The Biological Weapons Convention at Fifty

Codifying 100 years of efforts to combat biological warfare






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United Nations Office
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FOREWORD

Ms. Izumi Nakamitsu, United Nations Under-Secretary-General and High Representative for Disarmament Affairs

In 1975, the Biological Weapons Convention, the first multilateral disarmament treaty to ban an entire category of weapons of mass destruction, entered into force. Since its inception the Convention has been a key component of the global disarmament regime, codifying a strong and longstanding norm that the use of biological weapons would be repugnant to the conscience of humanity.

With 188 States Parties, the near universal adherence to the Convention serves as a testimony to its importance as a safeguard for humans, plants and animals across the world. Building upon the foundation set by the 1925 Geneva Protocol, the Convention has been instrumental to the international community's efforts to eliminate weapons of mass destruction and sustain a strong norm against biological weapons.

In an increasingly volatile international security landscape, where established disarmament norms face immense strains and potential risks continue to evolve, we must remain mindful that the threat of biological weapons has not been confined to history.

The COVID-19 pandemic demonstrated the devastating harm that the spread of infectious diseases can cause globally and the disruption that could be caused if biological agents were to be used in a deliberate manner as a weapon. This has only underscored the necessity of strengthened international efforts to ensure biosafety and biosecurity.

Constant breakthroughs in science and technology require constant vigilance. Only international cooperation can ensure that advances are used peacefully and responsibly. In 2024, the Heads of State and Government of all United Nations Member States adopted the Pact for the Future - a multilateral agreement that outlines necessary actions to protect the needs and interests of present and future generations. In the Pact, all Member States committed to a proactive approach to address emerging biological risks, reaffirming a shared determination to exclude completely the possibility of biological agents and toxins being used as weapons, and to strengthen the Convention.

The Biological Weapons Convention represents much more than just a legal framework - it embodies a shared commitment to protecting humanity from one of the most dangerous threats we face.

To effectively address the threat of biological warfare in an increasingly complex geopolitical environment, the inclusion of diverse voices and perspectives must be prioritized. This can help to ensure our collective efforts are tailored to the needs of all sectors of society.

To that end, this publication features insights from a range of stakeholders, with experience in diplomacy, academia, advocacy and science – both established experts and emerging leaders. Their contributions provide an overview of the Convention's past and present - with hard-fought breakthroughs and recent glimmers of hope from the Ninth Review Conference held in 2022. They make thoughtful proposals for approaches to identify and respond to potential challenges in the future.

As well as a celebration of the Convention's durability, this publication provides a timely opportunity to reflect on its evolution over time. The reflections can support current efforts, including the ongoing work of the Working Group on the Strengthening of the Convention, our growing and systematic activities to support national implementation and the continued engagement of civil society, including youth.

This publication aims to inspire renewed determination for a future in which the use of biological weapons is not only unthinkable but also impossible.

1. PAST

How did the 1925 Geneva Protocol prepare the foundation for the Biological Weapons Convention?

Dr. Fiona Simpson, Deputy Chief, Weapons of Mass Destruction Branch, United Nations Office for Disarmament Affairs

The Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare (otherwise known as the 1925 Geneva Protocol), which marks its centenary in 2025, is frequently cited as a product of the collective trauma of the First World War, particularly the use of chemical weapons. Indeed, in the years immediately following the November 1918 armistice, public sentiment, and even disillusionment, regarding the futility and tragedy of the war only grew. The posthumously popular description by the British poet Wilfred Owen of a fellow soldier during a chlorine gas attack made clear the inhumanity of chemical weapons:

Dim through the misty panes and thick green light

As under a green sea, I saw him drowning

However, to draw a direct line from the First World War to the 1925 Geneva Protocol is to disregard the earlier efforts that, ironically, had already been made to prevent the use of such weapons in war.

The Hague Conventions of 1899 and 1907 had sought to define the rules of war and warfare and had, amongst their wider ambitions, built upon even earlier efforts (Brussels Convention,1874) towards prohibiting the use of weapons that were rather nebulously characterized as "poison" or "poisonous".

Yet in requiring their Contracting Parties to abstain from the use of "projectiles, the sole object of which is the diffusion of asphyxiating or deleterious gases" (1899 Hague Convention) or from using "poison or poisonous weapons" (1907 Hague Convention), the imprecision of earlier efforts was perpetuated.

The definitive language of the 1925 Geneva Protocol, therefore, allowed for two particularly important improvements to be made in this regard.

The first was to close the loopholes in the language of the Hague Convention in order to ban not simply "projectiles" whose "sole object is the diffusion" of these weapons, but rather to ban the "asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices" ***themselves***.

The second key development was to extend the ban to the use of biological weapons or, in the language of the Protocol, "bacteriological methods of warfare." In so doing, the seeds for the Biological Weapons Convention were sown.

Despite the horrors wrought by conventional weapons, the Geneva Protocol clearly enshrined the notion of a separate category of weaponry deemed so terrible that they had been – as its preamble stated – "justly condemned by the general opinion of the civilized world."

The Protocol, however, only banned the use of these weapons; its remit did not extend to their production, use, stockpiling, acquisition or retention. Nor did it have any enforcement mechanism. In addition, some signatories submitted reservations, and retained the right to retaliate in kind, if attacked or against non-signatories. Neither of these limitations, however, should detract from the significance of the Protocol as an instrument and product of the era in which it was created. It provided the normative framework for treaty-based prohibitions of weapons of mass destruction, not only in the form of the Biological Weapons Convention, but the Chemical Weapons Convention and even the Treaty on the Prohibition of Nuclear Weapons and the Treaty on the Non-Proliferation of Nuclear Weapons (in particular, its Article VI).[1]

At the same time, it became clear that the prohibition on use of biological weapons, as contained in the Geneva Protocol, was the foundation – not the capstone – of efforts to rid the world of biological weapons and ensure against their return and use.

In the aftermath of another World War, one that brought to life a new category of weapons of mass destruction in nuclear weapons, a new era of arms racing began. The Cold War rivalry between the United States of America and the Soviet Union is rightly remembered for the build-up of nuclear weapons and, with it, the threat of immediate and existential annihilation.

1 Article VI of the NPT reads "Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control."

However, and absent of any prohibition against such activities, the arms racing of the Cold War era also entailed the development of biological weapons by both sides. Growing concerns about the dangers of biological weapons, and the likely inability to contain or control them once deployed, lent themselves to an ongoing normative shift in the international community – away from unconstrained arms racing and towards more meaningful constraints on weapons of mass destruction – beyond simply preventing their use.

This led directly to the successful negotiation of the 1972 Biological Weapons Convention, which became the first treaty to ban an entire class of weapons of mass destruction. The Convention explicitly built upon the Geneva Protocol, its preamble not only recognizing the "important significance" of the Protocol, but specifically highlighting "the contribution which the said Protocol has already made, and continues to make, to mitigating the horrors of war." Article VIII of the Convention made clear that "Nothing in this Convention shall be interpreted as in any way limiting or detracting from the obligations assumed by any State" under the Geneva Protocol. In doing so, the BWC represented a shift from principle to practice, by virtue of its prohibition against development, production and stockpiling of biological weapons and by containing specific, enforceable provisions.

On the centenary of the 1925 Geneva Protocol, its offspring – the Biological Weapons Convention – has 188 States Parties and four signatories. It has indisputably made the world a safer place. However, the capstone of the elimination of biological weapons, is still not yet in place; in spite of its enforceable provisions, the Convention lacks an enforcement mechanism. In a world where, as the UN Secretary-General António Guterres has said "distrust has replaced dialogue"[2] and amid fears that the nexus between technology and WMD is lowering the barriers to acquisition, it is an understatement to say that there is still work to be done.

One hundred years ago, in the wake of the most devastating war humanity had ever witnessed, the Geneva Protocol created a norm against the use of biological weapons. Now it is time to finish the job and ensure these weapons are verifiably and irreversibly eliminated.

2 https://www.un.org/sg/en/content/sg/speeches/2022-08-01/secretary-generals-remarks-the-tenth-review-conference-of-the-parties-the-treaty-the-non-proliferation-of-nuclear-weapons

How did the BWC evolve over the last five decades and establish itself as a key pillar in multilateral disarmament?

Dr. Lise H. Andersen, Post-Doctoral Researcher, Leiden University and Professor Brian Balmer, University College London

The Biological Weapons Convention (BWC) should be seen not merely as a Cold War product but rather a long-term development with continuing relevance today. Biological weapons, having been the subject of the 1925 Geneva Protocol, alongside chemical weapons, were not new to the international agenda in the latter half of the twentieth century. Biological disarmament did, however, gain renewed salience in the 1960s with breakthroughs occurring elsewhere in the nuclear arms limitation discussions, specifically with the 1963 Limited Test Ban Treaty and the 1968 Nuclear Non-Proliferation Treaty, providing impetus. More broadly, the Vietnam war – often regarded as the first televised war (Mandelbaum, 1982) – drew increasing public attention to chemical and, by association, biological weapons (Bridger 2015). Attempts were made throughout the 1960s to forge a convention that outlawed both chemical and biological weapons, but the two became separated as biological weapons were perceived as a more tractable problem to solve (Walker 2012).

The BWC was negotiated by the Conference of the Committee on Disarmament in Geneva from 1969 to 1971, opened for signature in April 1972, and entered into force in March 1975. Whilst "scuttled through," and having "obvious shortcomings" – significantly the lack of a verification mechanism – the BWC is considered "a real achievement" not only for the United Kingdom of Great Britain and Northern Ireland (UK), which spearheaded international talks in the area, but also for communities (including scientists) who had pushed for the ban on biological weapons (Sims, 2011, p.9). The Convention "became the first multilateral disarmament treaty to prohibit an entire class of weapons" and "represents a milestone of the international disarmament regime" (Shearer et al, 2023, p.47; Revill and Blancafort, 2023). Furthermore, it "has established a strong norm against biological weapons" and is considered by some a "powerful tool" and "key element" in dealing with the associated threats (UN ODA, n.d.a; Huigang et al., 2022, p.50). Indeed, both the United States of America and then Soviet Union supported the BWC, and alongside the UK, became the depositaries of the Convention.

Organisation of the BWC

In terms of structure, "the BWC has no international agency or governing council, nor even a permanent secretariat" (Sims, 2011, p.10). However, an Implementation Support Unit (ISU), was established in 2006 "to provide administrative support to meetings agreed by the Review Conference as well as comprehensive implementation and universalization of the Convention and the exchange of confidence-building measures" (UNODA, n.d.b). The First Review Conference in 1980 was initiated by Article XII of the BWC, which stated that no more than five years after the Convention entered into force a conference should be held "to review the operation of the Convention" (BWC, 1972, p.4). Significantly, Article XII also noted that "[s]uch [a] review shall take into account any new scientific and technological developments relevant to the Convention" (Ibid.). From the outset, therefore, the BWC was more than a paper agreement, with a mechanism for continuity built into the regime.

After the initial Review Conference, a further eight have been undertaken. The Fifth Review Conference in 2001 witnessed a degree of acrimony over the United States of America's proposal to end the Ad Hoc Group mandate to establish a legally binding protocol to strengthen the Convention (Littlewood 2005). In terms of the BWC's structure, a more positive outcome was the establishment in 2002 of an Intersessional Programme consisting of annual Meetings of Experts (MXs) and Meetings of States Parties (MSPs), to be held between successive Review Conferences. Writing at the time, Chevrier notes that these sessions provided a substantive forum for discussion and a procedural means for inter-state communication (Chevrier 2002). The Ninth Review Conference in 2022 replaced the MXs with a "Working Group on the Strengthening of the Convention."

The BWC as an on-going governance regime

As mentioned, the BWC, unlike many other international treaties, is not a fossilised agreement. The Review Conferences, inter-sessional meetings and activities of the ISU together create an on-going focus of attention on biological weapons control. The steadily increasing involvement of civil society groups in the BWC adds further scrutiny. Moreover, long-term commentator on the BWC, Malcolm Dando, observes that, where there would otherwise be a geopolitical vacuum, the treaty performs multiple functions that include: (Dando, 2002, p.24):

1. Deterrence of violation, inducing compliance through threat of discovery
2. Reassurance through confirmation that the treaty is being implemented
3. Channel of communication that enables States able to identify and deal with disputes before they escalate
4. Precedent for subsequent, more advanced stages of disarmament
5. Mechanism for distinguishing between major and minor violations

A different point ensuring its continuing relevance is that the BWC is future-proofed through what its negotiators called the 'general purpose criterion' (GPC). By regulating malign intent, or purpose, rather than creating easily outdated lists of banned substances, the BWC avoids technological surprises. This is because any novel scientific or technological development in the life sciences that is intended for harm is automatically sanctioned under the Convention. Referring to the same criterion in the Chemical Weapons Convention, Perry Robinson called the GPC 'the heart of the convention' (Perry Robinson, 1994, p.1).

A final point regarding continuity is highlighted in recent research by one of this chapter's authors (Andersen, 2024). While not explicitly labelled as Knowledge Management (KM), some of the activities associated with the BWC have acted as a way of systematically dealing with knowledge about both biological weapons and the arms control process. One of the purposes of formal KM is to ensure that the knowledge base of a particular professional entity is up to date, robust and relevant. To an extent, the Review Conferences and MXs can be considered as having a KM function. This is because – as Article XII states – their aim is to ensure that the BWC is fit for purpose through review of related scientific and technological developments. Specifically, during their third and fourth iterations, the MXs, while discussing a wide range of matters, did focus on reviewing scientific and technological developments. Finally, the ISU while modest in size, is an active repository and mobiliser of knowledge about the BWC, particularly through its many activities promoting knowledge and informing States in relation to CBMs. So, while not without shortcomings in formal KM terms, the BWC nonetheless consolidates and mobilises knowledge that would otherwise be dispersed.

The BWC at 50

While the BWC is a lean document that only specified the hosting of a single Review Conference as a direct follow-up to its entry into force, it set in motion the development of a global governance regime, which is now 50 years in the making. Over the past five decades, the BWC process has become increasingly sophisticated. States Parties have committed to the consistent hosting of Review Conferences every five years; enacted an intersessional programme to ensure the continuity of discussion in the interim; as well as established the ISU to help facilitate adherence. As a result, the BWC has become a key pillar in multilateral disarmament.

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How has the Implementation Support Unit strengthened the BWC since its establishment in 2006?

Mr. Daniel Feakes, Chief, Biological Weapons Convention Implementation Support Unit, United Nations Office for Disarmament Affairs

For over half of its lifespan, the Biological Weapons Convention operated without any dedicated continuous institutional support. This shortcoming was finally remedied at the Sixth Review Conference in 2006, not long after the Convention's thirtieth anniversary. The Implementation Support Unit (ISU) created by the Review Conference has now been in existence for almost two decades.

Prior to the creation of the ISU, the BWC lacked any dedicated and ongoing secretariat support. Without regular annual meetings there was little need for a full-time secretariat. Instead, the various predecessors of the current Geneva Branch of the United Nations Office for Disarmament Affairs provided secretariat and administrative support as and when required, mainly for the five-yearly review conferences. In addition, since 1987, the Office also supported the annual collation and circulation to all States Parties of the annual confidence-building measures (CBM) reports.

The Third Review Conference in 1991 saw the establishment of an Ad Hoc Group of Governmental Experts to Identify and Examine Potential Verification Measures from a Scientific and Technical Standpoint which held four sessions from 1992 to 1993. The subsequent Special Conference in 1994 established an Ad-Hoc Group which convened 24 sessions from 1995 to 2001. These decisions increased the requirement for dedicated support given the frequency of meetings under these processes. Therefore, the Office for Disarmament Affairs hired staff on temporary contracts for a few weeks or months at a time to service the meetings.

The collapse of the negotiations within the Ad Hoc Group in 2001 brought an end to this process and to the idea of creating a large international organization for the BWC modelled on the Organization for the Prohibition of Chemical Weapons. However, agreement on a new intersessional programme at the resumed Fifth Review Conference in 2002 meant that secretariat support would again be required for the annual Meetings of Experts and Meetings of States Parties to be convened in Geneva.

So, staff were again hired on a temporary basis to service the meetings as they were convened.

During this period from 2003 to 2006, there was also a growing acknowledgement of the need for more coordinated and sustained support for the implementation of the BWC at the national level. States Parties and regional organizations began to provide bilateral assistance, but there was a need for a coordination mechanism. In 2005 and 2006, proposals began to crystallise around the idea of establishing some form of "support unit", mirroring similar entities in other conventions.

At the Sixth Review Conference in 2006, three groups of States Parties independently tabled working papers proposing the establishment of such a unit.[1] One of the working papers noted that "the BTWC suffers from a serious institutional deficit. [...] These concerns have been accommodated in other arms control treaties. For example, a small implementation support unit has been developed under the Mine Ban Treaty and has already proven its added value."[2]

With a geographically-diverse range of States Parties supporting its creation, the Sixth Review Conference decided "that an 'Implementation Support Unit' (ISU) shall be established and will consist of three full time staff members within the Geneva Branch of the United Nations Department for Disarmament Affairs, funded by States Parties for the period from 2007-2011."[3]

The President of the Sixth Review Conference, Ambassador Masood Khan of Pakistan, wrote: "And perhaps most historically of all, we have agreed to establish an Implementation Support Unit to assist us in implementing the decisions of this Conference. For many years, the States Parties have debated the need for institutional support for the Convention. Now we have it, built not on a political argument, nor on a perception that "something is better than nothing", but on the solid basis of the positive and practical contribution the temporary

1 BWC/CONF.VI/WP.7, "Implementation of the Biological and Toxin Weapons Convention (BTWC): Need for a Concerted and Coordinated Approach", submitted by the Netherlands on behalf of the European Union; BWC/CONF.VI/WP.13, "Support Unit", submitted by Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Peru and Uruguay; BWC/CONF.VI/WP.16, "Support Unit for the Biological and Toxin Weapons Convention", submitted by Japan, Australia, Canada, Republic of Korea, Switzerland, Norway and New Zealand (JACKSNNZ).

2 BWC/CONF.VI/WP.16, "Support Unit for the Biological and Toxin Weapons Convention", submitted by Japan, Australia, Canada, Republic of Korea, Switzerland, Norway and New Zealand (JACKSNNZ).

3 BWC/CONF.VI/6, "Final Document", Part III, paras. 5-6.

secretariat has made over the past three years."[4]

The ISU was mandated to provide administrative support to meetings agreed by the Review Conference as well as support for the comprehensive implementation and universalization of the Convention and the exchange of confidence-building measures. The Seventh Review Conference in 2011 decided that the ISU would also establish and administer the Assistance and Cooperation Database and administer the Sponsorship Programme.

Since the ISU was formally launched in August 2007, it has worked to fulfil these mandates. Working with the chairpersons of the annual Meetings of States Parties, a total of 188 States are now party to the BWC. In 2024, a record number of 111 States Parties submitted their annual CBM reports. The Assistance and Cooperation Database currently contains a total of 28 offers for assistance from 12 States Parties and one group of States Parties and a total of 71 requests for assistance from 30 States Parties. In 2024, thanks to voluntary contributions from four States Parties and the European Union, around 60 national experts from developing countries were able to attend BWC meetings in Geneva and participate actively by making statements, participating in side events and having bilateral discussions.[5]

The Seventh Review Conference also noted that States Parties in a position to do so could provide voluntary contributions to the ISU to enhance its ability to carry out its mandated tasks.[6] Given that the funding received for the ISU from assessed contributions does not cover capacity-building or training activities, such voluntary contributions are crucial for addressing requests for assistance, primarily from developing States Parties. Donors have provided funds to the ISU to enable it to conduct implementation support activities at the request of States Parties, and to employ additional staff to carry out these activities.

Given that States Parties agreed to renew the mandate of the ISU at the Seventh, Eighth and Ninth Review Conferences, they clearly value the support that it has provided. In addition to the support that it provides to States Parties, the ISU also acts as the institutional memory of the BWC. At the Ninth Review Conference, States Parties finally agreed to expand the ISU by adding a fourth staff position.[7] It now plays a key role supporting the Working Group on the

4 Masood Khan, "The 2006 BWC Review Conference: The President's Reflections", Disarmament Diplomacy, no. 84 (Spring 2007).
5 BWC/MSP/2024/4, "Annual Report of the Implementation Support Unit."
6 BWC/CONF.VII/7, "Final Document", Section III, para. 33.
7 BWC/CONF.IX/9, "Final Document of the Ninth Review Conference", Section II, para. 25.

Strengthening of the Convention.

However, the ISU has also faced challenges during its lifetime. The mandate of the ISU is not continuous and has to be reviewed and renewed at each five-yearly Review Conference. The staff members of the ISU are also not permanent UN staff, but instead employed on fixed-term one-year contracts. The ISU, as with the BWC as a whole, receives no support from the UN regular budget.[8] All these factors make long-term planning and sustainability difficult.

The ISU's mandate was most recently reviewed and renewed by the Ninth Review Conference in 2022 for the period from 2023 to 2027.[9] In recent years, the ISU has recorded a significant increase in interest in and attention to the BWC at a national and regional level. This has been expressed in additional assistance requests, requests for guidance regarding the submission of CBMs, interest from States not party in joining the Convention, an increased number of sponsorship applications, an increased number of national contact points and a rise in the number of events to which the ISU is invited.
This reflects a welcome acknowledgement of the importance of the Convention within the multilateral disarmament framework.

8 In his book, The Precipice, Toby Ord remarks that "The international body responsible for the continued prohibition of bioweapons [...] has an annual budget of just $1.4 million – less than the average McDonald's restaurant." Toby Ord, The Precipice: Existential Risk and the Future of Humanity, Bloomsbury Publishing, 2020.

9 BWC/CONF.IX/9, "Final Document of the Ninth Review Conference", Section II, para. 24.

How will the Ninth Review Conference be remembered and what impact has it had on future meetings under the BWC?

Ambassador Leonardo Bencini, Permanent Representative of Italy to the Conference on Disarmament, President of the Ninth BWC Review Conference

The Ninth Biological Weapons Convention (BWC) Review Conference opened on 28 November 2022 against the backdrop of an international context that could have hardly been more challenging. While the deadlock on several disarmament and non-proliferation negotiations (including on biological weapons) dates back many years and is rooted in long-standing cleavages, the war in Ukraine had further exacerbated divisions. The failure to achieve consensus at the Tenth Review Conference of the Nuclear Non-Proliferation Treaty a few months earlier added to the general sense of pessimism.

So, the prospects for an agreement at the BWC Review Conference did not look promising. However, the sense of satisfaction was palpable in the room on the evening of 16 December, at the closure of the Review Conference. Against all odds, the States Parties to the BWC found consensus on a Final Document. Even though a broader and truly historic agreement might have been within reach, what we finally achieved was generally seen as a success. In a statement released in New York a few hours later, the Secretary-General of the United Nations, Antonio Guterres, welcomed the adoption of the final document of the Ninth Review Conference and considered it "a glimmer of hope in an overall bleak international security environment".[1]

So, in what way was the Ninth BWC Review Conference "a glimmer of hope"? To begin with, we broke the deadlock that had prevented any progress in the implementation of the Convention for more than twenty years. We established a Working Group tasked with identifying, examining and developing measures to strengthen the Convention and improve its implementation. No issue would be off the table at this Working Group, including compliance and verification – the question at the heart of the previous deadlock – and the possibility of legally-binding measures. So, we agreed on a clear roadmap for the entire four-year review cycle, leaving open the possibility of an "early harvest" in 2025.

1 UN 2022. Secretary-General Welcomes Outcome Document for Biological Weapons Convention's Ninth Review Conference, Saying It 'Offers a Glimmer of Hope'. https://press.un.org/en/2022/sgsm21638.doc.htm

We also made progress on the institutionalisation of the Convention by agreeing to develop two mechanisms, one on international cooperation and assistance under Article X and the other to review technological and scientific developments. Another perhaps minor but significant achievement was the strengthening of the Implementation Support Unit with one additional staff position.

The Ninth Review Conference benefited from having a geographically well-balanced cohesive team of young, competent and committed diplomats. It also had the most gender-balanced "bureau" in the history of the BWC: the Chairs of the Committee of the Whole and the Drafting Committee were both women, respectively the Moldovan Ambassador to the United Nations in Geneva, Tatiana Molcean, and the Swedish Deputy Head of Mission in Geneva, Sarah Lindegren. Half of the facilitators were also women. This well-balanced and competent team reassured delegates and contributed in no small part to the success of the Review Conference.

What will come of this process that we started back in 2022? The Working Group on the Strengthening of the BWC has already held five sessions and has achieved considerable progress, especially on the two mechanisms. In fact, the progress has been so significant that the idea of a Special Conference in 2025 to decide on the two mechanisms is now widely supported. There is clearly an important momentum that needs to be preserved and enhanced, despite the inevitable temporary setbacks typical of such crucial negotiations. Besides the two mechanisms, there is another key area where progress needs to be made, and that is the topic of compliance and verification. Several ideas are on the table and there is still time to find common ground also on this topic so that by the time that the Tenth Review Conference convenes in 2027, the Working Group will be able to present meaningful recommendations. This is the challenge that we face now.

If a biological weapon were to be used tomorrow, we would be caught completely unprepared. The world would look at us and would ask: what have you done to prevent this?
All the more reason to act now and complete the work we started at the Ninth Review Conference. If we succeed – as we must – that Conference will have been more than "a glimmer of hope".

2. PRESENT

How can the current discussions in the Working Group support States Parties in strengthening the BWC?

Strengthening the BWC at Fifty: A Living Organism in a New Biosecurity Ecosystem

Ambassador Frederico S. Duque Estrada Meyer, Permanent Representative of Brazil to the Conference on Disarmament, Chairperson of the Working Group on the Strengthening of the Biological Weapons Convention

The rapid transformation of the life sciences — propelled by the convergence of radically innovative biotechnology and computational power — has reshaped security imperatives. As we mark the 50th anniversary of the Biological Weapons Convention (BWC), this is a moment of reckoning. The Convention remains a landmark of legal and diplomatic foresight, yet the environment it seeks to regulate has undergone a profound metamorphosis. Genetic engineering, synthetic biology, and proteomics, once confined to specialized laboratories, are now widely accessible, with technologies that drastically reduce costs and barriers to entry. These advances bring extraordinary potential for medicine, agriculture, and industry, yet they introduce risks of misuse on an unprecedented scale. The strategic calculus of biosecurity must evolve accordingly.

Scientific progress now unfolds at a velocity that outpaces conventional regulatory structures. While nuclear and chemical disarmament frameworks have matured through decades of refinement, biological risks have expanded with little oversight keeping pace. The discussion on verification has been stagnant for over twenty years. Meanwhile, the nature of biological threats has shifted. The focus on state-run bioweapons programmes, once the dominant concern, has given way to a broader challenge: cutting-edge biotechnologies are no longer the exclusive domain of governments, being increasingly within reach of private entities, independent research groups, and non-state actors with varied intentions. This reality demands a governance model that is agile, responsive, and attuned to the rapid dissemination of knowledge and capabilities.

The agenda of biosecurity is advancing elsewhere. Fora dealing with public health, biosafety, and biotechnology governance have accelerated their related discussions, generating operational mechanisms that respond to contemporary risks with speed and institutional backing. The BWC, by contrast, has remained hesitant, confined by diplomatic caution. The resulting gap is widening. Without action, the Convention risks becoming an instrument whose principles remain relevant, but whose capacity to shape practical outcomes is limited.

Modern biosecurity is not a discrete field. It is an interwoven system where risks emerge at the intersection of many disciplines. The fusion of computational sciences with life sciences accelerates both discovery and risk. Artificial intelligence-driven modeling, gene synthesis, and automated laboratory platforms are revolutionizing biosciences and also challenging traditional mechanisms of oversight. The same tools that enable breathtaking scientific breakthroughs can be weaponized with efficiency never before imagined. In the contemporary configuration of scientific research, a multitude of specialized domains operates with distinct internal logics and communication modes. This internal differentiation, while a testament to the complexity and vibrancy of modern inquiry, poses significant challenges for the creation of cohesive policy responses. Regulatory mechanisms conceived in an era of slower-paced innovation now struggle to keep pace with the rapid proliferation and diffusion of advanced technologies. The language of risk and control, traditionally rooted in a compartmentalized understanding of authority and responsibility, must be recalibrated to reflect a world where the boundaries between legitimate research and potential misuse have grown increasingly porous.

Despite these formidable challenges, there is a path forward. The Working Group on the Strengthening of the Convention, established by the Ninth Review Conference in December 2022, has been demonstrating that progress is possible, even in a difficult geopolitical environment. The Group's deliberations have made clear that governance cannot afford to remain compartmentalized. Biosecurity and biosafety are no longer separate concerns. The Convention must define its role within a growing constellation of international efforts. The principle that form follows function must guide institutional design. The Working Group has also reinforced the need to engage multiple sectors, ensuring that scientists, industry, and civil society contribute their perspectives to decision-making. In this moment of jubilation and reflection, the enduring legacy of the BWC offers both inspiration and a critical mandate: to forge an integrative and anticipatory approach to international oversight that harmonizes the diverse voices of science, law, and policy.

The established channels of scientific inquiry, legal adjudication, and policy formulation have long evolved in relative isolation, each with its distinct temporalities and priorities. The challenges posed by contemporary biotechnological advances have rendered such isolation counterproductive. It is imperative that the languages of these domains converge, enabling a coordinated exchange of insights and a unified response to emerging risks. This synthesis of perspectives is essential for constructing a governance framework that is both agile and resilient, a framework that can keep pace with scientific innovation while safeguarding international security.

One of the most consequential achievements of the Working Group has been to move discussions on verification out of stagnation. The issue remained untouched for more than two decades. Recent negotiations, however, have reintroduced momentum, showing that verification can be pursued through structured steps rather than treated as an all-or-nothing proposition. Regulatory models must adapt to contemporary realities, and incremental gains should not be dismissed as insufficient. The structured mechanisms now under discussion — on international cooperation and assistance, as well as on scientific and technological developments — offer a pathway to institutionalizing expertise and fostering informed decision-making. A mechanism for structured international cooperation and assistance would facilitate the equitable exchange of information and resources among nations, building a foundation of mutual trust and shared responsibility. In tandem, the creation of an institutionalized channel for continuous scientific advice would ensure that policymakers have ready access to the most current and rigorously analyzed technical insights, thereby empowering them to make informed decisions in an ever-evolving landscape.

These mechanisms, if swiftly operationalized, could provide concrete benefits in the immediate term and also serve as the foundation for addressing verification and compliance challenges over time. The evolving risk landscape demands that oversight mechanisms transition from reactive, compartmentalized approaches to proactive, integrative strategies that emphasize continuous dialogue and dynamic adaptation. Together, these proposed mechanisms would serve to counterbalance the existing asymmetries between various regulatory domains.

The work ahead is urgent. Biotechnological capabilities advance at an accelerating pace. The 50th anniversary of the Convention must be more than an occasion for reflection. It must be an inflection point.

The BWC will remain meaningful only if it keeps pace with the transformations shaping biosecurity today. This milestone should inspire the translation of its principles into action and of its commitments into genuine and timely solutions.

How can the BWC respond to the rapid advancements in science and technology?

Unprecedented advances in science and technology

Dr. Filippa Lentzos, Reader (Associate Professor) in Science & International Security, King's College London and NGO Coordinator for the Biological Weapons Convention

The pursuit of national and international security is intimately connected with the use of science and technology to design and deploy powerful weapons. From the battleships and chemical weapons of the First World War to the radar systems and atomic bombs of the Second World War to the intercontinental ballistic missiles and nuclear arsenals of the Cold War, scientists and engineers transformed the nature, political stakes and impacts of war throughout the twentieth century.

Today, science and technology remain crucial to contemporary security. While the BWC and the 1925 Geneva Protocol together completely prohibit biological weapons and the use of biology to deliberately cause harm, advances in life sciences and next-generation biotechnology continue at an unprecedented pace, and, against the backdrop of increased global militarisation, war-mongering and converging technologies, there are serious concerns that States might look to these advances as providing a potential technological edge in future conflicts and hybrid warfare.

There are clear actions States Parties can take to address these concerns. To strengthen the BWC, States Parties must heighten the political costs of a biological weapons attack, develop a framework to coordinate an international response following any use of biological weapons, and support and strengthen the United Nations Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons to conduct independent, in-depth investigations of suspected bioweapons use. States must also provide swift and strong rebuttals of baseless non-compliance claims in BWC meetings, the UN General Assembly and the UN Security Council, and they must counter efforts to erode the international architecture against the proliferation of biological weapons.

To address scientific advances head on, States Parties must prioritise and properly resource technical expertise within the Implementation Support Unit, establish an appropriate scientific review process to regularly and systematically analyse BWC-relevant developments in science and technology, and consider scientific advances in the context of monitoring, investigation and other systems that can increase confidence that biological activities are only being conducted for peaceful purposes. Of particular importance are efforts to sustain the norm against repurposing biology to deliberately cause harm. This starts with effectively raising awareness of the security dimensions of life sciences research, promoting research integrity and the responsible use of life sciences, and enhancing accountability practices among life science stakeholders.

In the 2023 blockbuster movie Oppenheimer, which chronicles the career of the 'father of the atomic bomb', Robert Oppenheimer says, "Our work here will ensure a peace mankind has never seen." His rationale becomes apparent later in the movie when he explains that "Once it's used, nuclear war—perhaps all war—becomes unthinkable." To Oppenheimer, the horror of the atomic bomb would be so great that it would demand arms control and provide unprecedented opportunity for remaking international relations to overcome war and to achieve peaceful international cooperation.

Responding to Oppenheimer's 'our work will ensure peace' line, fellow physicist Edward Teller replied, "Until somebody builds a bigger bomb". Teller was of the view that scientists are specialised experts in a limited domain; it is not their role to tackle humanity's problems, and they should not concern themselves with the ends to which their science may be applied (Teller later proved instrumental in building the worst weapon of all: the dreaded hydrogen bomb.)

Oppenheimer and Teller represent two interpretations of the role of scientists. The first, that scientists have an obligation to consider the broader ends of their science, whether military, strategic, political or moral; the second, that they should narrowly stay in their lane.

The scale of the loss of life and the total obliteration of Hiroshima and Nagasaki when the first atomic bombs were detonated in the late summer of 1945 proved a wake-up call for physicists about the potential destructive power of their science and its new-found role in waging war.

While health professionals have for centuries taken the Hippocratic Oath to 'first do no harm,' biologists and life scientists have, in general, had limited awareness of and engagement in the potential for their science to cause harm, whether unintended or intended.

Today, it is recognised that scientists, and especially scientists doing high-risk life sciences research where outcomes—accidentally, inadvertently or intentionally—could significantly harm society, have a professional obligation to engage with the broader ends of their science.[1] Josef Rotblat, a physicist and former colleague of Oppenheimer who quit the Manhattan Project in 1944 and later helped establish the Pugwash Conferences on Science and World Affairs, wrote that "Scientists can no longer claim that their work has nothing to do with the welfare of the individual or with state policies". To ignore the societal implications of their work is "immoral", he wrote, because "it eschews personal responsibility for the likely consequences of one's actions".[2] Science and technology studies scholar Charles Thorpe wrote "scientific responsibility must go beyond vocation to encompass a deeper ethical commitment based on the emphatic experience of interdependence and shared humanity."[3]

Today, sustaining the norm against biological weapons and making them 'unthinkable' requires a new approach. Disarmament diplomats and their delegations must get out of their twentieth century meeting rooms and insular discussions to actively engage with the scientific, tech and practitioner communities in industry, academia and the military, as well as with their funders, publishers and other enablers, to learn about current technical capacities and community practices, to encourage consideration of potential harms and repurposing potential, to nurture responsible use of the life sciences and support accountability, and, not least, to listen and exchange ideas on how life sciences developments can best be managed to minimise the potential for weaponizing biology in the twenty-first century.

1 (IAP) The Interacademy Partnership. 2005. IAP Statement on Biosecurity. The Interacademy Partnership; (WHO) World Health Organization. 2022 Global guidance framework for the responsible use of the life sciences: mitigating biorisks and governing dual-use research. World Health Organization.

2 Rotblat J. A Hippocratic Oath for scientists. Science. 1999 Nov 19;286(5444):1475. doi: 10.1126/science.286.5444.1475. PMID: 10610545.

3 Thorpe, C. 2004. "Violence and the Scientific Vocation." Theory, Culture & Society 21 (3): 61.

What lessons have been learned to strengthen the national implementation of the Convention?

Lessons learned to strengthen the national implementation of the Biological Weapons Convention in Botswana

Dr. Janes Mokgadi, Chemical, Biological, Nuclear, and Radiological (CBNR) Weapons Management Authority of Botswana, Ministry of Defense Security

Botswana has actively engaged in strengthening the national implementation of the Biological Weapons Convention (BWC) and has gleaned several key lessons from its efforts:

Establishment of a National Authority

The establishment of the Chemical, Biological, Radiological and Nuclear (CBRN) Weapons Management Authority in 2018 was a significant milestone for Botswana. It serves as the National Authority responsible for implementing the Biological Weapons Convention (BWC). Established under the Chemical Weapons (Prohibition) Act, the CBNR Authority's mandate encompasses a range of critical functions to ensure compliance with the BWC and related international treaties. Prior to this, Botswana did not have a designated National Authority responsible for overseeing these commitments and as such the implementation of the BWC, including the submission of the Confidence Building Measures (CBMs) lagged behind. While the establishment of the CBNR Authority has been a positive step, ensuring that the Authority has sufficient resources, expertise, and inter-agency coordination remains a challenge.

Furthermore, the designation of a National Contact Point for the BWC has highlighted a major step towards the implementation of the BWC. With support from the United Nations Office for Disarmament Affairs (UNODA), Botswana has established a well-structured National Contact Point framework that ensures continuity, efficiency, and sustainability. These includes clear mandates, inter-agency coordination, international engagement and capacity-building.

Legislative Framework

Botswana has established a comprehensive legislative framework to implement the BWC, ensuring alignment with its international obligations.

The cornerstone of this framework is the Biological and Toxin Weapons (Prohibition) Act of 2018, which serves to domesticate the provisions of the BWC within Botswana's legal system. This legislation not only aligns national laws with BWC obligations but also underscores the importance of having a robust legal framework to prevent the development and proliferation of biological weapons. In addition, Botswana has enacted the Chemical Weapons (Prohibition) Act, which, among other provisions, establishes the CBNR Authority tasked with overseeing the implementation of both chemical and biological weapons prohibitions and ensuring a coordinated approach to weapons of mass destruction (WMD).

While the Chemical Weapons (Prohibition) Act and other regulations cover certain aspects of WMD control, ensuring consistency and coherence between different legal frameworks remains a priority. Integrated legislation covering all aspects of biosafety, biosecurity, and the non-proliferation of WMDs is essential for a more effective implementation strategy. Botswana's legislative framework for the implementation of the BWC has made significant progress, but continued efforts are needed to strengthen enforcement, improve coordination, and enhance public awareness. The key lesson is that legislation alone is not enough - effective implementation, regular reviews, and capacity building are essential for long-term success.

Capacity Building and Awareness

In 2022, the Government of Botswana adopted a voluntary national action plan (NAP) on United Nations Security Council resolution 1540. We took advantage of the complementarity of the resolution with other international instruments, such as the BWC. The NAP pursues a comprehensive and full-life cycle approach to addressing CBRN risks and incorporates other obligations including biosafety. We received overwhelming support from the 1540 Committee, UNODA, from the BWC Implementation Support Unit (BWC ISU), as well as from Kenya and South Africa, who shared with us their best practices. As part of the implementation of the NAP, we initiated a series of workshops for our stakeholders engaging in awareness and capacity-building activities in BWC implementation and the submission of reports on Confidence Building Measures (CBMs). As a result, Botswana submitted its very first CBM report in 2022.

The experiences shared by South Africa and Kenya inspired our efforts to successfully implement similar measures. We are currently providing assistance through information exchange and knowledge sharing on expertise, best practices and specific trainings with other State Parties - Namibia, Zambia and Rwanda - on CBMs within the region through the BWC-ISU.

International Cooperation and Regional Collaboration

Botswana has been actively participating in initiatives and programmes through international cooperation and regional collaboration. We have collaborated on various projects, workshops, capacity-building, and exchanges of expertise to enhance global health security, biosafety and biosecurity. For instance, the Verification Research, Training and Information Centre (VERTIC) provided assistance in the review of our legislation, training the legislative drafters and other relevant stakeholders.

Recently, Botswana hosted the Regional Workshop on Universalisation and Effective Implementation of the BWC in Southern Africa in March 2024, which highlighted the value of regional cooperation. Such platforms facilitate the sharing of experiences, challenges, and best practices among neighbouring countries that enhance collective security against biological threats. Engaging with international organizations, like UNODA, has been instrumental in building national capacities. Workshops and training sessions have been invaluable in raising awareness and understanding on obligations related to the BWC and the importance of biosafety and biosecurity measures.

Recognizing the role of women and youth in disarmament and non-proliferation discussions has also underscored the importance of inclusive dialogue. Incorporating diverse perspectives enriches decision-making processes and strengthens the implementation of the BWC, especially by attending official meetings in Geneva and acting as Heads of Delegations.

Other international partners that have been instrumental in the implementation of the BWC in Botswana include the Group of Experts of the UN Security Council Committee Established Pursuant to resolution 1540 (2004), the Organisation for the Prohibition of Chemical Weapons (OPCW), the BWC ISU, VERTIC, the Secretariat of the South African Council for the Non-Proliferation of Weapons of Mass Destruction, the Federal Office for Economic Affairs and Export Control (BAFA) of Germany, the European Union's P2P Export Control Programme, Interpol and the Stimson Center.

3. FUTURE

How can the next generation of scientists support efforts to reaffirm the shared determination to exclude completely the possibility to use biological agents and toxins as weapons?

Youth Education and Advocacy Programmes in the Light of the «Pact for the Future»

Dr. Judith Chukwuebinim Okolo, Assistant Chief Research Officer, National Biotechnology Development Agency, and Youth for Biosecurity Fellow, Nigeria

The "Pact for the Future" adopted by the Member States of the United Nations in September 2024, underscores the urgent need to strengthen the Biological Weapons Convention (BWC) and reaffirms their shared determination to exclude completely the possibility of using biological agents and toxins as weapons. This endeavour critically relies on the active engagement of the next generation of scientists who are the leaders of tomorrow. The next generation of scientists can positively support these efforts, if they are equipped with knowledge and a strong understanding of the issues relating to the BWC. The role of education and advocacy programmes cannot be overemphasized because when young people are knowledgeable, they become advocates who support the development of, for example, a verification mechanism.

Engaging the next generation of scientists through education and advocacy programmes is key to driving innovation for peaceful purposes. Education is vital, as it helps raise awareness about the dangers of biological weapons as well as the importance of adherence to the BWC. Actively involving the next generation of scientists in BWC-related events provides valuable insights and perspectives on emerging scientific and technological developments. Various youth programmes have been seen to create a massive impact in fostering understanding and cooperation on BWC-related issues. One example is the Youth for Biosecurity Initiative which educates young scientists about the BWC, its history, and significance in preventing the use of biological weapons. This knowledge empowers them to become informed advocates and responsible researchers.

In the past few years, BWC events and advocacy programmes such as workshops, fellowships, and forums have been useful in creating platforms for young scientists to connect with each other and with experienced professionals in the field. Such programmes foster collaboration, knowledge sharing, and a collective voice for advocating for a world free from biological weapons. Programmes such as the Youth Champions for Disarmament training programme and the Youth for Biosecurity Fellowship, have made a significant impact in training young people to be advocates for strengthening the BWC. These programmes have also created opportunities for the next generation of scientists to build international networks which connect young scientists from around the world, thereby providing a platform for collaboration. Once again, the Youth for Biosecurity Initiative proves a valuable example, which aims to increase knowledge about the BWC, build the necessary skills for its more successful use among the next generation scientists, thereby promoting global collaboration for peaceful ends.

Education and advocacy programmes play a critical role as they help promote ethical research. Programmes channelled to educate the next generation of scientists can provide a platform for emphasis to be made on the ethical implications of biological research, thereby encouraging young scientists to prioritize peaceful applications of biotechnology and avoid research that could be misused for weapons development. Through education and advocacy programmes, young scientists participate in and advocate for open science practices, fostering transparency and collaboration within the scientific community. This minimizes the risks of dual-use research and promotes responsible scientific conduct. Education and advocacy programmes also provide a platform for developing and adhering to robust ethical guidelines for biological research while ensuring that scientific advancements are used for peaceful purposes and do not contribute to the development of biological weapons. As referenced by fellow contributors to this publication, the Tianjin Biosecurity Guidelines are a practical example of promoting ethical research and many young scientists who are knowledgeable about the Guidelines have become advocates for better international oversight and transparency in emerging technology.

Through education and advocacy programmes, the next generation of scientists have become more informed and engaged in the global community resulting in the public support for the BWC and its goals. There has been an increase in raising public awareness and active participation of young people in global efforts to strengthen the BWC.

Some of the significant achievements of the Youth for Biosecurity Initiative include the contributions of young scientists in developing the *Youth Declaration for Biosecurity* and the *Youth Recommendations for the Ninth Review Conference of the BWC*. These education and advocacy programmes have given the young people who are the next generation of scientists a voice to support efforts to reaffirm the shared determination to exclude completely the possibility to use biological agents and toxins as weapons.

Young scientists become champions for responsible science by participating in discussions and debates on the ethical implications of biological research and the importance of preventing the misuse of biological agents and toxins. More opportunities to bring young scientists on board through regular participation in BWC events, workshops, forums and fellowships, should be created to facilitate knowledge sharing and collaboration among scientists worldwide, as this would be very instrumental to reducing the risks of dual-use research. If they are given the opportunity to participate in global decisions and policymaking on biological disarmament, they could also contribute to scientific research efforts aimed at developing countermeasures against biological weapons and improving detection and response capabilities.

Education and advocacy programmes offer the platform for which the next generation of scientists can be inspired to achieve the BWC goals and ensure a future free from the threat of biological weapons.

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Is a path opening for discussions on a verification system and the further institutionalization of the Convention?

Dr. James Revill, Head of Programme, Space Security, Weapons of Mass Destruction and Ms. Maria Garzón Maceda, Project Coordinator, United Nations Institute for Disarmament Research (UNIDIR)

The establishment of the Working Group on the Strengthening of the Convention with a mandate to look at verification has once again opened up a path for discussion around verification of the BWC. However, this is not the first time such a path has emerged; and in the past, long and difficult routes designed to strengthen the BWC have ultimately proved to be impassable.

The Protocol: a path to nowhere?

The thawing of Cold War tensions in the early 1990s, combined with growing concerns about biological weapons, opened the door for an extended discussion on BWC verification. This began with a scientific and technical review of verification methods followed by extended negotiations carried out through the Ad Hoc Group, which focused on developing a protocol for the Convention. A key component of this protocol was a verification mechanism.

The Ad Hoc Group appeared to be making progress in the mid-to-late 1990s. However, by the turn of the century, negotiations began to stall with positions becoming deeply entrenched around a number of issues on which there were "strong conceptual differences in views".[1] The work of the Group collapsed in 2001 when the United States of America concluded that the work of the Group was not capable of "strengthening confidence in compliance" with the BWC, a position that likely masked wider objections to the Protocol from other States Parties. This decision closed off any path for multilateral discussions on a verification system for more than two decades.

The Working Group: a path to verification?

At the Ninth BWC Review Conference in 2022, States Parties agreed to establish a new Working Group on the strengthening of the Convention. The mandate for this Working Group includes discussion on, among other things, compliance and verification.

1 See Ad Hoc Group BWC/AD HOC GROUP/52 (Part I).

In this regard, the Working Group has indeed opened a path for discussion on a verification system or roadmap under the BWC.

At the time of writing, BWC States Parties have met for a total of six days to discuss compliance and verification in the Working Group. These discussions have revealed a shared appetite for work on verification and demonstrated that many States Parties are willing to move beyond the protocol negotiations with sharpened attention to the "biological threat landscape". Understanding this threat landscape is an important first step if States Parties are to develop an effective mechanism that addresses present and future threats rather than those of the past.

The discussion has also provided some indication of the broad contours of a BWC verification mechanism. For example, several States Parties have suggested there could be value to national declarations[2] and some form of challenge inspection-type capacity in cases of alleged non-compliance.[3]

However, the discussions have also revealed some differences in views on certain verification tools, particularly around the value of routine inspections (or "visits", as they were named in the protocol discussions). These remain a core component of the Chemical Weapons Convention verification regime, and some countries clearly see value to organizing regular visits under the BWC, which "would be a useful source of supplemental information".[4] Others have questioned the usefulness of visits and highlighted some of the institutional and other costs of setting up such a mechanism, which could be significant, particularly considering the scale of life sciences research globally.

Institutionalization of the Convention

The costs of any mechanism will be particularly important. Any verification mechanism will require, among other things, an independent organization with adequate resources.[5]

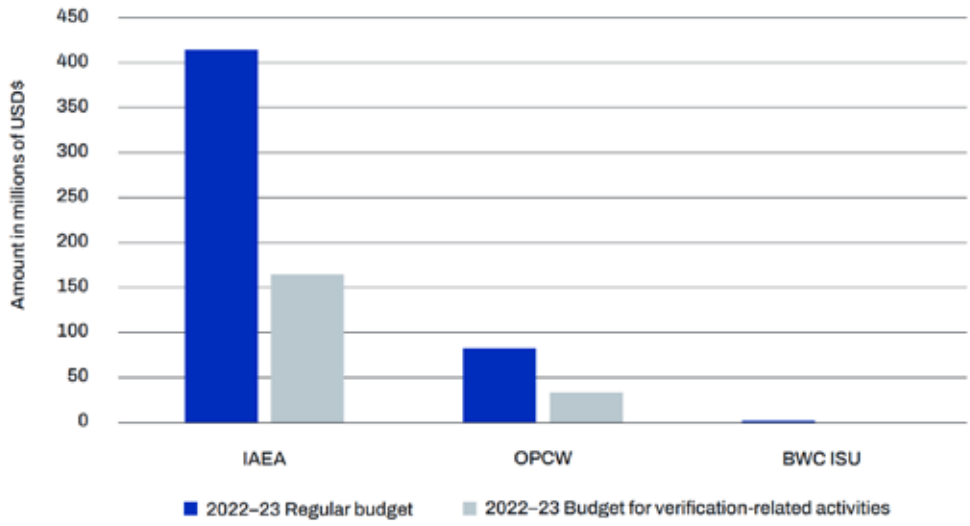
2 France, Co-sponsored by Belgium, Hungary, Morocco and the United Kingdom of Great Britain and Northern Ireland g2422292.pdf; Germany g2421958.pdf; European Union and its Member States on compliance and verification g2423060.pdf; Switzerland g2422082.pdf

3 France, Co-sponsored by Belgium, Hungary, Morocco and the United Kingdom of Great Britain and Northern Ireland g2422292.pdf; Germany g2421958.pdf; European Union and its Member States on compliance and verification g2423060.pdf; United States of America Co-sponsored by Australia, Bulgaria, Germany, Slovenia, Sweden and the United Kingdom of Great Britain and Northern Ireland g2420705.pdf

4 Switzerland g2422082.pdf

5 Germany g2421958.pdf

The current 4-person BWC Implementation Support Unit (ISU), with its 2.1-million-dollar annual budget is already stretched and unlikely to be able to contribute significantly to verification without further resources. A review of the costs of verification in other treaties (see figure 1 below) would suggest an effective mechanism might require a budget orders of magnitude bigger than that of the current ISU team.



Source: James Revill (2023) "Verifying the BWC: A Primer", UNIDIR, Geneva, Switzerland. https://doi.org/10.37559/WMD/23/Bio.verification.primer1

Looking ahead

To focus the discussion, prior to the fifth session of the BWC Working Group in December 2024, Ambassador Frederico S. Duque Estrada Meyer of Brazil, the Chair of the Working Group, presented a roadmap for the Convention. This roadmap envisioned the convening of a Special Conference in 2025 to establish two mechanisms: one covering international cooperation and assistance and a second one on science and technology review.[6] Such a step could have enabled a more systematic evidenced-based technical exchange around components of a verification mechanism.

6 Draft recommendation of the Working Group on the Strengthening of the Biological Weapons Convention Proposing a Special Conference in 2025 – Submitted by the Chairperson

Whilst this proposal appeared to be gaining support, the process collapsed on the penultimate evening of the Working Group session, when "one delegation opposed the proposal for a special conference to adopt the two mechanisms".[7] This has left the BWC at a crossroads on its fiftieth anniversary and, as one seasoned diplomat remarked, the "challenge we face is where to go from here".[8]

It is of course possible that States Parties could pick up on the mature proposals for the mechanism at a Special Conference later this year. However, advancing verification will require States Parties to determine a clear and realistic destination - this is, a vision for what verification can realistically achieve in the BWC context - and to suitably prepare for the journey ahead. This includes the determination of the threat landscape, testing the effectiveness of verification methods - such as routine inspections or "visits" - and the establishment of an adequately resourced BWC organization.

7 Closing statement 13 December 2024 Statement by Ambassador Leonardo Bencini
8 Statement to the Meeting of States Parties. U.S. Special Representative Kenneth D. Ward

How can education and awareness-raising enhance trust or compliance with the BWC?

Tianjin Biosecurity Guidelines for Codes of Conduct for Scientists: Enhancing Awareness and Trust for Compliance with the Biological Weapons Convention

Dr. Leifan Wang, Mr. Jie Song, and Professor Weiwen Zhang, Tianjin University Center for Biosafety Research and Strategy, China

Introduction

In the past decades, remarkable advances in bioscience and relevant fields have been achieved, rendering biotechnology lower-cost, easier to use and more accessible. Due to such rapid progress, the biotech industry has become a major economic driving force that contributes a significant proportion of national Gross Domestic Product (GDP) and employment in many countries. While biotechnology brings prosperity to human society, any unintentional misuse or deliberate abuse of dual-use biotechnology could cause serious consequences to the economy and security at both national and international levels. National regulations and operational mechanisms on biosafety and biosecurity often lag behind the evolving biothreats and biotechnological advancements, creating challenges for full compliance with the Biological Weapons Convention (BWC).

Recognizing the critical need to strengthen the implementation of the BWC, State Parties in the Final Document of the Ninth Review Conference decided to establish a new Working Group, "to identify, examine and develop specific and effective measures, including possible legally-binding measures, and to make recommendations to strengthen and institutionalize the Convention in all its aspects, to be submitted to States Parties for consideration and any further action".[1] This agreement was "historic yet modest", providing a window of opportunity for building effective measures to improve the implementation of the BWC.

There remain diverging perspectives and priorities on measures to achieving this objective; however, scientists should take a special responsibility to safeguard the misuse and abuse of dual-use research as a shared understanding

1 BWC/CONF.IX/9, p.9.

of States Parties.[2] The Tianjin Biosecurity Guidelines for Codes of Conduct for Scientist (hereinafter "Tianjin Biosecurity Guidelines") elaborate this special responsibility of scientists.

Tianjin Biosecurity Guidelines

Scientists are at the frontier of biotechnology innovation, and also the first line of defense against technology misuse and abuse. Therefore, to prevent the misuse and abuse of dual-use biotechnology, it is important to meaningfully engage with them on biosafety and biosecurity issues. The delegations of China and Pakistan jointly submitted the "Proposal for the Development of a Model Code of Conduct for Biological Scientists" to the Eighth BWC Review Conference in 2016.[3] In June 2018, the BWC Implementation Support Unit (ISU), the Ministry of Foreign Affairs of China and TJU co-hosted an international workshop on ''Building a Global Community of Shared Future for Biosecurity: Development of a Code of Conduct for Biological Scientists" in Tianjin, during which Mr. Ljupčo Jivan Gjorgjinski, then Chair of the BWC Meeting of States Parties, suggested to name this proposal with the term ''Tianjin" to recognize the far-reaching impact of the workshop. Since January 2021, experts from Tianjin University Center for Biosafety Research and Strategy, Johns Hopkins University Center for Health Security and the InterAcademy Partnership (IAP), engaged in active discussions with scientists from more than 16 countries across four continents to improve the guidelines. The efforts led to the final version of the Tianjin Biosecurity Guidelines for Codes of Conduct for Scientists which was endorsed and certified by the IAP on July 7, 2021. The Tianjin Biosecurity Guidelines were then submitted to the Ninth BWC Review Conference in November/December 2022.

The final version of the Tianjin Biosecurity Guidelines highlights a set of ten guiding principles and standards of conduct designed to promote responsible science and strengthen biosecurity governance. It guides scientists to behave responsibly to prevent accidental lapses and substantive violations in their daily scientific work.

The ultimate aim of the Guidelines is to prevent the misuse of bioscience research without hindering beneficial outcomes, in accordance with the articles and norms of the BWC, and in advancing the achievement of the UN Sustainable Development Goals.

2 World Health Organization, Global guidance framework for the responsible use of the life sciences: mitigating biorisk and governing dual-use research (2022).
3 BWC/CONF.VIII/WP.30.

Awareness and Trust for Full Compliance with the BWC

All scientists, research institutions, and governments are encouraged to incorporate elements from the Guidelines into their national and institutional practices, protocols, and regulations, to collectively promote a culture of responsibility and guard against misuse and abuse of biological sciences during the entire life cycle of their research.

As an important next step, biosecurity education projects urgently need to be carried out to ensure enough knowledge, methodologies and expertise remains available around the world to support the Tianjin Biosecurity Guidelines. In particular, there is a need for more one-stop-shop biosecurity education resources reflecting the most recent biological advances and associated challenges, as well as innovative means of large-scale awareness-raising. To achieve these goals, Tianjin University, the University of Bradford, London Metropolitan University and their collaborators invited global experts to collaborate on the biosecurity educational resource book entitled "Essentials of Biological Security." In the longer term, States Parties should consider developing an International Biosecurity Education Network with similar functions to the well-developed International Nuclear Security Education Network under the IAEA, to routinely engage with scientists to promote universal adherence to norms in the BWC as well as prevent hostile uses of the life sciences.

In due course, the Working Group on the Strengthening of the BWC should incorporate the key elements of the Tianjin Biosecurity Guidelines into its recommendations to States Parties to raise awareness and build trust. State representatives have recognized that the Tianjin Biosecurity Guidelines would be a significant instrument towards the establishment of a scientific network mutually informing each other that they adhere to the same principles and standards of code of conduct in their work.[4]

This shared understanding among scientists would be immensely beneficial to build trust and thus ensure compliance with the BWC at various levels. For instance, research creating life composed entirely of mirror-image biological molecules could lead to unprecedented or severe risks to its natural-chirality counterparts.[5]

4 Statement delivered by Amb. Leonard Bencini, Permanent Representative of Italy to the Conference on Disarmament, Geneva, 6 December 2023

5 K.P. Adamala et al., Confronting risk of mirror life, Science, Vol. 386 Issue 6728, 20 December 2024.

Before a better understanding of these risks and feasible governance is in place, scientists in different countries should accord with the principles and codes of conduct highlighted in the Tianjin Biosecurity Guidelines and other relevant norms, when conducting research towards creating mirror organisms. This universal adherence to the Guidelines and relevant norms of scientists could mitigate risks from the mirror life research even if national oversight has not yet been adapted to the new challenge.

Future Promise

The year 2025 marks the 50th anniversary of the BWC. It is a pivotal moment to seize the opportunity and make concrete progress towards strengthening the BWC and its implementation. We sincerely hope State Parties and other key stakeholders should meaningfully engage with scientists when they take measures to comprehensively address the evolving biothreats and biotechnology advancements for strengthening the implementation of the BWC. Such efforts are critical to realize the future promise of the BWC as a cornerstone of international security.

Since 2006, the European Union has supported the BWC by means of two Joint Actions and five Council Decisions in the framework of its Strategy against Proliferation of Weapons of Mass Destruction. Over thirteen million Euros have been provided by the European Union to support, among others, the universalization of the BWC, various capacity-building activities to strengthen the implementation of the Convention, the BWC Sponsorship Programme, the Youth for Biosecurity initiative as well as the elaboration and production of outreach and awareness-raising materials.

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