A tale of two anniversaries and the future of biological weapons control

Jean Pascal Zanders

The control of biological weapons (BW) celebrated two major anniversaries earlier this year. On 26 March, the international community lit fifty candles for the entry into force of the Biological and Toxin Weapons Convention (BTWC). Less than three months later, on 17 June, the Geneva Protocol banning the use in armed conflict of chemical and biological weapons (CBW) reached the venerable age of 100. Both international agreements are still in force and remain pillars supporting the international security edifice. They are also living agreements. One hundred and forty-seven states have ratified or acceded to the Geneva Protocol, Bosnia and Herzegovina having joined in 2024. The BTWC is approaching universal adherence with Kiribati becoming the 189th state party on 20 May. Of the major weapons control treaties, only the Nuclear Non-Proliferation Treaty (190) and the Chemical Weapons Convention (CWC, 193) exceed it.

In this issue . . .

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Being the first agreement to proscribe bacteriological methods of warfare explicitly, the Geneva Protocol was the forerunner to the BTWC. Yet, it too drew on earlier treaties, each one of which introduced new concepts still present in today's prohibitions on toxic chemicals and disease as weapons. The story began with the incipient industrial revolution at the end of the 18th century. The rise of national and international controls for disease prevention, the efforts to reduce the impact of the new industrial toxicants on labourers and communities, and the prevention of crimes with the new poisons built the foundations for regulating or prohibiting new types of weaponry at the 1899 Hague Peace Conference. This process prepared the ground for the BTWC and the CWC by reaching into many adjacent areas and, over several decades, depositing regulatory layer upon regulatory layer.

The Geneva Protocol's contribution to disarmament

The *Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare* was a one-page contract that a state concluded with any other party to it. In consequence, if a party were to break the contract, the Protocol would no longer apply in respect of the violator. As the document belongs to the laws of war, it did not require a party to eliminate its chemical or biological arsenal, and therefore the party could lawfully retaliate in kind. Before the BTWC and CWC, many states ratified or acceded to the Protocol with reservations that underscored the contractual nature. They also extended this understanding to other parties and non-signatory states allied with the offending belligerent if they were to violate the prohibition, too. No state party reneged on the Geneva Protocol concerning biological warfare. However, the commitment was broken several times as regards chemical weapon (CW) use, notably during the 1935–1937 Italo-Abyssinian war, the 1980–1988 Iran–Iraq war, and the current Russian invasion of Ukraine. After the Paris Conference in January 1989 to restore the Protocol's authority, the understanding emerged that the ban applied to internal wars too, to prevent a repetition of Iraq's extensive CW use against its Kurdish population.

Pushing CW to the margins of military doctrine and denying a more prominent role for BW are the most obvious reasons why the Geneva Protocol prepared the ground for disarmament. Governments found it increasingly difficult to justify expenditure in offensive CBW programmes, having announced in advance that they would not use those weapons on the battlefield (first). Still, there were other, deeper reasons going back to scientific and technological developments in the 19th century.

The impact of science and technology on early norm development

In 1899, delegates participating in the First Hague Peace Conference came up with two documents limiting the use of toxic substances in war. Article 23 of the *Regulations Respecting the Laws and Customs of War on Land* annexed to the *Convention with Respect to the Laws and Customs of War on Land* especially prohibited 'to employ poison or poisoned arms'. They also issued *Declaration (IV, 2) on the Use of Projectiles the Object of Which is the Diffusion of Asphyxiating or Deleterious Gases*. Remarkably, they adopted the former prohibition without any discussion, but became deeply divided on the latter one. Chemists may argue that asphyxiating and deleterious gases are poisons, but the terms had different connotations for the negotiators. 'Poison', as used in the late 18th and much of the 19th century, covered then known toxic substances, most of which derived from nature (mineral, animal and plant poisons). However, it also included the miasmic conception of disease. The growing understanding in the early 1800s that disease actually 'invaded' the body paved the way for the germ theory, thereby removing infection from the poison concept. During the same period, the first industrial revolution was exposing the factory workers and the population at large to new toxic substances, leading to the emergence in the 1820s of the new discipline of toxicology. Terms like 'deleterious' and 'asphyxiants' took on additional meanings, thereby differentiating human-made toxicants from naturally occurring poisons.[1] Thus, the negotiators in The Hague had no problems with codifying the age-old customary ban on poison use, but split on whether the toxic compounds synthesised by chemists and produced by the industry should be regulated as a means of warfare. These had not yet seen use in combat. Hence, some delegates speculated that they could be more humane than explosives or prove decisive in war. In other words, poisons now belonged to a more primitive past, whereas asphyxiating or deleterious gases were the product of advanced civilisations.

This semantic bifurcation, which proceeded through the 19th century and became evident at the Hague Peace Conference, had a significant impact on the further development of the norm against CBW.

On the one hand, the Second Hague Peace Conference, held in 1907, reiterated the ban on poison warfare. The International Military Tribunal of Nürnberg declared in 1946 the provisions of the 1907 Hague Convention, and therefore the prohibition on the use of poison and poisoned weapons, as universal irrespective of whether a state was a party to the accord or not. The 1998 Rome Statute of the International Criminal Court has declared a violation of the interdiction a war crime in both international and non-international armed conflicts (see Article 8, 2(b)(xvii) and (c)(xiii)).

On the other hand, the language of the Declaration (IV, 2) was carried over into the 1919 Versailles Treaty. The reference to asphyxiating and deleterious gases also featured in the 1922 Washington Naval Treaty. Both documents formed the basis for the Geneva Protocol, which in turn laid the foundations for the BTWC and the CWC.

A decade of shaping stepping stones for the BTWC

Calling the 1920s a decade of disarmament may raise many eyebrows. The diplomatic output was meagre. The League of Nations, the first permanent international security organisation, worked hard to reduce military spending and armament levels of its members while trying to set up an arms trade control regime and an international system of security assurances to prevent rearmament and war. However, in terms of weapon control, the body only produced a single agreement in the twenty-six years of its existence: the 1925 Geneva Protocol. Still, the path to the Geneva Protocol and the consequences of its adoption involved many steps that shaped the BTWC and today inform discussions about the convention's future.

Part 1 of the Versailles Treaty was the Covenant of the League of Nations. Article 8 defined weapon control as its primary mission. The remainder of the agreement concerned the peace settlement with Germany. It included the mandatory CW disarmament for Germany in Article 171. To this end, it had to define a CW, and in doing so, it introduced the three-step definition comprising the agent, delivery system and ancillary (specialised) equipment. The three-step approach can still be found in the definition of a BW in BTWC Article I and of a CW in CWC Article II, 1. Together with Article 172, it also determined that control over the industrial production of toxic chemicals was central to the disarmament objectives. Article 171 also confirmed the semantic bifurcation between poisons and asphyxiating or deleterious gases.

The Geneva Protocol has its origins in a US proposal to expand a proposed ban on the arms trade prepared by the League to include asphyxiating or deleterious gases. Poland added bacteriological methods of warfare. The amendments had three immediate consequences. First, BW were henceforward to be considered on the same level of security concerns as CW. Second, whereas previously the restriction of chemical warfare considered the humanitarian implications of gas use, the trade control angle required consideration of the technological characteristics of the weapon. The CW definition in Article 171 of the Versailles Treaty became a key element in the considerations. Smaller nations, conscious that without a legitimate trade in CW they would be at a serious security disadvantage relative to states with large chemical industries, requested in consequence that defence and protection against gas be excluded from the restriction. Moreover, all these considerations also applied *mutatis mutandis* to BW. Third, negotiators had to consider that most toxic chemicals also had legitimate industrial and commercial purposes and were thus, for the first time, confronted with their dual-use characteristics—a technical problem they were unable to resolve. The delegates also realised that without a formal international ban on chemical warfare, they had no legal foundation to restrict the international commerce in toxic substances. The Geneva Protocol solved that problem, pending the future disarmament conference that the League was already considering.

Having come face-to-face with the dual-use dilemma, League committees preparing the World Disarmament Conference (held from February 1932 to November 1934) investigated the problem. In particular, the definition of the warfare agent required further refinement to be able to distinguish between its use in war and legitimate commercial applications. They rejected a list-based approach due to the evident inability to keep it up-to-date in the face of rapid scientific advances. They also discarded approaches based on toxicity or lethality. They rejected criteria based on chemical structures, not in the least because of the likely discovery of novel compounds in the near future. Ultimately, they came up with a solution known today as the General Purpose Criterion (GPC): the toxic agent as such is not prohibited, but the goal to which it is applied is. The corrected British draft disarmament convention of April 1933 contained its first iteration.[2] The GPC is at the heart of the CBW definitions in the BTWC and the CWC.

Ongoing challenges for the BTWC

The BTWC, as an operational treaty, needs a significant upgrade. It lacks verification machinery to maximise state party confidence in compliance. Except for the five-yearly review conferences, there is no mechanism to assess scientific and technological developments and draw conclusions, updating the common agreements and shared understandings. And it requires institutional permanency.

Still, these deficiencies do not mean that the BTWC is a weak instrument. The fact that no state, whether a party to the convention or not, will admit to an offensive BW programme testifies to the strength of the norm. The regulatory system regarding disease prevention and management evolved and expanded over two centuries in line with the arrival of new scientific insights and technological advancements. The ban on bacteriological warfare arrived a quarter of a century after the scientific community accepted the germ as a fact. The utilisation in 1969 of 'biological' in the title of the draft BTWC recognised the uncovering of other sources of infection in the four decades since the Geneva Protocol. Just like the development of the regulatory frameworks in the 19th century affected adjacent areas of activity, the current BTWC activities increasingly involve national and international stakeholder communities, including multiple ones beyond the life sciences and biotechnologies, without direct links to weapon development. More specifically, via the series of intersessional meetings in between review conferences since the early 2000s, the state parties have engaged with the scientific community and diverse technological sectors. They began working on implementing the resultant recommendations through a widening array of national and regional outreach and capacity-building activities.

Yet, the future still appears bewildering, especially given the ever-accelerating advances in the life sciences and the diverse branches of biotechnology, as well as the multitiered convergence processes with other scientific and technological fields (with which the diplomatic or legislative processes struggle to keep up). All of this is furthermore combined with an extreme sense of vulnerability (exacerbated by the COVID pandemic), given so many uncertainties.

Even so, the BTWC's purpose is highly specialised: disarmament. Disarmament has a backward dimension, namely the elimination of past BW programmes, an obligation a state should have completed within nine months after becoming a party to the convention. It also has a forward-looking dimension: the prevention of future BW armament or rearmament and use. This objective includes the consideration of how those advances may affect the object and purpose of the treaty and proposed measures to counter the possible malicious application of those advances for governments to execute.

How the state parties will define the oncoming security challenges is key to the BTWC's continuing relevancy. What is the current core conception of biological warfare? Is it still rooted in the images of the two World Wars and the Cold War? Is it still linked to projections of hyper terrorism with pathogens of the 1990s and 2000s, which had no limits on the number of people that might perish at the hands of a small group or a lone wolf? If these are no longer the threats under consideration, what then does BW use represent? Are policy makers and shapers now considering individual assassinations and crime? In other words, small weapon capacities, tailored to a specific mission. Or do they intend to define threat as *specialisation* multiplied by *nationality*? Are they looking into hybrid warfare scenarios involving disinformation, cyber attacks against biological facilities, or acts of sabotage that could lead to (unwarranted) military responses or premeditated releases of disease agents from the targeted installations? Are they considering biological warfare techniques that, rather than disseminating infectious agents, aim to compromise a population's natural immune system? Present threat considerations focus primarily on agents and their possible enhancement using the latest scientific techniques. Given the three-step definition of a BW, what dissemination technologies should the state parties consider when taking the updated understanding of BW use into account? With those emerging understandings of the BW threat, what types of incidents will the international community address and which ones will become the primary responsibility of the state party?

The answers to these and many other questions may help to shape the future verification system and the nature and functions of the international organisation. They will also affect the organisation of investigative and analytical capacities, and the provision of technical assistance and emergency assistance.

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Endnotes

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Approaching 40 years of support for the Biological Weapons Convention

Larry MacFaul

To mark the 50th anniversary of the Biological Weapons Convention (BWC), this article describes VERTIC's long-standing work to support the treaty.

Preventing biological weapons by means of an international agreement and national action fits squarely within the mission and mandate of VERTIC. As such, VERTIC is in its fourth decade of work supporting biosecurity and biosafety, as well as international public health more broadly. The horrific and unacceptable nature of biological weapons and the level of risk they pose to humanity was clearly recognised universally in the BWC. However, despite this, the BWC remains startlingly under-resourced for the scale of the task, as well as in comparison to similar international mechanisms in the nuclear and chemical fields, where VERTIC also operates. There is no equivalent to the International Atomic Energy Agency or the Organisation for the Prohibition of Chemical Weapons (OPCW), nor is there an agreed set of measures on how to monitor and verify compliance with the commitments in the treaty. The persistent political, technical and institutional challenges that have beset negotiations in the BWC and stymied further progress make it especially apt for VERTIC's attention, given our mission and mandate, and our staff's expertise and skillset.

Since the early 1990s, VERTIC has helped to develop and operationalise key principles in the convention, and to plug its gaps. This work has encompassed research on technical and policy matters, as well as capacity building for national stakeholders responsible for implementing the convention. Many of VERTIC's staff and trustees have had a close relationship and intensive engagement with the development and implementation of the treaty.

VERTIC's work on the BWC has inspired and enabled the organisation to help in the broader biotech and health sectors, as well as to support the UN Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM). As such, staff have applied their expertise spanning policy, science, law, institution-building, scenario design, table-top exercises, training, in-country investigation mission support and knowledge-sharing tools.

Our work has been enabled with funding from both philanthropic organisations, such as Ploughshares and Rockefeller, and governments, including Canada, the Netherlands, Norway, Sweden, Switzerland, the UK and USA, as well as the European Union. VERTIC remains very grateful for this support.

1990s: analysis and reporting on negotiations; verification prospects wax

Throughout the 1990s, VERTIC closely monitored developments in the BWC conferences and published regularly on them in our Trust & Verify newsletter and Yearbook publications. Special attention was paid to the negotiations on a verification protocol for the convention, the VEREX committee and the possibility of establishing an Organization for the Prohibition of Biological Weapons, akin to the implementing body set up for the Chemical Weapons Convention. As is VERTIC's practice, the articles were authored variously by staff, external experts and active practitioners in the field.

During this time, VERTIC also reported on major BW-related incidents including President Yeltsin's 1992 decree prohibiting breaches to the BWC and the statement by the Russian government on termination of offensive research and closure of the biological weapons testing facility; the United Nations Special Commission (UNSCOM) and inspections of Iraq's biological weapons programme; and Cuba's use of the BWC's formal consultative mechanism to allege that the United States had used a biological weapon against it.

2000s: verification prospects wane, but VERTIC begins BWC legislative assistance worldwide

VERTIC continued reporting on the verification negotiations—until these discussions imploded, whereupon our outputs necessarily turned to reflections on what had happened. We also wrote frequently on investigations of Iraq's biological weapons programme and the role of the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC), with staff observing UNMOVIC training exercises and compiling a database of all these UN inspections.

VERTIC also began to lay down the foundations of what would become a key line of work that continues to this day: our in-country legislative assistance programme. In 2003, VERTIC produced the first ever study since its entry into force in 1975 of how states were putting in place national legislation to implement the BWC. The report, which was presented at the BWC inter-sessional meeting in Geneva, found that there were significant gaps in states' legal frameworks and many had a limited understanding of the requirements. The following year, VERTIC produced reports for the Weapons of Mass Destruction Commission proposing a modular approach to improving BWC implementation and verification which included recommendations on mechanisms to strengthen legislative implementation, and on the status of BWC verification. During 2005 and 2006, VERTIC generated several tools to help states, including a Model Law for the BWC (in partnership with the International Committee of the Red Cross) and a Sample Act.

VERTIC then set about building a specialist assistance programme to states implementing the BWC, and our existing experienced international lawyers recruited and trained a small team for this purpose. In 2008 our work to strengthen the BWC globally shifted gear as we received funding to launch a multi-year programme of legislative assistance to states. VERTIC has since become a recognised legislative assistance provider for the BWC and works alongside several other excellent organisations (see box). In essence, the work, now known as the National Implementation Measures (NIM) Programme analyses legislation, and through in-country and online workshops, raises awareness, reviews draft legislation and assists in drafting new laws. These laws include prohibitions and criminal measures, biosafety and biosecurity measures, transfer controls and enforcement measures. VERTIC has supported over 150 states in this way, resulting in laws drafted and adopted in states worldwide. We have worked in Central Asia, Latin America, Eastern Europe and our current activities are centred in Africa, the Caribbean and Southeast Asia. In our activities, we routinely engage with legislative and regulatory drafters, representatives from key ministries (Health, Defence, Agriculture, Education, Commerce, Foreign Affairs, Trade and Justice), as well as parliamentarians and expert practitioners working on biorisk and pandemic prevention.

VERTIC's partners in the National Implementation Measures Programme

1540 Committee, Africa CDC, AFRICSIS, BWC Implementation Support Unit, CARICOM, CRDF Global, IFBA, ISEMI, ISTC, OPCW, PNNL, RACVIAC, RIVM, SCJS, Stimson, UKHSA, UNICRI, UNIDIR, UNLIREC, UNOCT, UNODA, WOAH, ICRC and WHO.

2010s: legislative assistance continues, scope of legal analysis widens and work on the UNSGM begins

Early in the 2010s, VERTIC's legal team brought their expertise to bear on other outstanding matters in international law and enforcement practice. In 2011, they produced a brief focusing on the lack of reference to biological weapons in the Rome Statute – the international treaty that established the International Criminal Court. The brief recommended a new amendment explicitly prohibiting chemical and biological weapon use. An amendment to the Statute including explicit text relating to biological weapons was adopted by the Assembly of State Parties to the Rome Statute in 2017 and has since been accepted or ratified by 24 states. The following year, we prepared guidelines for developing regulations, began publishing short articles on criminal court cases related to the BWC (and the Chemical Weapons Convention, CWC) taking place in various states around the world. These cases served to examine the relationship between states' legal frameworks and enforcement for activity prohibited by these treaties. In 2016 we published an updated report on the status of BWC implementing legislation for the BWC 8th Review Conference. We also published analysis of BWC victim assistance provisions and national implementing legislation in our Yearbooks.

VERTIC also began a major new line of work focusing on providing practical support to the UNSGM—the only international mechanism for the investigation of alleged use of biological weapons. With no standing body supporting it, the UNSGM relies on rosters of experts nominated by UN member states, who could be called to launch an investigation using UN-agreed guidelines and procedures.

In the early 1990s, the mechanism was called on to run investigatory missions in Mozambique and Azerbaijan. In 2013, the UNSGM deployed a major mission to investigate allegations of chemical weapons use in Syria. So far, the mechanism has never been called to investigate allegations of biological weapons use. A clear need has been identified to develop and support mission preparedness and deployment for investigations into the use of a biological weapon, and to recognise the implications of the rapidly evolving technological landscape in which a mission would operate. The purpose of such support activities is to ensure that any launched mission can be effective, its results trusted, and the safety and security of the team maintained—while avoiding disruption to national emergency response activities. VERTIC is one of a select few organisations providing such support.

In 2019 VERTIC developed and ran a unique tabletop exercise bringing together practitioners who had led national and international chemical, biological, radiological and nuclear (CBRN) investigations as well as humanitarian response bodies. The purpose was to assess, using a fictional scenario developed by VERTIC, how a UNSGM mission could best coordinate with national law enforcement and public health authorities who would also be responding to the emergency. We also reviewed past experiences in Syria, the Amerithrax (anthrax tainted letters) case and digital forensics, to identify lessons learned from other operations and to highlight key operational requirements for an effective mission.

2020s: UNSGM support expands, BWC legislative assistance evolves, data tools built, and research focuses again on monitoring of BWC compliance

Our work on the UNSGM has continued and expanded during the current decade. In 2021, we ran workshops with regional partners in Central Asia and Latin America. These events offered awareness-raising of the UNSGM and capacity building for the roster of experts. In 2022–23, VERTIC surveyed the resources held by international organisations (such as various UN agencies, the World Health Organization, the Comprehensive Nuclear-Test-Ban Treaty, the OPCW and others) and compiled a repository of relevant capabilities and resources (both material and intangible) that could be provided to a UNSGM mission to support operational readiness. As part of the same effort, VERTIC worked with the United Nations Office for Disarmament Affairs (UNODA) on supporting training for UNSGM experts, including interviewing techniques— a key and challenging aspect of mission implementation. VERTIC also worked with UNODA, UNSGM experts and other UN agencies to identify priorities and resources for pre-deployment orientation—the last phase of team building, training refreshers and equipment familiarisation before an investigative team deploys.

Currently, VERTIC is working with the UN and other experts to identify the information management requirements for UNSGM during deployment and on mission. This will result in recommendations on how to provide appropriate information management infrastructure to a deployed mission, and in the development of training material on information management for UNSGM experts.

Meanwhile, we have also used our legal experience to build new tools for states and other stakeholders. We updated our online drafting assistant tool and issued a timely report, which we hope to keep updated, disproving misconceptions about biological and chemical weapons. Based on our extensive work reviewing legal frameworks and our repository of laws, the team worked with the United Nations Institute for Disarmament Research (UNIDIR) to develop an open-access online National Implementation Database that allows users to search states' legal frameworks implementing the BWC.

In a similar vein, we looked at our longstanding reporting on criminal court cases and decided to enhance the utility of this work by designing a prototype database of judicial cases and proceedings related to CBRN materials, equipment and technology. The aim is to inform efforts to create or improve legislative frameworks to control biological agents. We hope to launch this soon, funding permitting.

We have also recently taken our assistance provision to a new level. In 2024, VERTIC conducted a pilot project to develop and deliver the first ever training programme on legislative drafting for implementation of the BWC. The pilot project trained officials in six states in Latin America, the Caribbean and Southeast Asia.

We have also reengaged with BWC monitoring, using the skills we have gained in scenario building and technical assessments. This project aims to assess different options for monitoring compliance with the BWC. It uses a number of hypothetical scenarios of biological weapons production to identify observables relating to capabilities, that could be the target of monitoring and verification. The work coincides with a resurge in interest and willingness to discuss such issues by states in the BWC context. Our collaboration on this work led to a joint article on AI and bioweapons published in the Bulletin of the Atomic Scientists in September 2024.

Biosecurity, biosafety and public health

VERTIC's early work on BWC implementation expanded our understanding to other international non-proliferation instruments covering chemical, radiological and nuclear weapons and materials. VERTIC's mandate means that it can complement its BWC assistance provision by also offering help on other related areas, such as UN Security Council

Resolution 1540, the Codex Alimentarius, the CWC, and the International Health Regulations and CBRN emergency preparedness. This breadth of coverage can be particularly useful for smaller states with fewer officials focusing on this area and who therefore look for ways to streamline implementation. We also provide tailored, cross-cutting legislative assistance and training to support the One Health Initiative and pandemic prevention.

Contributions to the BW community

Our staff have also contributed their expertise to strengthening the biological weapons nonproliferation community through invited contributions to various initiatives. Staff have prepared online educational modules, held lectures and tutorials on the BWC and biosecurity more broadly, written invited papers for external publications and contributed to the BioSecurity Central advisory group. They were active members of the BioWeapons Prevention Project consortium of civil society organisations and its governing board and participate in the Council for Security Cooperation in Asia-Pacific working group on biosecurity and health security. Staff also serve on government advisory bodies on arms control and disarmament issues in New Zealand. More broadly, we have trained many legal and scientific expert staff in the BWC who have gone on to contribute their expertise to positions in government, international organisations and civil society organisations.

The future

VERTIC's mandate, and our team's appreciation of the evolving landscape in the biological and health sectors means we are keenly aware of the rapid advances in biotechnology and the lowering of the cost and knowledge needed to access this technology. These developments can bring great benefits but also risks. VERTIC is well placed to use its skills and experience to help ensure that the technology is only used for peaceful rather than malicious purposes. More broadly, VERTIC remains concerned with the global risks posed by disease whether intentional, accidental or natural. Alongside our traditional work, we are deepening our focus on this latter category, including zoonotic diseases and emerging infectious diseases of animal origin.

We are looking to consolidate some of our current, novel activities, for example, by regularising our legislative drafting training with annual regional workshops and launching our CBRN case database. We aim to deepen our legislative assistance with regulatory and guidance instruments, such as national authority decrees, codes of conduct, standard operating procedures, and to broaden it into strategic trade controls. We will provide tools to help address the implications of rapidly evolving technologies for states' national implementation measures and in the legislative drafting process itself. We are looking to continue to support the prevention of bioweapons through strengthening the BWC especially through novel approaches to monitoring.

VERTIC's work on the BWC and related areas has been remarkably consistent in focus and evolutionary in application. There is an ongoing and growing need for these types of contributions. VERTIC remains well placed to continue this work based on the professionalism of its staff, maturity of its working methods, quality of its partners, and the trust states and other stakeholders have in us. Yet, despite the threats and risks the BWC is meant to counter, and despite the positive impacts we have had, the funding environment for technically focused, multilateral approaches to peace and security is worsening for non-profit organisations such as ours. This trend creates very significant challenges. We hope that funders, both traditional and new, can focus their resources and enable organisations like VERTIC to thrive and to bring on the next generation of passionate and committed experts. For our part, we will continue to be rigorous in our work and adaptable and innovative in our outlook.

Verification Watch

Eliciting the views of UN Member States on establishment of a Group of Scientific and Technical Experts on Nuclear Disarmament Verification

Noel Stott

United Nations General Assembly (UNGA) resolution A/RES/79/240 requested the UN Secretary-General to elicit the views of member states on the possible establishment of a Group of Scientific and Technical Experts on Nuclear Disarmament Verification (GSTE-NDV) within the UN system (see Trust & Verify 175). The resolution also provided for three informal in-person meetings to discuss and debate the potential scope and modus operandi of such a Group, thereby allowing all member states to have the opportunity to engage on the matter before the Secretary-General submits his report to the UNGA eightieth session towards the end of 2025. The resolution requires that two of these should be held at the UN Headquarters in New York and one at the UN Office in Geneva.

In March 2025, the first meeting was held in Geneva while the second was held in New York on 28 May. A further meeting is scheduled for 20 June 2025.

Brazil championed formation of the GSTE-NDV and is of the view that it would facilitate preparations for future negotiations on disarmament and its verification arrangements, and also ensure that verification technologies, methodologies and procedures are effective and sustainable. According to a joint Brazilian and Norwegian concept note, "Effective verification includes the need for producing high confidence that States are fulfilling their obligations, as well as in protecting proliferative and other sensitive information". The GSTE-NDV, as part of the global disarmament machinery would thus appraise knowledge on NDV, derived from past and ongoing initiatives; consider technical challenges in NDV in terms of tools, techniques, processes and procedures; enable states to participate in technical NDV discussions on a voluntary basis; and, incorporate and preserve knowledge on NDV within the UN system and provide assurance to the international community that states are focused on this matter. Its deliberations would, of course, not be legally binding and the Group would not be a negotiating forum. It would enhance knowledge of practical tools, technologies, and procedures and their benefits and challenges and also address 'technology gaps'.

Drawing lessons from other processes

According to participants, these informal meetings have so far generated useful ideas on the proposed GSTE-NDV's aims and objectives, mandate, modalities and modus operandi, as well as its terms of reference and life-span. Participants also thought it may be useful to examine similar structures within the broad UN regulatory family as possible models and for lessons learned. These include, but are not limited to, the Intergovernmental Panel on Climate Change (IPCC), the United Nations body for assessing the science related to climate change and the Secretariat of the Antarctic Treaty that ensures that all activities in Antarctica are consistent with the purposes and principles of the Treaty and its Protocol on Environmental Protection.

A historical and relevant entity suggested by several participants and independent experts is the Group of Scientific Experts (GSE), which was key to the development of the international seismic network included in the 1996 Comprehensive Nuclear-Test-Ban Treaty (CTBT). For some twenty years, this GSE reviewed research on the design and testing elements of a potential seismic verification system. This work eventually resulted in many of their recommended measures being incorporated into the systems currently used by the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO). As noted by Dahlman et al, key conditions that made the GSE a successful endeavour include: the strong engagement among scientists and scientific institutions in many countries; its long-term mandate; and, its management and leadership.

Outside of the UN, other bodies could also be examined, such as the International Panel on Fissile Materials (IPFM)—an independent group of arms-control and non-proliferation experts that analyses the technical basis for practical and achievable policy initiatives to secure, consolidate, and reduce stockpiles of highly enriched uranium and plutonium.

Towards an independent panel of experts?

A GSTE-NDV could thus take the form of a panel comprising some 25 experts with nominations based on their scientific and technical expertise, geographical region and gender. Representation from both nuclear weapon possessing states and non-possessing states was deemed crucial for any new independent panel while recognising the need to safeguard proliferation-sensitive information and respect national security imperatives. The importance of the experts maintaining independence and working in their personal capacity was stressed by participants. It may also be instructive then to take note of the process currently underway by the UN Secretary-General to establish an Independent Scientific Panel on the Effects of Nuclear War. This includes *inter alia*, its intended composition and how members will be selected and appointed (e.g. an open call for nominations by member states and/or self-nomination), whether members will serve in a personal capacity or under a mandate from their national scientific institutions), the mandatory requirements of applicants, topic areas to be covered, and format of intended outcomes.

Importantly, most participants at the informal meetings, in recognising that ultimately verification would be linked to a specific treaty agreement and is therefore context-dependent, also felt that exploring NDV in a systematic and preparatory manner would contribute to future negotiations, without prejudging any outcome of those negotiations. The participants therefore concluded that the GSTE-NDV should not aim to formulate a standardized template for nuclear disarmament verification.

At the same time, it was noted that while work on NDV can contribute to promoting disarmament, it should not be seen as a means to prevent the international community from continuing to fulfil its current obligations under existing non-proliferation regimes or to address the present unstable and insecure global nuclear environment. In this regard the GSTE-NDV could also contribute to strengthening the effectiveness of the IAEA safeguards system and complement the on-going work of the CTBTO and other key disarmament regimes.

Brazil and Norway's suggested way forward

In their proposal on the mandate of a GSTE-NDV, Brazil and Norway, suggest that the following elements of the process of nuclear disarmament be considered:

- State declarations of their nuclear material and related activities and plans to disarm;
- Removal of deployed nuclear warheads;
- Dismantlement and storage of warhead components;
- Conversion of nuclear material with classified characteristics;
- Elimination or irreversible conversion of all nuclear-weapon-related facilities;
- Placement of nuclear material and facilities under international safeguards;
- Verification of the correctness and completeness of the baseline declarations of nuclear material once the state concerned declares that it no longer possesses nuclear weapons or nuclear explosive devices; and
- Delivery vehicles of nuclear weapons.

While these issues continue to be discussed and debated, such a broad mandate should be encouraged as this will allow the Group's work to be flexible enough to evolve as NDV questions and challenges are identified.

As also stated by Norway and Brazil in June 2024, there is little doubt that the more states get involved in work on disarmament verification, the better prepared they will be for future negotiations, and the more effective the relevant technologies, methodologies and procedures will be. An important component of the GSTE-NDV should therefore be to capacitate developing countries in the Global South and take into account the work of relevant networks and organisations in this regard. These include the International Partnership for Nuclear Disarmament Verification (IPNDV), the Quad Nuclear Verification Partnership and its predecessor, the United Kingdom – Norway Initiative on the Verification of Nuclear Warhead Dismantlement, as well as VERTIC's initiative to support nuclear disarmament verification expertise in non-nuclear-armed states through the established of three research and innovation hubs in Africa, Central Asia and Latin America.

As the UN Secretary-General reported in Securing Our Common Future: An Agenda for Disarmament: "The active engagement of all States, especially developing countries, in policy discussions facilitates more effective and sustainable outcomes in all areas of peace and security". And as stated in a Working Paper submitted to the Group of Government Experts to consider the role of verification in advancing nuclear disarmament in 2018, closing the information and experience gap between the nuclear-armed and non-nuclear-armed states "could take many years to develop, and in order to be ready for future negotiations capacity to develop such options should be built today".

The United Kingdom has also noted in a 2021 Working Paper that "expertise from a wide range of technical disciplines will be important for developing effective verification regimes in the future, including explosive detection, material science, physics measurements, unique identification, tamper-indicating materials, computer science, change detection in data including digital photography, software authentication, information theory and system confidence".

Given that these skills can be found in both nuclear-armed states and non-nuclear-armed-weapon states, the 2025 First Committee and General Assembly sessions have a unique opportunity to further the role of verification in advancing nuclear disarmament and in expanding options for NDV. Work on NDV through the establishment of a GSTE-NDV in a multilateral setting would go a long way to achieving this.

Regional perspectives on irreversibility: Africa

Kudakwashe Mapako[1]

The principle of irreversibility was first introduced into the nuclear disarmament discourse at the 2000 Non-Proliferation Treaty (NPT) Review Conference. Until recently, the principle has remained underexplored and underdeveloped. This article seeks to capture African stakeholders' perspective of irreversibility and the rationale behind their conception of irreversibility. It contends that African states' disarmament policy is shaped by their past regional experience with nuclear weapons and the present status of disarmament commitments by nuclear weapon states (NWS). This background and state of disarmament affairs has shaped their perception of irreversibility vis-à-vis disarmament. To promote African states' informed participation in the ongoing discourse on irreversible nuclear disarmament, there is a need to strengthen inclusive diplomacy on key disarmament issues, initiate stakeholder mapping, sensitization, and regional capacity building, and ensure that resources are allocated to support sustainable capacity initiatives.

African stakeholders' conception of and support for irreversibility

African states' conception of irreversible nuclear disarmament is informed by their regional denuclearization and disarmament success, exemplified by the South African case, which was characterized by a combination of international, domestic and technical factors. Although South Africa's disarmament is regarded as unique due to the unprecedented level of transparency and co-operation with the international community, among other factors, the aforementioned variables that ensured South Africa's disarmament are argued to be sufficient to inform the discussion on the requirements to achieve irreversible nuclear disarmament.[2]

The pursuit of the principle of irreversibility has its critics, however, particularly the timing of the discussions, which some stakeholders regard as a potential distraction that could be detrimental to attaining tangible progress on existing disarmament commitments. Pursuing irreversibility is regarded as an ambitious and futuristic pursuit and it is argued that more effort should be directed towards verification and transparency, whose results can be quantified. Hence, the principle of irreversibility is perceived by some experts as an undertaking that takes place after disarmament and not a concurrent exercise, but by others as complementary exercise in pursuit of disarmament.

Consistent with the available scholarship on irreversibility as a spectrum, the author understands irreversibility as managing latency and hedging since achieving absolute irreversibility is not practical or realistic. This raises issues that are beyond the scope of this discussion concerning the continued imbalance that will remain even after disarmament due to the availability of intangible technology (knowledge and expertise) between former NWS and non-nuclear weapons states (NNWS) that never pursued a nuclear programme. Nevertheless, for this state of irreversibility to be achieved, a commonly understood threshold to measure the level of irreversibility and its parameters is required. This conception of irreversibility suggests the central complementary role that verification has to play in this process. South Africa's disarmament is regarded as a success in part because of the visibility of sufficient assurances through verification that it was an irreversible process.

Establishing a comprehensive nuclear disarmament verification (NDV) regime that detects and deters reversibility is more significant than dwelling on definitional issues. It raises questions, of course, on the prospects of establishing a sufficient verification regime to achieve the highest level of irreversibility. Is there a need to establish an international NDV agency or is it within the purview of the international Atomic Energy Agency (IAEA) to carry out this role? If not, how will a newly established international agency reconcile with the IAEA? Will there be some form of reliance and complementarity between a newly established agency and the IAEA to ensure irreversibility? What role can African states and stakeholders assume in this process to ensure nuclear disarmament?

African states have generally been consistent in their approach to the global non-proliferation and disarmament regime as exhibited in their statements in multilateral fora. Although some African stakeholders are sceptical about the timing of the discussions around irreversible nuclear disarmament, African states have implied support for and explicitly highlighted the principle of irreversibility within the NPT. The statement on behalf of the African Group at the 2024 NPT PreCom, for example, does so without delving into the discussions of the meaning of irreversibility and how it dovetails with the existing arms control and disarmament regime. African states have also been committed to efforts that promote (either directly or indirectly) the realization of irreversibility, such as the African nuclear-weapon-free zone treaty, also known as the Treaty of Pelindaba. African states also played on important role in the establishment of the Treaty on the Prohibition of Nuclear Weapons (TPNW), which has clear disarmament obligations and endorses the notion of irreversible nuclear disarmament. Most African states have also ratified the Comprehensive Test Ban treaty (CTBT) whose verification machinery can be regarded as part of the irreversibility requirement architecture.

Actionable steps to encourage African states' participation and prioritization of irreversible nuclear disarmament

There are several actionable steps to encourage African states' participation and prioritization of irreversible nuclear disarmament ahead of the next 2026 NPT Review Conference and beyond.

1. *Strengthen inclusive diplomacy on disarmament issues*

First, there is a need to strengthen inclusive disarmament diplomacy. This is consistent with the United Nations General Assembly (UNGA) Special Session on Disarmament and subsequent UNGA resolutions that have declared the right of all states to participate on an equal footing in negotiations that have a direct bearing on their national security, particularly NDV and irreversibility of nuclear disarmament—for example, UNGA Resolutions and Decision adopted during its Tenth Special Session 1978, (A/S-10/4) and UNGA Brazil and Norway Draft Resolution: Group of Scientific and Technical Experts on Nuclear Disarmament Verification 17 October 2024 (A/C.1/79/L.67). The establishment of a group of governmental experts to consider nuclear disarmament verification issues and requesting the Secretary-General to seek the views of member states, including NNWS, is a positive start (see the article in this edition of Trust & Verify). There is thus an opportunity to invest in regional capacity-building efforts on NDV and irreversible nuclear disarmament which would enhance the understanding and readiness of African stakeholders ahead of the 2026 NPT Review Conference. For the realization of this objective, however, an inclusive, equitable geographical representation approach should be adopted, with African actors recognized as stakeholders. This can be achieved through regional stakeholder mapping and sensitization, and regional capacity-building.

Stakeholder mapping and sensitization primarily targets government officials, state representatives and other relevant stakeholders who will participate in the next NPT 2026 Review Conference. Mapping relevant actors and sensitization would facilitate engagement and up-close understanding of African states' conceptions of irreversibility and the rationale behind any current skepticism on the irreversibility of nuclear disarmament.

Capacity-building initiatives can be undertaken by utilizing existing regional institutions, such as the African Commission on Nuclear Energy (AFCONE), established under the Treaty of Pelindaba, the African Union (AU), and specific African nations known for excelling in nuclear development (including South Africa, Egypt, Ghana), to facilitate knowledge acquisition, skills enhancement and the dissemination of best practices. AFCONE, for example, has huge potential to play an active role on disarmament related issues with its mandate to ensure that Africa's status as a nuclear weapons free zone is respected and to promote the peaceful use of nuclear energy. There is an opportunity for AFCONE to reposition itself and also prioritize disarmament thus spearheading the discussion on irreversibility among other disarmament issues. Such capacity-building initiatives could serve as a central mechanism to promote the development of essential NDV competencies through workshops and training programmes. In addition, these existing mechanisms can play an active role in assembling an African common position, which will amplify the African states' role in the ongoing irreversibility debates. The process could start small through member states inviting African experts to discuss the irreversibility of nuclear weapons and eventually look to place the subject on the AU agenda.

As part of dispelling the scepticism around irreversibility, the upcoming 2026 NPT Review Conference can be utilized as an architecture for packaging key disarmament issues. Packaging irreversibility with other fundamental NPT principles, particularly transparency and verification, is central to incentivizing NNWS' active involvement and participation. Apart from the immediate efforts that can be made to address irreversibility and verification by targeting high-level officials in Africa ahead of the 2026 NPT Review Conference, a sustained approach to capacity-building needs to be employed, particularly by targeting the next generation of future expertise on NDV. Consistent with this objective, credit should be given to the Norwegian Government that has funded a VERTIC project that has created regional nuclear disarmament verification hubs—one in Africa within the Radiation and Health Physics Unit of the University of Witwatersrand and the other two in Central Asia and Latin America. These hubs have facilitated seminars, training courses and commissioned papers for regional participants to publish articles on NDV through a regional lens.

2. *Allocation of resources to support sustainable capacity initiatives*

Despite these efforts, there is room for further initiatives to empower the younger generation with the skillset and knowledge to address both the irreversibility of nuclear disarmament and NDV. African states have a development deficit that impedes their effective participation in issues related to international security and development. Consequently, there is a lack of prioritization and urgency to allocate resources to these complex disarmament issues. Developed states, in the interest of promoting collective and equitable participation of stakeholders in global security matters, should dedicate funding to support the development of expertise in NDV in an inclusive and equitable manner.

Conclusion

The disarmament policies of African states are informed by their threat perception and regional experience with nuclear weapons, from the South African nuclear weapons programme to nuclear tests on Algerian soil. This background has been at the centre of African states' disarmament commitments and advocacy. Unfortunately, the current diplomatic impasse within the NPT, characterized by empty signalling, lack of transparency, stalling on disarmament commitments and actions that undermine article VI of the NPT, has fuelled the growing scepticism by many African stakeholders about embracing the irreversibility discourse. It increasingly appears to be treated as a debate that needs to be pursued once existing disarmament commitments have been accomplished, which at present seems unlikely any time soon. Therefore, perhaps the conception and attitude towards irreversibility by the NNWS should encourage the NWS to reflect on existing nuclear weapons disarmament progress thus far. Practical steps can be pursued to promote the participation of African states in the ongoing irreversibility debate through stakeholder mapping, sensitization, capacity building, and allocation of resources to support sustainable capacity initiatives. With the initiation of these steps, perhaps the perception of irreversibility among African states will be transformed, and they will also approach the current irreversibility discourse not as the means to an end but as preparatory work for when a suitable political and security climate allows for its application. African states should look at embracing the irreversibility debate as a strategic gateway to initiate a constructive dialogue on existing disarmament commitments with the NWS.

Endnotes

1. Mr. Mapako is a 2024–25 CTBTO Research Fellow and was previously a Research Officer at the African Center for Science and International Security (AFRICSIS) in the Arms Control and Nonproliferation programme. Mr. Mapako holds a Master's Degree in International Law from the University of Cape Town and LLB Degree in International Law (Cum Laude) from Zhejiang Gongshang University.
2. Professor André Buys, interview with author, 5 February 2025; Mr. Noel Stott, interview with author, 26 February 2025.

Implementation Watch

The new WHO Pandemic Agreement and synergies with the Biological Weapons Convention and the International Health Regulations

Alix Renaudin

Introduction

On 20 May 2025, the World Health Organization (WHO) Pandemic Agreement was formally adopted by the 78th World Health Assembly (WHA) following more than three years of negotiations under the Intergovernmental Negotiating Body established in 2021. The Pandemic Agreement aims to increase preparedness and resilience against pandemics, taking into consideration lessons learned during the COVID-19 outbreak. The Agreement establishes new obligations for States Parties, complementary to the provisions of the 2005 International Health Regulations (IHR).

The Pandemic Agreement establishes new mechanisms for preventing pandemics (Articles 4 to 6) and new obligations for strengthening national capacities (Articles 7 and 8). The most critical innovation of the Agreement lies in its equality systems, designed to geographically diversify pandemic-related products (Article 10), transfer relevant technologies, knowledge and data (Article 11), or ensure the equal access and distribution of pandemic-related products in the event of pandemics or public health emergencies (Articles 13 and 14). Pandemic-related products are defined as "relevant health products that may be needed for prevention, preparedness and response to pandemic emergencies", and include detection tools, diagnosis instruments, countermeasures, therapeutics, vaccines, physical protection products, etc.

Additionally, the Pandemic Agreement establishes the Pathogen Access and Benefit-Sharing System (hereinafter PABS) designed to ensure the timely sharing of "materials and sequence information on pathogens with pandemic potential" (Article 12). The PABS will be established once the 79th WHA formally adopts an Annex to the Pandemic Agreement, to be negotiated by an Open-ended Intergovernmental Working Group mandated by the 78th WHA to detail the PABS functioning along with other systems initially created by the Pandemic Agreement. The entry into force of the Pandemic Agreement is conditional upon the Annex being adopted.[1] Under the PABS, participating manufacturers would be obliged to make available to the WHO around 20% of their real-time production of pandemic-related products to be redistributed in countries having difficulties in accessing those articles.

Synergies

The Pandemic Agreement demonstrates aligned objectives with the recently amended IHR, and the Biological Weapons Convention (BWC). These three instruments share the general goal of preventing and mitigating the outbreak of diseases, whether natural, accidental or deliberate. Notably, the Pandemic Agreement includes express references to both the IHR and the BWC, underscoring its complementary approach and commitment to coherence within the broader international health and security frameworks. Three main areas of synergy can be identified.

Biosafety and biosecurity

BWC States Parties have agreed that under the national implementation obligation of Article IV of the BWC, they shall adopt measures to prevent the unauthorised access and use of dangerous pathogens and toxins (biosecurity) and to ensure the safety of activities involving dangerous biological agents and toxins (biosafety). Articles 4 to 6 of the Pandemic Agreement aim to prevent the occurrence of pandemics, including through the implementation of biosafety and biosecurity practices. Such practices are also critical to ensure alignment with the IHR, which focus on biosafety aspects. By aligning biosafety norms and expanding technical support opportunities, the Pandemic Agreement and the IHR strengthen their respective impact, offering a more coherent global system to prevent laboratory incidents and mitigate biological risks. Beyond the IHR, the Pandemic Agreement complements the BWC and the UN Security Council Resolution 1540 (2004), enhancing coherence across biological risk governance.

Disease surveillance

Similarly, Article 5 of the IHR requires States Parties to establish and maintain surveillance mechanisms designed to allow the early detection, assessment and timely notification of disease outbreaks. Article 4 of the Pandemic Agreement requires States Parties to strengthen surveillance capacities and expand their scope. Although the establishment and maintenance of surveillance systems is not expressly required in the text of the BWC, successive Review Conferences outlined that such mechanisms are essential to prevent the outbreak of diseases, regardless of their origin, and are part of national implementation obligations of Article IV.[2]

International cooperation and assistance

An integrated implementation of the international cooperation and assistance obligations included in the three instruments would allow streamlined and comprehensive cooperation among States Parties on the interlinked issues covered by the Pandemic Agreement, the IHR and the BWC. The Pandemic Agreement requires States Parties to cooperate to achieve the objectives of the Agreement (Article 17) and in specific areas, including on capacity strengthening (Article 7 and 8), and on the transmission of essential information, samples, products or data (Articles 11 to 14). International cooperation in these areas coincides with cooperation and assistance under Article 44 of the IHR or under Article X of the BWC in various areas.

Conclusion

The WHO Pandemic Agreements represents a significant step toward strengthening global health security by addressing gaps exposed during the COVID-19 pandemic. Its innovative mechanisms, including the PABS, technology transfer, equality systems would enhance preparedness and resilience against future pandemics. Although its full impact will depend on effective implementation and the adoption of the PABS annex, the Agreement is a significant opportunity to strengthen and modernise global health security frameworks.

Spanish police make arrests for alleged illegal transfers of dual-use chemicals

Thomas Brown

In October 2024 and February 2025, Spanish police made a series of high-profile arrests and seizures related to the illegal transfer of chemicals. The two episodes formed part of an operation to disrupt an alleged illicit supply chain of dual-use chemicals from Spain to Russia.

Spanish authorities are yet to release details about the specific chemicals involved in the network, however a press release from the Ministry of Interior noted that, "a chemical substance classified as a precursor to chemical weapons", was among the shipped products and that some of the chemicals fall within the scope of the EU dual-use Regulation 2021/821.

Spain controls the transfer of dual-use chemicals through Law 53/2007 on the control of foreign trade in defence and dual-use material, as well as its implementing regulations promulgated by Decree 679-2014, in line with the EU export control regulations. Through such legal instruments, Spain implements transfer control related provisions of the Chemical Weapons Convention (CWC) and related obligations under United Nations Security Council Resolution 1540 (UNSCR 1540). Article I of the CWC prohibits the transfer of chemical weapons and Article VI requires States Parties to implement national measures to ensure that a number of activities involving toxic chemicals and their precursors (including transfers) only occur for peaceful purposes. UNSCR 1540 obliges states to establish export controls over items that could be used to create chemical weapons.

The ongoing investigation in Spain highlights a number of important elements related to national transfer control frameworks. Notably, in this case the Spanish company allegedly routed the shipments through intermediaries in third states outside of the EU to disguise the true end-user of the transfers. This is a common practice in illicit proliferation networks and demonstrates the challenge in ascertaining the true end-user for such transfers. The situation also emphasises the need for inter-agency collaboration to counter the smuggling of chemicals of proliferation concern. The Spanish operation involved coordination between at least nine judicial, investigative and operational government agencies at the national and local levels, demonstrating the complex task of enforcing transfer controls. When designing national frameworks, it is important to create structures to facilitate coordination and collaboration between relevant agencies, to support the enforcement of transfer controls.

Institutionalisation of the Biological Weapons Convention: comparative analysis of State Parties proposals for creating a BWC organisation

Eliza Walsh

It is well documented that the Biological Weapons Convention (BWC) does not have a specific intergovernmental organisation dedicated to implementing the Convention, unlike the Organisation for the Prohibition of Chemical Weapons (OPCW) and the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) which are specifically mandated to work on chemical weapons and nuclear test ban related matters, respectively.

In the sessions of the Working Group on the Strengthening of the BWC in December 2023, States Parties reinitiated discussions on a potential BWC organisation and continued those discussions at the December 2024 Working Group sessions.

Proposal from the United States

At the fifth session of the working group in December 2024, the United States introduced a working paper (co-sponsored by Australia, Bulgaria, Denmark, Finland, Germany, Hungary, North Macedonia, Slovenia, Sweden and the UK) which presents a proposal for the establishment of a Biological Weapons Convention Organisation (BWCO). The proposed BWCO shares many similarities with the OPCW, including a similar structure of two policy making organs (the Executive Council and the Conference of the States Parties), a Technical Secretariat and an elected Director General. The Technical Secretariat would take on the role of managing annual submissions of national information, promoting and supporting effective national implementation, international cooperation and assistance activities, supporting scientific and technological review, an annual programme of familiarisation visits and investigations of alleged use of biological weapons.

Proposal from Kazakhstan

Kazakhstan circulated an updated concept paper at the working group in December 2024 with a proposal for the creation of an International Agency for Biological Security (IABS), which aims to "promote implementation of, and compliance with, the BTWC". Kazakhstan acknowledges that there are ongoing discussions amongst states on mechanisms for verification, international cooperation and assistance and science and technology, respectively, but proposes that the IABS be tasked with implementing such mechanisms when it is agreed upon by states.

In addition to its working paper, Kazakhstan advanced a draft statute for the IABS consisting of a Technical Secretariat, Conference of Member States and an Executive Council. There are many similarities in the proposed structure of the IABS and the OPCW, including the international cooperation and assistance (ICA) activities, national implementation requirements and administrative matters, such as costs and financing of the IABS.

Positions of other states and regional groups

Russia expressed its support for the Kazakh proposal provided the IABS reports to the UN Security Council. Other delegations indicated that the BWC organisation should be independent and report to BWC States Parties only. Iran noted that until a legally binding protocol is concluded the existing Implementation Support Unit (ISU), established within the Geneva Branch of the United Nations Office for Disarmament Affairs in 2006, should not be substituted with an organisation with a broader mandate. The Iranian statement also indicated that any possible new organisation must remain fully independent from the UN Security Council, in contrast to Kazakhstan's position.

The EU noted its reservations with Kazakhstan's proposal including its potential undermining of the organisation's independence through linkages with other bodies outside of the BWC. The EU also noted that the US proposal offers "useful suggestions" but requires further discussion. The EU is a proponent of the "form follows function" argument in this debate, meaning that the structure and role of an organisation will depend upon the specific tasks it is expected to perform and that this debate should be closely linked to discussions on verification of compliance. Finland separately echoed this "form follows function" point in its statement and that the OPCW provides a relevant example in terms of structure.

The Africa group noted that an international agency could "facilitate a more binding approach to guarantee safe operations of the BWC". Conversely to other proposals, it remarked that the agency could carry out international cooperation and assistance activities and separately have a stand-by roster of experts to carry out other ad hoc activities like verification and compliance.

The Non-Alignment Movement group stated that the "Review Conference remains the authoritative forum to evaluate and enhance the organizational framework of the Convention".

Other proposals were made by states to enhance the BWC ISU's capacities. South Africa, for example, remarked that the ISU should be adequately resourced and capacitated to conduct capacity-building activities.

Conclusion

The resumption of discussions on this matter is a positive indicator for the institutionalisation of the BWC. However, it is clear from the papers and statements of States Parties that this topic warrants further discussion to align the various models for creation of such an organisation. It remains to be seen how the institutionalisation of the BWC will be reflected in the final report of the Working Group. The discussion on the establishment of a BWC organisation can learn from the experiences of the OPCW and CTBTO, as well as the past 50 years of the BWC, to ensure that the necessary elements are included.

Endnotes

1. World Health Assembly, "WHO Pandemic Agreement", WHA78.1, 20 May 2025, Accompanying Resolution – §9(1).
2. See for example BWC, Seventh Review Conference, "Final Document of the Seventh Review Conference", BWC/CONF.VII/7, January 2012.

Compliance Watch

Fraudulent vessel registries: A growing and evolving sanctions evasion risk

Roel Walravens

Introduction

During 2015–16 a seemingly legitimate entity called the 'Micronesia International Ship Registry' (MISR) purported to operate an open international ship registry on behalf of the Federated States of Micronesia (FSM). Open registries allow for the registration of vessels by companies and individuals of all nationalities (including foreign-owned ships) and are sometimes referred to as 'flags of convenience', while closed registries are open only to ships owned by registered companies or individuals from the relevant flag state. In 2015 the operators of the MISR set up a well-designed and professional-looking website for the "registry" and made illegitimate representations to the International Maritime Organisation (IMO), of which the FSM is not a member. This resulted in the MISR's website temporarily being listed as the FSM's provider of seafarer certificate verification and vessel registration services. Between July and September 2016, the FSM's authorities notified the IMO that unauthorised individuals had been attempting to register vessels under the FSM's flag, and that they had not enacted any legislation for the establishment of an open registry. In fact, Micronesia's legislation explicitly establishes a closed ship registry, wherein vessels can exclusively be registered by FSM individuals and companies. On 21 March 2023, the Supreme Court of the FSM sentenced two individuals for their involvement in the scheme, under which 103 ineligible vessels were "registered" to non-domestic operators, collecting US$ 600,000 in illicit registration fees.

The MISR scheme was one of the first in a continuing series of fraudulent registry operations – fraudulent bodies or entities that intentionally misrepresent that they are authorised for the registration of ships on behalf of a flag state. Given that fraudulent registries do not have authorisation to issue the flag of the state they claim to represent, any vessel which has purportedly obtained registration through a fraudulent registry is illegitimately registered and, ultimately, considered a stateless vessel.

Fraudulent registries pose a myriad of challenges, including the often-overlooked risk that they may be used to help facilitate the evasion of national, regional and international sanctions.

Fraudulent registries: a growing and evolving problem

Since the MISR scheme was first discovered, several other fraudulent registries have come to light, as have the tactics employed by their operators.

In most cases, fraudulent registries are established in the form of companies, often based in jurisdictions outside of the flag state they claim to represent, by unauthorised individuals without the knowledge of the flag state concerned. In February 2025, for instance, the French government notified the IMO of the existence of a Solomon Islands-based company called 'The Matthew Island Ship Registry', which purported to offer "flag letter issuance and ship certification" for Matthew Island, an uninhabited French island in the South Pacific. Like many other fraudulent registries, the Matthew Island Ship Registry has a professional-looking website with a contact number, email address and office address, as well as detailed information relating to the apparent process of applying for vessel registration under the "Matthew Flag".

'The Matthew Island Ship Registry' emerged not long after another fraudulent registry, known as the 'Maritime Safety & Technical Administration – International Maritime Registries & Regulatory Inc.' (MSTA – IMRR Inc.), was uncovered in April 2024. MSTA – IMRR Inc. purports to provide numerous maritime "technical and regulatory services" (including vessel registration) on behalf of Sint Maarten, a constituent country of the Kingdom of the Netherlands located in the Caribbean which has no flag registry. In statements to the IMO's Legal Committee in April 2024, the Netherlands confirmed the fraudulent nature of the registry and noted that numerous fraudulent flag state documents, including certificates of competency, seaman's books, and other seafarer's certificates, had purportedly been issued to maritime stakeholders on behalf of Sint Maarten, which is unable to issue these documents. If the fraudulent documents discovered by the Netherlands were 'issued' by MSTA – IMRR Inc., it would indicate that fraudulent registries have become increasingly active in issuing forged maritime documents beyond certificates of registration, further undermining international maritime frameworks.

There is also evidence to suggest that the networks that operate fraudulent registries are widening the scope of their activities, either because individual operators are establishing more fraudulent registries, or because several operators have become more closely interlinked. A joint document submitted by France and the Netherlands to the IMO's Legal Committee in February 2025, for instance, notes the "very similar interfaces" of the websites for the fraudulent 'The Matthew Island Ship Registry' and MSTA – IMRR Inc., suggesting that these have either been established by the same operator, or by separate closely-linked operators. Two further factors (not evident in the present case) which may support the notion of links between seemingly different fraudulent registries are common parent companies or joint company registration addresses, usually based in jurisdictions outside the flag state they claim to represent.

Fraudulent registries have also been established after initial contact between the operators of the scheme and the authorities of the flag state whose registry they come to misrepresent. In 2022, for example, Guyana informed the IMO of a "dubious entity" known as the 'International Maritime Safety Agency of Guyana Pte. Ltd.' (IMSAG), a private company based in Singapore. Guyana's government indicated that there was an initial "undertaking" between Guyana and the scheme's operators, but that this was ended "following the discovery that these entities are prone to fraudulent representations and illicit conduct". Despite Guyana's severance of ties with IMSAG and it's warning to the IMO, the entity's website remains active and purports to provide vessel registration and other services on behalf of the South American state.

The challenges posed by fraudulent registries

The challenges posed by fraudulent registries are far from trivial. It is important to recall that the function of vessel registration and the issuance of other maritime documents and certificates is to ensure that flag states exercise effective control over the vessels which fly their flags, including in relation to maritime safety and security, environmental protection, and the prevention and suppression of international crime. Because the registration certificates and other documents issued by fraudulent registries are invalid, the vessels which obtain such documents operate unregulated and without oversight.

With respect to the operation of fraudulent registries themselves, these are effectively elaborate scams. In many cases, vessel owners and operators which apply for registration through such schemes do so ignorant to the fact that the purported registry they are using is not authorised to represent the flag state in which they seek registration, and that the respective certificates they receive (if any) are fraudulent and therefore invalid.

At the same time, fraudulent registries could also intentionally facilitate numerous forms of maritime crime, as unscrupulous vessel owners and operators may attempt to use fraudulent registries and the invalid documentation to give the impression that their respective vessels are properly registered and documented, while deliberately operating with significantly reduced oversight to help disguise their illicit activities.

One particular concern relating to the intentional use of fraudulent registries has arisen in the context of maritime sanctions evasion. In its Sanctions Advisory for Shipping and Maritime Stakeholders issued on 16 April 2025, the United States Treasury Department's Office of Foreign Assets Control raises the use of fraudulent registries as a tactic adopted by Iranian shadow fleet tankers – vessels used by Iran and its network of facilitators to disguise oil shipments and generate revenue – in conjunction with other evasion methods to transport Iranian petroleum in contravention of US sanctions. Similar methods may also be used by North Korea and Russia for the circumvention of the sanctions regimes imposed against them.

Conclusion

Over the past decade, fraudulent vessel registry schemes have become an increasingly prevalent problem which flag states, their maritime authorities, and international organisations have sometimes struggled to address. Such schemes have evolved and grown more complicated. As a result, they have been used to facilitate various forms of maritime crime, including sanctions evasion at sea.

While the IMO's Legal Committee has worked to address fraud in relation to vessel registration since 2018, the vast majority of the work undertaken has involved the fraudulent registration of ships—an inter-connected but distinct and broader issue that involves any intentional misrepresentation of information and documentation by which a ship is purportedly given its nationality without authorization by the government of the misrepresented flag state. The IMO's Legal Committee should give more attention to the specific problems raised by fraudulent registries within the scope of this work.

States should also continue to notify the IMO of any suspicious or fraudulent registries they discover. At the same time, flag states must protect their legitimate vessel registries—whether open or closed—by adopting clear and detailed legislation to establish their lawful registries and criminalise the operation of fraudulent and unauthorised registries.

Centre News

National Implementation Measures

Angela Woodward, Yasemin Balci, Thomas Brown, Eliza Walsh and Alix Renaudin

Since the last edition of *Trust & Verify*, the National Implementation Measures (NIM) team has continued to work across a number of projects to support the national implementation of international instruments focusing on chemical, biological, nuclear and radiological (CBRN) weapons and the security of related materials.

EU CBRN Centres of Excellence (CoE) Project 81

The team successfully completed the implementation of EU CBRN CoE Project 81 on 'Enhanced Biosecurity in South East Asia', which ended in March 2025. The team undertook work to review partner countries' biosecurity legislation and develop related guidance under Work Package 2 of the project. Co-Programme Director Thomas Brown and Legal Officer Eliza Walsh held a bilateral workshop in Phnom Penh, Cambodia under Work Package 2 from 14–15 January 2025 which focused on the biosecurity legal framework in the country. Co-Programme Director Angela Woodward and Thomas further participated in the closing conference for this project from 25–27 February 2025 in Hanoi, Viet Nam, leading sessions on biosecurity legislation.

Enhancing national implementation of non-proliferation obligations

Since December 2024, the team has been implementing a project funded by the Norwegian Agency for Development Cooperation to provide bilateral assistance and training to interested countries, to work on the development of training and reference materials, as well as publications, and to undertake outreach and visibility activities. Under this project, Eliza virtually presented on implementing national CBRN criminal legislation at a CBRN Criminalisation Workshop related to Strengthening the CBRN Investigation, Prosecution and Adjudication Capabilities of Ukraine organised by the UN Interregional Crime and Justice Research Institute on 26–27 February 2025. Thomas also provided a virtual presentation to the UNSCR 1540 National Action Plan Workshop for Cambodia 23–25 April 2025. The team is currently finalising plans to hold its first bilateral assistance project under the project in July 2025 and will shortly publish its first training and reference tool, which will be showcased to States Parties at the Sixth session of the Working Group on Strengthening the Biological Weapons Convention in August 2025.

Other NIM news

Thomas and Eliza attended a workshop on Unpacking the AI-CBW Interface: Early-stage development of a structured inquiry tool from 25–26 March 2025 at the University of

Sussex. On 3 April 2025, Thomas virtually presented at the launch of the Nuclear Threat Initiative's Ninth Annual Next Generation for Biosecurity Competition.

The NIM team has also continued to contribute to the development a Compendium of Best Practices for a National Legislative and Regulatory Framework on Chemical Security organised by the OPCW, leading on the drafting of elements of the compendium in April 2025. Eliza and Associate Legal Officer Alix Renaudin have also been supporting the project activities of the Verification and Monitoring Programme.

Thomas Brown was promoted to Co-Programme Director for National Implementation in February 2025.

Verification and Monitoring

Alberto Muti, Grant Christopher, Hugh Chalmers, Hailey Wingo, Caroline Higgins and Noel Stott

Financial support

In May, the Government of Norway, provided VERTIC with further financial support to continue its work in supporting capacity for global disarmament verification. The project will continue to May 2026 with the aim of: supporting the establishment of a Group of Scientific and Technical Experts for Nuclear Disarmament Verification (GSTE-NDV); preparing for the Nuclear Nonproliferation Treaty (NPT) Review Conference (RevCon) in 2026; and providing sustained support for the three hubs established by VERTIC in Africa, Central Asia and Latin America and enabling them to remain operationally effective.

In addition, Global Affairs Canada (GAC) has agreed an extension to a project looking at open-source research on North Korea's WMD capacity. The project will now run until the end of the year and encompass new activities including research into recent technical developments and infrastructure expansion within North Korea.

Webinars, conferences, seminars and other outreach activities

In January 2025, VERTIC, in collaboration with the African Nuclear Disarmament Verification Hub and the Radiation and Health Physics Unit of the University of the Witwatersrand, hosted a seminar to discuss the current global context, and its impact on prospects for nuclear disarmament and verification. Held at the Institute for Security Studies, Pretoria, South Africa, the seminar was opened by Mrs Wera Helstrøm, Deputy Head of Mission, Royal Norwegian Embassy in Pretoria. A high-profile panel consisting of representatives from the International Red Cross and Red Crescent Movement, the Mapungubwe Institute for Strategic Reflection (MISTRA) and South Africa's Department of International Relations and Co-operation as well as political scientists and academics from the Universities of the Free State, Witwatersrand and the Western Cape, kicked off the proceedings. Participants also discussed and debated how to galvanise African states (and other so-called smaller states within the Non-Aligned Movement) to submit their views to the UN Secretary General on the possible establishment of a Group of Scientific and Technical Experts (GSTE) on Nuclear Disarmament Verification.

Proposed by Brazil and Norway, if such a Group were to be established, it could provide unique practical benefits in support of the long-term goal of nuclear disarmament and enable UN Member States—including African states—to work collaboratively on nuclear disarmament verification in a multilateral setting (see the article in this edition of *Trust & Verify*). In May, in response to a request from Norway, Alberto Muti and Larry McFaul, co-hosted informal meetings in New York with representatives of African and Asian states, where they provided an overview of the challenges of nuclear disarmament verification and discussed how the proposed GSTE might assist in meeting these challenges.

Researcher Hailey Wingo was invited in February to take part in a workshop hosted by the Open Nuclear Network in Vienna. The workshop focused on disinformation and escalation events specific to radiological and nuclear issues, with some additional input on the chemical and biological aspects.

Supported by the UK Department for Energy Security & Net Zero (DESNZ) 'Nuclear Safeguards Programme 2024–2025: Safeguards Outreach and Assistance', Hugh Chalmers attended a workshop in Guinea in February. The aim of the workshop was to support the US International Nuclear Safeguards Engagement Program (INSEP) to deliver assistance on the implementation of IAEA safeguards relevant to Guinean government stakeholders.

In March, as part of the African Nuclear Disarmament Verification Hub's activities, VERTIC also co-hosted a seminar, titled, 'Providing credible assurance: post-facto versus real-time nuclear disarmament verification: a South African perspective'. Participants comprised South African diplomats, former nuclear weapons experts, and personnel from the IAEA who were involved in the verification of South Africa's dismantled nuclear programme, and who possessed in-depth knowledge of the process. This seminar examined from a South African perspective *inter alia*: whether post-facto versus real-time verification makes a significant difference in providing credible assurance; what 'multilateral nuclear disarmament verification' means; what 'real time verification' means; and, whether the modalities of the IAEA's verification of the dismantlement of South Africa's nuclear programme would have been any different if the IAEA had been invited to be part of the actual dismantlement process.

During April, VERTIC staff were invited to attend a variety of outreach events: Hailey Wingo took part in the UK's Chemical Weapons Convention (CWC) Advisory Council; Alberto Muti attended a workshop on cyber-biosecurity hosted by King's College London; and Grant Christopher attended a table-top exercise by the research consortium VeSPoTec – Verification in a complex and unpredictable world: social, political and technical processes, based at Aachen University.

Also during April, VERTIC hosted a workshop in collaboration with the United Nations Office for Disarmament Affairs, supported by the US Department of State at the UN headquarters in New York to map information management needs for the UN Secretary-General's Mechanism (UNSGM). The workshop successfully validated a high-level information map and explored priorities and approaches to managing mission-relevant data.

Hugh Chalmers attended a side event on Iran's nuclear programme at the NPT Preparatory Committee meeting in New York in May, where he delivered remarks and engaged in discussions on allegations of Iran's non-compliance with its Comprehensive Safeguards Agreement (CSA). Drawing on IAEA reports, he outlined three key issues: undeclared uranium at two sites; unexplained uranium metal from historic activities; and Iran's refusal to implement binding safeguards arrangements. The panel also discussed ways to incentivise Iran to comply without rewarding obstruction, and possible actions by the IAEA Board and UN Security Council.

Publications

As part of phase 2 of VERTIC's project supporting long term capacity-building and education in the field of nuclear disarmament verification, the African Research and Innovation Nuclear Disarmament Verification Hub produced three research outputs:

- Michaelan Sinnett, 'Adopting societal verification as a method for verifying nuclear non-proliferation and disarmament: the potential role of African civil society';
- Edwick Madzimure, 'African women's participation in nuclear non-proliferation debates and policy processes: challenges and opportunities for African women in disarmament diplomacy and advocacy'; and
- Ian Fleming Zhou, 'Strengthening non-technological aspects of verification and monitoring mechanisms'.

The Latin American Research and Innovation Hub produced a compendium of papers by Gustavo Zlauvinen, Christian Bonfili, Alfredo Labbé, Orpet J. M. Peixoto, Diego Santos and Pablo Mari Thomsen. Edited by Irma Argüello and Emiliano J. Buis, the volume is titled 'Contributions from Latin America to Nuclear Disarmament Verification: Unlocking the power of verification worldwide'. A highly successful webinar to launch the monograph was held in April.

A monograph compiling a selection of other African papers drafted as part of the project is currently in process as are three papers produced by the Central Asian Research and Innovation Nuclear Disarmament Verification Hub.

As part of an ongoing project on North Korea's WMD capacity, VERTIC identified the location of a facility in China that is likely associated with their nuclear weapon programme. An article by Hailey Wingo, 'Complex Near Mianyang Likely Associated with China's Nuclear Weapons Programme' detailing the process of identification was published on the VERTIC website in May.

Compliance Mechanisms and Measures

Angela Woodward and Roel Walravens

North Korean maritime sanctions

The Compliance Mechanisms and Measures (CMM) Programme's work on implementing UN Security Council sanctions on North Korea continued into the first and second quarters of 2025. The team is conducting training activities with states and other relevant maritime stakeholders involved in implementing the sanctions. Operating as part of a consortium together with the James Martin Center for Nonproliferation Studies, the CMM team continued to develop training courses on sanctions implementation pertaining to due diligence in sanctions implementation, ship registry operations, and sanctions enforcement. CMM's project mandate focuses primarily on research of UN Security Council maritime sanctions-related issues, particularly on matters related to their legal implementation, but also includes identifying new trends in sanctions evasion tactics, examining case studies of false and fraudulent ship registries and enforcement action, and compiling best practices of effective national implementation.

Outreach and external relations

Angela Woodward conducted training on North Korean maritime sanctions at a workshop in the Pacific during 22–23 January 2025. On 17 February, she was appointed Deputy Chair of the New Zealand Public Advisory Committee on Disarmament and Arms Control during the committee's first meeting with the Associate Minister of Foreign Affairs in Wellington. Angela co-chaired the Council for Security Cooperation in Asia-Pacific's (CSCAP) Biosecurity and Health Security Working Group session held in Singapore from 10–11 March 2025, on behalf of CSCAP New Zealand, in cooperation with CSCAP colleagues from Singapore and Japan. She also gave a presentation on Verification, Compliance and Confidence-Building Measures Supporting the Implementation of the Biological Weapons Convention at the meeting. Angela was appointed as a Senior Fellow of the New Zealand Centre for Strategic Studies at Victoria University of Wellington on 14 May.

VERTIC

building trust through verification

Mission statement

VERTIC is an independent, not-for-profit, nongovernmental organisation. Our mission is to support the development, implementation and effectiveness of international agreements and related regional and national initiatives, with particular attention to issues of monitoring, review, legislation and verification. We conduct research, analysis and provide expert advice and information to governments and other stakeholders. We also provide support for capacity building, training, legislative assistance and cooperation.

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