for instance, it is hard to see how enforcement procedures under the NPT can meaningfully progress. The lesson is that, without great power unity – or at least a useful measure of common resolve – the compliance and enforcement system in the nuclear regime does not work.³⁸

Moreover, nuclear arms competition and wider geopolitical rivalry have consequences for enforcement: the cleavage between the NWS and the – mostly non-aligned – NNWS is growing. Leading non-aligned States have blocked measures to strengthen verification and enforcement – these countries say this is because of a lack of progress in disarmament among the NWS.³⁹ Member States of the Non-Aligned Movement (NAM) accused of non-compliance enjoy some peer solidarity: for example, when in June 2004 the BOG deplored the Islamic Republic of Iran's lack of cooperation, NAM demanded the termination of the IAEA file on the Islamic Republic of Iran.⁴⁰ Such cleavages hurt the NPT's compliance and enforcement system.

36 IAEA, "Safeguards Statement for 2019", June 2019, <https://www.iaea.org/sites/default/files/20/06/statement-sir-2019.pdf>.

37 Documentary evidence on China's policies is hard to come by. A pointed journalistic account is J. Meyers, "Here's Why China Refuses to Block North Korea's Nuclear Ambitions", Los Angeles Times, 12 September 2016, <https://www.latimes.com/world/asia/la-fg-china-north-korea-snap-story.html>. A good, crisp scholarly analysis is E. Albert, "The China–North Korea Relationship", Backgrounder, Council on Foreign Relations, 25 June 2019, <https://www.cfr.org/backgrounder/china-north-korea-relationship>.

38 H. Müller, "Compliance Politics: A Critical Analysis of Multilateral Arms Control Treaty Enforcement", *Nonproliferation Review*, vol. 7, no. 2, 2000, pp. 77–90, <https://doi.org/10.1080/10736700008436811>.

39 W. Potter, and G. Mukhatzhanova, *Nuclear Politics and the Non-Aligned Movement*, IISS, 2012, <https://doi.org/10.1080/19445571.2011.664914>.

40 N. Gerami and P. Goldschmidt, *The International Atomic Energy Agency's Decision to Find Iran in Non-Compliance, 2002–2006*, Center for the Study of Weapons of Mass Destruction, National Defense University, 2012, https://wmdcenter.ndu.edu/Portals/97/Documents/Publications/Case Studies/cswmd_cs6.pdf, p. 9.

3.4 NEED FOR AND PROBABILITY OF ADAPTATION

The compliance toolbox of the NPT is in good shape. Adaptations after the 1974 Indian explosion and the Iraq revelations strengthened the capability to prevent proliferation-prone transfers and gave the IAEA greater scope to detect clandestine nuclear activities. Moreover, the Additional Protocol is in force for 136 States as of March 2020 and improved verification technology and digital analytical techniques continue to enhance the Agency's power to determine non-compliance.⁴¹

There is room for improvement in discovering and controlling weaponization activities, which was not part of the IAEA's original mandate. Involvement in the disarmament of South Africa, the dismantlement of weapon facilities and equipment in Iraq and Libya, and systematic investigations of previous weaponization activities in the Islamic Republic of Iran have furnished the Agency with some experience. The JCPOA control system for weapon-capable dual-use equipment provides a model for similar cases.

The system proved adaptable to the particularities of each case. The IAEA, besides routine procedures, created special teams for non-routine tasks in Iraq, the Democratic People's Republic of Korea and the Islamic Republic of Iran. Some member States invented new negotiation formats to complement official institutions.

It may seem that NPT Review Conferences could and should be the forum to deliberate non-compliance issues and take decisions on appropriate remedies. But this is not the case, for good reasons. Since Review Conference Final Documents are adopted by consensus, it is not possible to condemn the action of parties that are present at the conference because they would veto the respective language.

In addition, two factors already mentioned – the readiness of the great powers to grant some protection to their clients, and the reluctance of NAM to deviate from peer solidarity – are at work here. For example, the successful 2010 NPT Review Conference, which resulted in a substantial Final Document including an Action Plan for improved implementation of the Treaty, took place while three serious non-compliance cases were pending: the Democratic People's Republic of Korea, the Syrian Arab Republic and the Islamic Republic of Iran. The Syrian Arab Republic and the Islamic Republic of Iran were not mentioned in the Final Document, even though this text included a special section on the Middle East: these two States were present.⁴² The only case among the three that found its way into the Final Document was that of the Democratic People's Republic of Korea, which was not present at the conference because it had withdrawn from the NPT. The document demanded full compliance by the Democratic People's Republic of Korea with the relevant Security Council resolutions and "urged" it to return to the NPT, but did

41 IAEA, "IAEA Director General's Introductory Statement to the Board of Governors", 14 September 2020, <https://www.iaea.org/newscenter/statements/iaea-director-generals-introductory-statement-to-the-board-of-governors-14-september-2020>.

42 2010 NPT Review Conference, "Final Document", NPT/CONF.2010/50 (Vol. I), [https://undocs.org/NPT/CONF.2010/50\(VOL.I\)](https://undocs.org/NPT/CONF.2010/50(VOL.I)), pp. 29–31.

not agree on any measures to underline this request.⁴³ Thus, NPT Review Conferences have never addressed compliance issues effectively.

Enforcement is the weak spot. Divisions in the IAEA BOG and the United Nations Security Council impede determined reactions to non-compliance. Largely, this is due to great power policies for geopolitical interest. New IAEA tools can only be effective when the great powers support pressure on reticent rule-breakers to restore compliance, but we are far away from this state of affairs.

⁴³ Ibid., p. 31.

4. THE BIOLOGICAL WEAPONS REGIME

As with the nuclear regime, this chapter begins (in section 4.1) with an overview of the original compliance and enforcement mechanisms in the biological weapons regime. It then proceeds to outline (in section 4.2) how the regime has adapted before looking (in section 4.3) at the current state of the regime and the implications of great power rivalry. It ends (in section 4.4) by evaluating the likelihood of further adaptation.

4.1 COMPLIANCE AND ENFORCEMENT IN THE ORIGINAL CONCEPTION

The Biological and Toxin Weapons Convention (BTWC) entered into force in 1975 and currently has 183 States parties. It was the first multilateral treaty to ban an entire class of weapons. The Convention has codified and solidified a norm against weapons which its preamble deems “repugnant to the conscience of [hu]mankind”. By basing the prohibition on intent rather than specified materials through a general purpose criterion, the treaty’s scope will remain comprehensive even as science and technology progress.

However, the BTWC does not include verification measures. When it was negotiated, several States considered biological weapons to be of relatively low military utility, and views on verification were too diverse to permit agreement. BTWC Article V however contains provisions for consultations to solve problems regarding the BTWC and its implementation. Under Article VI, States parties can lodge a complaint with the United Nations Security Council in cases of non-compliance, and they are obliged to cooperate in any investigation initiated by the Security Council. Collective enforcement of compliance rests entirely with the Council.

4.2 COMPLIANCE CRISES AND THE ADAPTATION OF THE REGIME

Biological weapons have not been used in war since 1945. Compliance concerns have nevertheless induced adaptations in the BTWC. For example, an unusual anthrax outbreak in Sverdlovsk in 1979 triggered suspicions about Soviet non-compliance which fed into efforts to strengthen the BTWC’s compliance instruments.⁴⁴ Sweden attempted to amend the Convention with a verification system but could not garner sufficient support. Instead, States parties elaborated politically binding procedures for consultations under Article V in 1980 and 1986. They also added politically binding confidence-building measures (CBMs) in 1986 and 1991 to enhance transparency.⁴⁵

In the 1980s, in response to alleged hostile uses of chemicals and toxins, United Nations Member States created the United Nations Secretary-General’s Mechanism for

44 See for example First BTWC Review Conference “Summary Record of the Twelfth Meeting”, BWC/CONF.I/SR.12, 25 March 1980, <https://undocs.org/BWC/CONF.I/SR.12>, paragraphs 16–18.

45 On the BTWC compliance mechanisms see e.g. F. Lentzos, Compliance and Enforcement in the Biological Weapons Regime, WMD Compliance & Enforcement Series no. 4, UNIDIR, 2019, <https://doi.org/10.37559/WMD/19/WMDCE4>.

Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM).⁴⁶ It is based on the 1925 Geneva Protocol and not formally related to the BTWC, but it would be available to BTWC States parties as a means to investigate allegations in case of suspected biological weapon attacks. The UNSGM is, however, only mandated to establish the facts of an incident. Any collective measures to address BTWC violations and restore compliance would have to be decided upon and enforced by the United Nations Security Council.

In the early 1990s, past secret offensive biological weapon programmes were revealed in three BTWC States parties: Iraq, South Africa and the former Soviet Union.⁴⁷ For Iraq, the Security Council established the United Nations Special Commission (UNSCOM, 1991) and the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC, 2002) to verify and carry out the elimination of the chemical and biological weapon programmes and ballistic missiles. South Africa voluntarily renounced its WMD programmes and undertook a domestic investigation into past activities. In the Soviet case, the BTWC depositaries (the United Kingdom, the United States, and the Soviet Union and later the Russian Federation) undertook to resolve compliance concerns through the so-called Trilateral Initiative.⁴⁸

None of these cases triggered the BTWC compliance mechanism under Article VI. Article V was invoked only once, in 1997, when Cuba accused the United States of having disseminated a plant pest over Cuban territory. The United States denied the allegation. A consultative meeting of BTWC States parties was held in 1997 but could not reach a definitive conclusion.⁴⁹

The biological export control regime has also evolved and adapted. In the early 1990s, the Australia Group, an informal grouping of countries that harmonize their export regulations in the chemical field, expanded its guidelines to cover biological dual-use items.⁵⁰ The Australia Group's guidelines are only politically binding on its members and are intended to support implementation of BTWC Article III on non-proliferation. As such, they do not

46 United Nations, "Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons", <https://www.un.org/disarmament/wmd/secretary-general-mechanism/>. See also M. Crowley, "United Nations Mechanism to Combat the Development, Acquisition and Use of Chemical Weapons", in M. Crowley, M. Dando and L. Shang (eds.), *Preventing Chemical Weapons: Arms Control and Disarmament as the Sciences Converge*, Royal Society of Chemistry, 2018, pp. 101–145, <https://doi.org/10.1039/9781788010092-00101>, pp. 103–108.

47 See for example the pertinent contributions in M. Wheelis, L. Rószka and M. Dando (eds.), *Deadly Cultures: Biological Weapons since 1945*, 2006, <https://www.jstor.org/stable/j.ctvjghwwg>; and F. Lentzos (ed.), *Biological Threats in the 21st Century: The Politics, People, Science and Historical Roots*, 2016, <https://doi.org/10.1142/p1081>.

48 D.C. Kelly, "The Trilateral Agreement: Lessons for Biological Weapons Verification", *Verification Yearbook 2002*, Verification Research, Training and Information Centre (VERTIC), 2002, http://www.vertic.org/media/Archived_Publications/Yearbooks/2002/VY02_Kelly.pdf, pp. 93–110.

49 Formal Consultative Meeting of BTWC States Parties, Report, BWC/CONS/1, 29 August 1997, <https://undocs.org/BWC/CONS/1>.

50 Australia Group, "The Origins of the Australia Group", 2007, <https://www.australiagroup.net/origins.html>. NAM countries have repeatedly criticized the Group's approach as discriminatory and as hampering the peaceful use of biology and biotechnology. See U. Becker-Jakob, *Notions of Justice in the Biological Weapons Control Regime*, Peace Research Institute Frankfurt (PRIF) Working Paper no. 9, August 2011, https://www.hsfk.de/fileadmin/HSEK/hsfk_downloads/PRIF_WP_09.pdf.

constitute a compliance mechanism per se, but they support the disarmament objective of the BTWC.

At the end of the Cold War, revelations about illegal biological warfare programmes, and negotiations for the Chemical Weapons Convention (CWC) with its comprehensive compliance system contributed to the reinvigoration of the verification debate in the BTWC. After a group of experts concluded in 1993 that it was technically possible to “enhance confidence” in compliance with the BTWC, States parties began negotiations on a legally binding BTWC protocol. In 2001, the United States rejected the approach, and the negotiations came to a halt because other States were not prepared to continue negotiations on a protocol or to adopt legally binding compliance-related measures without the United States.⁵¹

Since then, Western countries have promoted a modular approach to strengthening the BTWC through national measures and wider governance tools drawing in non-State actors from academia and industry. These measures are aimed at enhancing implementation and demonstrating compliance, including, more recently, through peer reviews. Voluntary peer reviews, initially proposed and carried out by France and later taken up or modified by others, aim at reviewing and strengthening the national implementation of, and demonstrating compliance with, the BTWC.⁵² A number of Western States would still support stricter compliance measures in principle but follow an incremental approach. In contrast, members of the Non-Aligned Movement (NAM), the Russian Federation and China argue for strengthening the BTWC through a holistic, legally binding instrument covering all aspects of the Convention.

As a result of this division, verification and compliance remain off the official agenda of the annual Meetings of Experts and Meetings of States Parties. However, acceptance has been growing around discussion of aspects of “institutional strengthening” of the BTWC, including compliance, but these discussions have yet to produce tangible results.⁵³

4.3 CURRENT STATE AND THE INFLUENCE OF GREAT POWER RIVALRY

An allegation of non-compliance would be likely to prove a significant challenge to the BTWC. The United States on the one hand and China and the Russian Federation on the other maintain fundamentally different positions – including on compliance politics. In general, there are also wide differences between Western States and some NAM members, such as the Islamic Republic of Iran, the Bolivarian Republic of Venezuela and Cuba, which can count on group solidarity and are frequently supported by China and the Russian Federation. Beyond compliance, these differences extend to their approaches

51 J. Littlewood, *The Biological Weapons Convention: A Failed Revolution*, 2004.

52 J. Revill, *A Peer-Review Mechanism for the Biological and Toxin Weapons Convention*, UNIDIR, 2013, <https://unidir.org/files/publications/pdfs/a-peer-review-mechanism-for-the-biological-and-toxin-weapons-convention-403.pdf>.

53 See discussion in the Meeting of Experts on Institutional Strengthening of the Convention (MX5) of the current intersessional process. See also Meeting of BTWC States Parties, Report, BWC/MSP/2017/6, 19 December 2017, <https://undocs.org/BWC/MSP/2017/6>.

to international cooperation under the Convention and approaches to enhancing its national implementation.

Despite these differences, great power cooperation has occasionally been possible. For example, in 2017 the Russian Federation, the United Kingdom and the United States tabled a joint proposal as depositaries that helped secure agreement on a new intersessional process between the eighth and ninth BTWC Review Conferences.⁵⁴ However, as all complaints and investigations of possible BTWC violations must ultimately run through the United Nations Security Council, the current fraught political climate would be likely to have a considerable bearing on the prospects of resolving any BTWC compliance issue referred to it.

Moreover, the Covid-19 pandemic has demonstrated that new concerns and unofficial allegations of biological weapon research, development or use may quickly take hold regardless of the origin of a disease outbreak. This is tricky for the BTWC regime because the lack of transparency in biological research in many States leaves room for mistrust and frivolous allegations. For example, the United States has accused China and the Russian Federation of not having been transparent about their past biological weapon activities and its leadership has publicly expressed doubts about whether either country has completely fulfilled its BTWC disarmament obligations.⁵⁵ In turn, the Russian Federation has raised questions over the “military biological activities of [the] Pentagon” and suggested the United States is conducting research that may violate the BTWC or fall into a legally grey area.⁵⁶ The countries concerned have denied such allegations.⁵⁷

Without effective transparency and verification measures, such claims and denials are hard to confirm or refute independently. This is problematic because, in the absence of functioning mechanisms to resolve such claims, even in the case of natural disease outbreaks, unfounded allegations may unintentionally or intentionally exacerbate tensions, including between great powers.

54 Meeting of BTWC States Parties “Elements of a Possible Intersessional Process”, Working paper submitted by the Russian Federation, United Kingdom and the United States, BWC/MSP/2017/WP.10, 30 November 2017, <https://undocs.org/bwc/MSP/2017/WP.10>.

55 Most recently in United States Department of State, Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments (Compliance Report), June 2020, <https://2017-2021.state.gov/2020-adherence-to-and-compliance-with-arms-control-nonproliferation-and-disarmament-agreements-and-commitments-compliance-report-2/>.

56 Russian Ministry of Foreign Affairs, “Commentary by the Information and Press Department (MFA of Russia) on Executive Summary of the 2020 Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments (Compliance Report) – United States Department of State”, 23 April 2020, https://www.mid.ru/en/foreign_policy/news/-/asset_publisher/cKNonkJE02Bw/content/id/4104977. For similar claims see also R.G. Reeves et al., “Agricultural Research, or a New Bioweapon System?”, *Science*, 5 October 2018, pp. 35–37. <https://doi.org/10.1126/science.aat7664>; and M. Wheelis and M. Dando, “Back to Bioweapons”, *Bulletin of the Atomic Scientists*, vol. 59, no. 1, January 2003, pp. 40–46, <https://doi.org/10.1080/00963402.2003.11460645>.

57 See for example Russian Ministry of Foreign Affairs, “Commentary by the Information and Press Department (MFA of Russia) on Executive Summary of the 2020 Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments (Compliance Report) – United States Department of State”, 23 April 2020, https://www.mid.ru/en/foreign_policy/news/-/asset_publisher/cKNonkJE02Bw/content/id/4104977; and L. Wright and P. Ashtutosh, “Russia Claims US Tested Biological Weapons in Georgia, Killing 73”, *Deutsche Welle*, 4 October 2018, <https://p.dw.com/p/35yFM>.

4.4 NEED FOR AND PROBABILITY OF ADAPTATION

The ongoing Covid-19 pandemic has highlighted the need to strengthen the BTWC's compliance and enforcement measures. In parallel, rapid scientific and technological developments, as well as a broadening range of actors undertaking research in the life sciences, may increase the risk that beneficial pathogen-related discoveries are misused for hostile purposes.

At the same time, the diversification of stakeholders facilitates the implementation of governance initiatives designed to be undertaken by non-State actors. Examples here include measures such as awareness-raising among experts and scientists or self-regulation through codes of conduct for industry and academia.⁵⁸ A growing overlap between biological disarmament, biosecurity and global health, as epitomized in the term "dual-use research of concern" (DURC), presents new opportunities but also new challenges for preventing biological warfare.

Achieving greater transparency in military and civilian bio-related research is key to tackling any of these challenges, let alone to avoid traditional concerns in the BTWC regime about misuse and misperceptions that might trigger a biological arms race. In the long run, such transparency would be most effective if it were bolstered by a technically robust, legally binding, authoritative system of independent verification. However, in the meantime, strengthening and updating the politically binding CBMs and raising awareness through measures to engage all stakeholders could function as useful first steps. For instance, an international Biosecurity Summit could provide a useful starting point. Ideally, efforts to ensure BTWC compliance would not wholly depend on Security Council approval given the disproportionate influence it gives to a few BTWC State parties.

Given the entrenched positions regarding BTWC verification and compliance discussed above, the chances for reform of the Convention's compliance and enforcement procedures seem low in the short-to-medium term. Since the current central role of the Security Council in the BTWC entails well-known problems, it would be worth exploring whether (international or national) criminal or customary law could and should be playing a role in ensuring BTWC compliance beyond the Security Council. As indicated by decades-old State practice, the prohibition on possession of biological weapons, like the prohibition on their use, may have become, or be in the process of becoming, a rule of customary international law.⁵⁹ If States recognized this publicly, such a customary norm would provide a broader legal basis for efforts to prevent or counter biological weapon proliferation.

58 See for example InterAcademy Panel, "IAP Statement on Biosecurity", 7 November 2005, https://www.interacademies.org/sites/default/files/2020-05/IAP_Statement_on_Biosecurity_1.pdf.

59 U. Becker, H. Müller and C. Wunderlich, "While Waiting for the Protocol: An Interim Compliance Mechanism for the Biological Weapons Convention", *Nonproliferation Review*, vol. 12, no. 3, 2005, pp. 541–572, <https://doi.org/10.1080/10736700600601194>; and S. Haines, "Weapons, Means and Methods of Warfare", in E. Wilmshurst and S. Breau (eds.), *Perspectives on the ICRC Study on Customary International Humanitarian Law*, 2007, pp. 258–281, <https://doi.org/10.1017/CBO9780511495182.011>.

The Covid-19 pandemic has impaired the work in the BTWC since meetings have had to be postponed and the preparatory process for the ninth Review Conference is significantly hampered. In terms of substance, lessons drawn from the Covid-19 experiences could enhance the willingness of parties to explore all available options to ensure compliance with the Convention.⁶⁰ However, to overcome the current strategic tensions between China, the Russian Federation and the United States in this field would require greater convergence of interests within the BTWC regime.

⁶⁰ For some implications see R. Guthrie, "COVID-19 Impact Reports", BioWeapons Prevention Project, 2020, <http://www.bwpp.org/covid.html>.

5. THE CHEMICAL WEAPONS REGIME

As with chapters 3 and 4, this chapter begins (in section 5.1) with an overview of the original compliance and enforcement mechanisms in the chemical weapons regime. It then proceeds (in section 5.2) to outline how the regime has adapted before looking (in section 5.3) at its current state and the implications of great power rivalry. It closes (in section 5.4) with an assessment of prospects for adaptation.

5.1 COMPLIANCE AND ENFORCEMENT IN THE ORIGINAL CONCEPTION

The Chemical Weapons Convention (CWC) entered into force in 1997. With 193 full members, it is close to universality. Of the non-members, South Sudan has expressed its intention to join, while Israel (a signatory), Egypt and the Democratic People's Republic of Korea are (for differing reasons) unlikely to accede to the CWC any time soon.⁶¹

Like the Biological and Toxin Weapons Convention (BTWC), the CWC is non-discriminatory. It bans the possession, retention, proliferation and use of chemical weapons by anyone. Further, like the BTWC, the CWC expresses the prohibition through a general purpose criterion. Specifically, chemical weapons are defined as "toxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes", as well as munitions, devices and equipment specifically designed for weapons purposes and containing chemicals that act through their toxic properties.⁶²

Unlike the BTWC, the CWC includes a complex verification and compliance system.⁶³ Under this system, CWC States parties must declare, among other things, current or old chemical weapons and production facilities in their possession or on their territory as well as stocks of riot control agents. Declarations are also required for chemicals listed in three CWC Schedules and facilities specified in the treaty.

The Organisation for the Prohibition of Chemical Weapons (OPCW) is tasked with overseeing CWC implementation. Its Technical Secretariat conducts routine inspections and other verification activities. Compliance measures also include consultations, either bilaterally or through the OPCW Executive Council, which consists of representatives from 41 member States. Any member State can request the Executive Council to clarify a situation of compliance concern. The Council can then request the State in question to redress the situation or recommend that the Conference of the States Parties (CSP) take action, as stipulated in CWC Article XII. In particularly grave cases, the CSP can also involve the United Nations General Assembly or Security Council. The power of enforcement is thus shared between the OPCW's policy-making organs and the Security Council.

61 Organisation for the Prohibition of Chemical Weapons, "South Sudan to Join Chemical Weapons Convention", 1 December 2017, <https://www.opcw.org/media-centre/news/2017/12/south-sudan-join-chemical-weapons-convention>.

62 See Article II of Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, 1997, <https://www.opcw.org/chemical-weapons-convention/articles/article-ii-definitions-and-criteria>.

63 R. Trapp, Compliance Management under the Chemical Weapons Convention, WMD Compliance & Enforcement Series no. 3, UNIDIR, 2019, <https://doi.org/10.37559/WMD/19/WMDCE3>.

5.2 COMPLIANCE CRISES AND THE ADAPTATION OF THE REGIME

The CWC has been successful in ridding the world of chemical weapons. In total, the States parties have destroyed 98 per cent of all declared stocks and facilities. Deficits in national implementation and the failure of some chemical weapon possessors to meet their initial destruction deadlines may have constituted technical violations of the treaty. However, this did not happen in bad faith, and the OPCW effectively and cooperatively addressed these technical violations.⁶⁴ The regime thus functioned without major compliance crises until chemical weapons were used in the Syrian Arab Republic and for assassination attempts in Malaysia, the United Kingdom and the Russian Federation.

Regarding the latter cases, one person was killed with the nerve agent VX at the Kuala Lumpur airport in February 2017. The Democratic People's Republic of Korea, which is not a member of the CWC and OPCW, has been considered a likely suspect for ordering this attack.⁶⁵ Five people were poisoned in Salisbury in March and June 2018 with a novichok nerve agent.⁶⁶ The United Kingdom blamed the Russian Federation, which denied any involvement.⁶⁷ While the case was primarily a criminal matter, the use of an undeclared chemical warfare agent, even in an assassination attempt, represents a compliance concern for the Convention. This incident increased tensions between the United Kingdom and its allies and the Russian Federation. Nonetheless, in 2019 the CWC States parties unanimously agreed to add several novichok chemicals to Schedule 1, subjecting them to the CWC's verification regime.⁶⁸ In August 2020, a different novichok agent was used in yet another assassination attempt, in the Russian Federation this time. Again, Western countries have accused the Russian government of ordering the attack. The OPCW provided technical assistance in the latter two incidents, but the CWC compliance procedures were not invoked in any of the cases.⁶⁹

The first reports about chemical weapon use in the Syrian Arab Republic emerged in late 2012.⁷⁰ The Syrian Arab Republic was not a party to the CWC at the time. The UNSGM carried out investigations in 2013 and confirmed the use of chemical weapons in four

64 Ibid.

65 C. Vestergaard, "Chemical Assassinations: the Role of International Organisations", The Stimson Center, March 2, 2017, <https://www.stimson.org/2017/chemical-assassination-role-international-organizations/#>.

66 In addition to the first two victims and supposed targets, Sergey and Yulia Skripal, three more people were poisoned, probably accidentally, one of whom died.

67 R. Trapp, "Novichok, the Skripal Affair and the Chemical Weapons Convention", in Spiez Laboratory, Annual Report 2018, May 2019, https://www.labor-spiez.ch/pdf/en/dok/jab/88_003_e_Geschaeftsbericht_LABOR_SPIEZ_2018_2_19_web.pdf, pp. 4–8.

68 S. Costanzi and G.D. Koblenz, "Updating the CWC: How We Got Here and What Is Next", *Arms Control Today*, vol. 50, no. 3, April 2020, <https://www.armscontrol.org/act/2020-04/features/updating-cwc-we-got-here-what-next>.

69 See Organisation for the Prohibition of Chemical Weapons, "Case of Mr Alexei Navalny", <https://www.opcw.org/media-centre/featured-topics/case-mr-alexei-navalny>; Organisation for the Prohibition of Chemical Weapons, "Incident in Salisbury", <https://www.opcw.org/media-centre/featured-topics/incident-salisbury>.

70 J. Perry Robinson, *Alleged Use of Chemical Weapons in Syria*, Harvard Sussex Program (HSP) Occasional Paper no. 4, 26 June 2013, http://www.sussex.ac.uk/Units/spru/hsp/occasional_papers/HSPOP_4.pdf, pp. 11–15.

cases, without, however, assigning blame to any party.⁷¹ A joint Russian–United States initiative led to both the Syrian Arab Republic’s accession to the CWC in September 2013 and an unprecedented disarmament process in which all declared Syrian stocks, precursors and facilities were destroyed. However, by 2014, OPCW findings and further chemical attacks nurtured suspicions that the Syrian Arab Republic may not have fully complied with its declaration, disarmament and non-use obligations.

To address this issue, rather than relying on existing CWC compliance measures, new instruments were designed to address this crisis. The decision to develop new tools was taken, as Trapp suggests, in part because “States Parties feared that invoking [existing tools] might carry excessive political risks”.⁷² This is why, for instance, States parties have long been reluctant to employ the tool of challenge inspections, as foreseen in the CWC.⁷³ However, the Executive Council has referred the Syrian case to the CSP in accordance with CWC Article XII, and it will be discussed accordingly during the second part of the 25th CSP, scheduled for April 2021.⁷⁴

In 2015, the Security Council established the United Nations–OPCW Joint Investigative Mechanism (JIM) to identify the perpetrators of confirmed chemical attacks. The JIM found that the Islamic State group had used chemical weapons twice and the Syrian Army four times.⁷⁵ Its mandate was renewed in 2016 but expired in 2017 when the Russian Federation vetoed the JIM’s extension. Within the OPCW Technical Secretariat, in 2014 the Director General created the Declaration Assessment Team (DAT) to resolve concerns around the Syrian declarations and set up the Fact-Finding Mission (FFM) to investigate allegations of chemical weapons use. The work of both is ongoing.

In 2018, a Special Session of the CSP voted to establish an Investigation and Identification Team (IIT) within the Technical Secretariat, tasked with identifying perpetrators of confirmed chemical attacks.⁷⁶ Its first report, published in April 2020, identified the Syrian Air Force as responsible for three chemical attacks in March 2017.⁷⁷ The findings of the

71 General Assembly and Security Council, “United Nations Mission to Investigate Allegations of the Use of Chemical Weapons in the Syrian Arab Republic”, A/68/663 and S/2013/735, 13 December 2013, <https://undocs.org/A/68/663>.

72 R. Trapp, *Compliance Management under the Chemical Weapons Convention*, WMD Compliance & Enforcement Series no. 3, UNIDIR, 2019, <https://doi.org/10.37559/WMD/19/WMDCE3>.

73 Ibid.

74 Organisation for the Prohibition of Chemical Weapons, Executive Council, “Addressing the Possession and Use of Chemical Weapons by the Syrian Arab Republic”, Decision, EC-94/DEC.2, 9 July 2020, [https://www.opcw.org/sites/default/files/documents/2020/07/ec94dec02\(e\).pdf](https://www.opcw.org/sites/default/files/documents/2020/07/ec94dec02(e).pdf); and Conference of the CWC States Parties, 25th Session, “Tentative Programme of Work”, C-25/INF.2, 27 November 2020, [https://www.opcw.org/sites/default/files/documents/2020/11/c25inf02\(e\).pdf](https://www.opcw.org/sites/default/files/documents/2020/11/c25inf02(e).pdf), p. 2.

75 Security Council, “Seventh Report of the Organisation for the Prohibition of Chemical Weapons–United Nations Joint Investigative Mechanism”, S/2017/904, 26 October 2017, <https://undocs.org/S/2017/904>. See also Security Council, “Third Report of the Organization for the Prohibition of Chemical Weapons–United Nations Joint Investigative Mechanism”, S/2016/738, 24 August 2016, <https://undocs.org/S/2016/738>.

76 Organisation for the Prohibition of Chemical Weapons, “Syria and the OPCW”, <https://www.opcw.org/media-centre/featured-topics/syria-and-opcw>.

77 Organisation for the Prohibition of Chemical Weapons, Technical Secretariat, “First Report by the OPCW Investigation and Identification Team Pursuant to Paragraph 10 of Decision C-SS-4/DEC.3 ‘Addressing the Threat From Chemical Weapons Use’ Ltamenah (Syrian Arab Republic) 24, 25, and 30 March 2017”, S/1867/2020, 8 April 2020, [https://www.opcw.org/sites/default/files/documents/2020/04/s-1867-2020\(e\).pdf](https://www.opcw.org/sites/default/files/documents/2020/04/s-1867-2020(e).pdf).

JIM and the IIT indicate that the Syrian Arab Republic has violated its CWC obligations repeatedly. The Syrian Arab Republic, the Russian Federation and others have questioned the legitimacy of both the IIT process and its findings, and the international community has been unable to provide a unified response.⁷⁸

5.3 CURRENT STATE AND THE INFLUENCE OF GREAT POWER RIVALRY

The CWC regime is facing a severe crisis. The Syrian violations would pose a serious but manageable challenge if the States parties were unanimously willing to redress the situation. However, they are split. After the United States and the Russian Federation had initially cooperated to dismantle the Syrian chemical weapon programme, their competing geostrategic interests in the Middle East and involvement in the Syrian war have now polarized the OPCW.⁷⁹ The Russian Federation has protected the Government of the Syrian Arab Republic from any United Nations- or OPCW-based sanctions. Both countries, as well as the Islamic Republic of Iran and other States, have publicly questioned the OPCW's impartiality and professionalism, and have presented counter-narratives to those of the JIM, FFM and IIT reports.⁸⁰ Moreover, they consider the IIT beyond the purview of the CWC.

The United Kingdom, France, the United States and many other States emphasize the need to uphold the CWC and the norms against chemical warfare. They have expressed their confidence in the Technical Secretariat and their support for all existing mechanisms aimed at addressing compliance concerns. Nevertheless, retaliatory airstrikes launched by the United States, France and the United Kingdom against Syrian targets after chemical weapon attacks in the Syrian Arab Republic in 2017 and 2018 were carried out before OPCW investigations had confirmed the attacks. As such, these demonstrations of power hardly served to enhance the OPCW's legitimacy and authority.

Although the CWC regime may be in crisis, the norms against chemical weapons remain solid. No actor, the Syrian Arab Republic included, has admitted to or sought to justify the use of chemical weapons, and many States have condemned such use. Nevertheless, the polarization among CWC members and the lack of consensus in acknowledging and reacting to the Syrian Arab Republic's non-compliance are problematic. So too is more frequent voting in the Executive Council and the CSP on substantive issues, a trend that threatens to undermine the OPCW's viability and "result in recriminations, a dysfunctional treaty regime, and paralyzed institutional and investigative mechanisms".⁸¹

78 See for example TASS, "Damascus Rejects OPCW Conclusions on Chemical Weapons Use in Syria's Ltamenah", 9 April 2020, <https://tass.com/world/1142481>; and TASS, "OPCW IIT Report on Chemical Attacks in Syria Politically Biased – Diplomat", 10 July 2020, <https://tass.com/world/1177227>.

79 H. Notte, "The United States, Russia, and Syria's Chemical Weapons: A Tale of Cooperation and Its Unravelling", *Nonproliferation Review*, vol. 27, nos 1–2, 2020, <https://doi.org/10.1080/10736700.2020.1766226>.

80 For more on FFM and IIT reports see Organisation for the Prohibition of Chemical Weapons, "Syria and the OPCW", <https://www.opcw.org/media-centre/featured-topics/syria-and-opcw>. For JIM reports see Security Council, "Exchange of Letters", <https://www.un.org/securitycouncil/content/exchange-letters>.

81 J. Hart and R. Trapp, "Collateral Damage? The Chemical Weapons Convention in the Wake of the Syrian Civil War", *Arms Control Today*, vol. 48, no. 3, April 2018, <https://www.armscontrol.org/act/2018-04/features/collateral-damage-chemical-weapons-convention-wake-syrian-civil-war>.

5.4 NEED FOR AND PROBABILITY OF ADAPTATION

The compliance system of the CWC is elaborate, but the context for which it was designed has changed. The chemical weapons prohibition regime needs to be adapted in at least two ways to function in this new context.

First, with the declared chemical weapon stocks of CWC State parties being all but dismantled, the OPCW's routine operations need to be reoriented to a changing chemical industry and research landscape and to "preventing the re-emergence of chemical weapons".⁸² Different political positions and priorities may require intense deliberations before the verification and compliance system can be adapted. However, given a (presumed) common interest among all States parties in a functioning inspection system and in as few restrictions as possible on chemical trade and international cooperation, a solution may be found eventually. Realizing this process of adaptation will require continued engagement with all stakeholders to leverage wider support and technical expertise for the OPCW's evolving mission.⁸³ Non-State governance-type activities, such as the formulation and promotion of the Hague Ethical Guidelines – a set of principles "to promote a culture of responsible conduct in the chemical sciences and to guard against the misuse of chemistry"⁸⁴ – represent important elements in these efforts.

Second, the full effectiveness of the CWC's compliance system is predicated on a unified treaty community addressing compliance concerns together and confronting a rule-breaker. As such, the extent and nature of the current division between States parties pose unexpected challenges for compliance politics. This polarization within the OPCW policy-making organs threatens to limit the Organisation's scope for action. Overcoming this polarization and formulating a determined response to treaty violations would be the best way forward, but it remains unlikely.

Because of the difficulty in agreeing such a determined response, some have promoted the notion of holding individuals politically or judicially accountable. For example, the "No Impunity" initiative, led by France, aims to publicize and place under sanctions individuals and entities connected with the Syrian chemical weapon programme.⁸⁵ This proposal, aimed at supporting the norm against chemical weapons, reflects a combination of normative-aspirational, political and legal efforts.⁸⁶ Since the International Criminal Court (ICC) could only act on the Syrian Arab Republic with a United Nations Security

82 R. Trapp, "The Chemical Weapons Convention – Past Success, Current Challenges", in M. Crowley, M. Dando and L. Shang (eds.), *Preventing Chemical Weapons: Arms Control and Disarmament as the Sciences Converge*, Royal Society of Chemistry, 2018, pp. 40–54, <https://doi.org/10.1039/9781788010092-00025>.

83 R. Trapp, "Future Verification Challenges for the Chemical Weapons Convention", in VERTIC, *Verification & Implementation: A Collection of Analysis on International Agreements for Security and Development*, 2019, <https://www.vertic.org/wp-content/uploads/2020/08/VI-Volume-2-2019-WEB-1.pdf>; and P. Van Ham, S. van der Meer and M. Ellahi, *Chemical Weapons Challenges Ahead: The Past and Future of the OPCW*, Clingendael Institute, 2017, <http://www.jstor.org/stable/resrep17327.6>, pp. 53-78.

84 Organisation for the Prohibition of Chemical Weapons, "The Hague Ethical Guidelines", <https://www.opcw.org/hague-ethical-guidelines>.

85 International Partnership against Impunity for the Use of Chemical Weapons, "International Tools for Fighting against Impunity for the Use of Chemical Weapons: Guiding Document for Outreach", 2020, https://www.noimpunitychemicalweapons.org/IMG/pdf/guiding_document_pai_-_final_-_en.pdf.

86 Ibid.

Council referral, the judicial approach currently relies on national courts taking action based on national or universal jurisdiction. The International, Impartial and Independent Mechanism (IIIM), established by the United Nations General Assembly in 2016, supports this by collecting, preserving and processing evidence of war crimes in the Syrian Arab Republic for future trials.⁸⁷

Those States parties willing to bolster the CWC and pertinent norms find themselves in a dilemma: invoking the CWC compliance procedures signals a determination to hold treaty violators accountable and demonstrates the treaty's effectiveness in handling compliance crises. However, this will be likely to exacerbate divisions between States parties, thus weakening the OPCW. Not invoking the procedures could, however, be construed as evidence that they are ineffective and signal that violators could go unpunished, thus weakening the deterrence effect of the compliance system and potentially weakening the norm. That non-compliance must be punished and compliance restored should be undisputable. Time will tell whether the current set of measures will work under the given political circumstances, or whether States parties will have to find yet another solution.

87 International, Impartial and Independent Mechanism, "Mandate", <https://iiim.un.org/mandate/>.

6. CONCLUSIONS

The regimes covering weapons of mass destruction (WMD) have compliance and enforcement systems that can perform well in crises. At the same time, their systems have failed in the absence of unity among a regime's membership, notably among the great powers. Historically, these systems proved flexible and capable of adaptation and improvement.⁸⁸ Gaps in the compliance systems of the WMD regimes have often been plugged by creative inventions such as special negotiation groups, special verification commissions etc. Even the notion that legally binding measures are hard to achieve has been defied: United Nations Security Council resolution 1540 (2004) was developed swiftly. It binds all United Nations members, is aimed at preventing nuclear, biological, chemical and radiological terrorism, and has enhanced compliance with the WMD treaties. If leadership is provided and political will channelled, then the lack of adaptive capability and flexibility of legally binding instruments proves to be a myth.

The membership of global arms control regimes is usually normatively heterogeneous, the result being broad, sometimes vague norms. While States may agree on a norm's purpose, the exact meaning might be contested in practice. Institutionalization may help cultivate common understandings and resolve conflicts over norms. While legalization and institutionalization may not prevent norms from being challenged (as seen in the Chemical Weapons Convention), codification at least provides a certain resilience. In addition, institutionalization also provides actors with forums to consolidate or clarify the meaning of vague norms and thus foster compliant behaviour.

The success of norm-based measures ultimately depends on the legitimacy attributed to them. If a norm is not accepted by a State, neither soft nor hard law may prevent non-compliance.⁸⁹ This points to the decisive fact: the emergence, existence, viability and success of arms control and disarmament norms and regimes is not nature-given and ultimately does not hinge on their type or structure. Rather, it depends on agency. United memberships and committed great powers allow a regime to flourish. Divided memberships and competing great powers push regimes to ineffectiveness, agony and decay.

Presently, great powers give higher priority to their own immediate freedom of action (including their armament policies) than to the longer-term consequences for the international system as a whole. Arms control and disarmament, although not dismissed if favourable to national interest, are a secondary priority. Compliance politics are informed by geopolitical interests more than by regime norms. In this context, it could be argued that the call for more informal, less binding agreements sounds more like an attempt to abolish restraints on freedom of action, rather than a concerted effort to enhance the chances for more normative constraints on armament.

⁸⁸ For more on this, see earlier papers in this series.

⁸⁹ R.L. Williamson, "Hard Law, Soft Law, and Non-Law in Multilateral Arms Control: Some Compliance Hypotheses", *Chicago Journal of International Law*, vol. 4, no. 1, 2003, pp. 59–82, <https://chicagounbound.uchicago.edu/cjil/vol4/iss1/7>, p. 74.

Which type of measure is most appropriate for a given problem in a given situation is a functional issue, not a question of principle. As we have shown, legally binding, politically binding and normative approaches coexist usefully in the WMD regimes. They can be combined, sequenced, built on each other and so on. What is needed for whatever type and whatever combination to come into being and to function smoothly, even in the most sensitive area of compliance and enforcement, is united political will.

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