

Biological Weapons Convention: Issues and Challenges

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Abstract:

Bioweapons are the most dangerous of all existing weapons of mass destruction, potentially producing more extensive and devastating effects on human populations than any other weapon, including chemical and nuclear. In light of these challenges, The Biological Weapons Convention is considered a cornerstone of the multilateral disarmament regime and an indispensable legal and political instrument that reinforces the widespread condemnation of biological weapons. It represents the first multilateral treaty banning an entire category of weapons of mass destruction. The BWC is still facing several challenges that keep emerging continuously. Starting with the non-universality of the Convention, the problem of dual-use in biotechnology, especially developing biological weapons in terms of pathogens, toxins and know-how, became accessible to many states. This leads to the third main issue related to verifying compliance; ensuring that states do not create new arsenals for the future represents the primary concern of the international community.

Keywords: Weapons of Mass destruction; Biological Weapons Convention; Biological weapon; issues and challenges; Verification regime.

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1. INTRODUCTION

Many experts consider biological weapons (bioweapons) as the most dangerous of all existing weapons of mass destruction (WMDs), with the potential for producing more extensive and devastating effects on human populations than even fusion nuclear weapons.

Unlike nuclear and chemical weapons, biological weapons are without odour or colour. Examples of diseases used in biological warfare include smallpox, cholera, plague, anthrax and avian influenza. Besides, these living organisms are highly infectious, substantially accessible, and relatively easy to deliver and use.

Biological weapons are prohibited according to the legally binding treaty, Biological Weapons Convention, formally known as “The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and Their Destruction”. The Biological Weapons Convention (BWC) forms the foundation of the biological arms control regime. It was designed to ban biological weapons by prohibiting the development, production, and stockpiling of biological agents and related equipment and delivery systems intended for malicious use.

The BWC is a cornerstone of the multilateral disarmament regime and an indispensable legal and political instrument that reinforces the widespread condemnation of biological weapons. It represents the first multilateral disarmament treaty banning an entire category of weapons of mass destruction (WMD). Currently, the BWC has reached 183 States Parties, with four signatory states and additional ten states still needing to sign or ratify the agreement, which keeps it from being universal (as of August 2019). The Convention is comparatively short and comprises only 15 articles.

In many respects, the fundamental objectives of the Convention have been achieved. Yet, the BWC, soon after its ratification, started to face serious issues and challenges that threatened its relevance. This study aims to lay the ground for a proper understanding of the following question:

What are the issues and challenges that face the Biological Weapons Conventions?

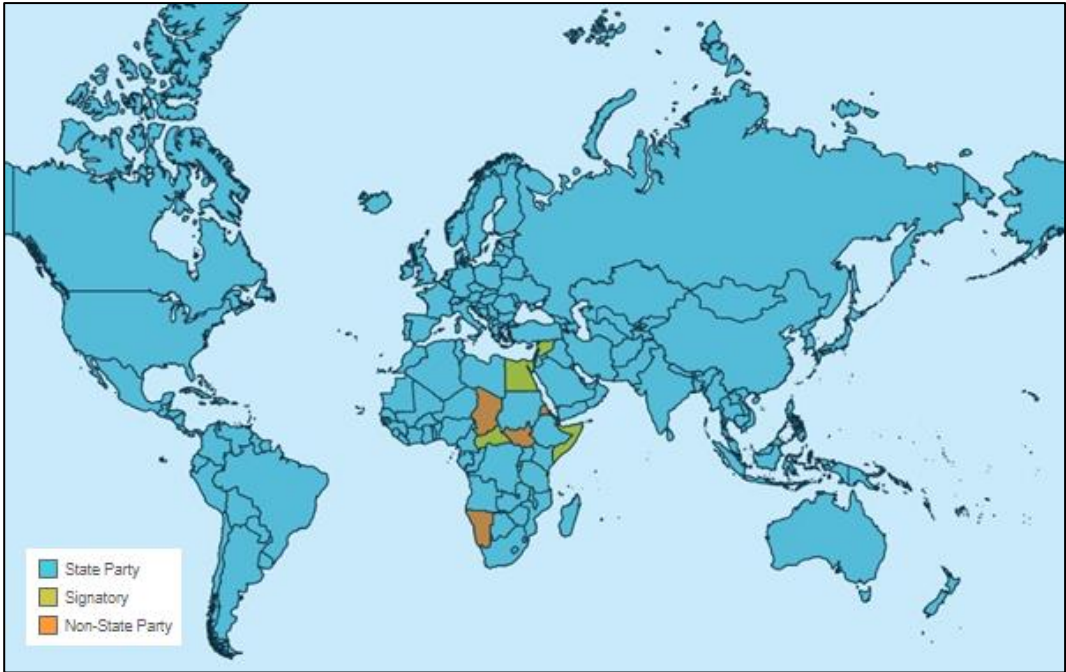
This research is divided into three main chapters; the collective conclusions accumulate to form a clear answer to the main research question.

2. University Gap

The Biological Weapons Convention makes no direct reference to the concept of universality. Nevertheless, the desire for universal adherence is clear from all the final documents of the Review Conference, which have systematically emphasised the importance of universality and have called upon states that still need to do so to ratify or accede to the Convention. The BWC Review Conferences have regularly asserted that increasing the membership of the BWC is of great importance. (Unit, 2017)

The Biological Weapons Convention was opened for signature on April 10, 1972, and entered into force on March 26, 1975; by the end of 1975, 64 states had ratified or acceded to the BWC. By August 2019, the BWC membership has grown to 183 States Parties, including the five permanent members of the Security Council. Four signatory states; (Signatory States (deposit of the instrument of ratification still required): Egypt, Haiti, Somalia, Syrian Arab Republic.) and 10 states have neither signed nor ratified the convention (Chad, Comoros, Djibouti, Eritrea, Israel, Kiribati, Federated States of Micronesia, Namibia, South Sudan, Tuvalu.). (See Figures 01 and 02). To bring on board the 14 states that are still off the hook is one of the major concerns and challenges of the BWC, and it has been the case since the very first Review Conference.

Fig.1. Membership of the Biological Weapons Convention



Source: Created by the student based on the map provided by:

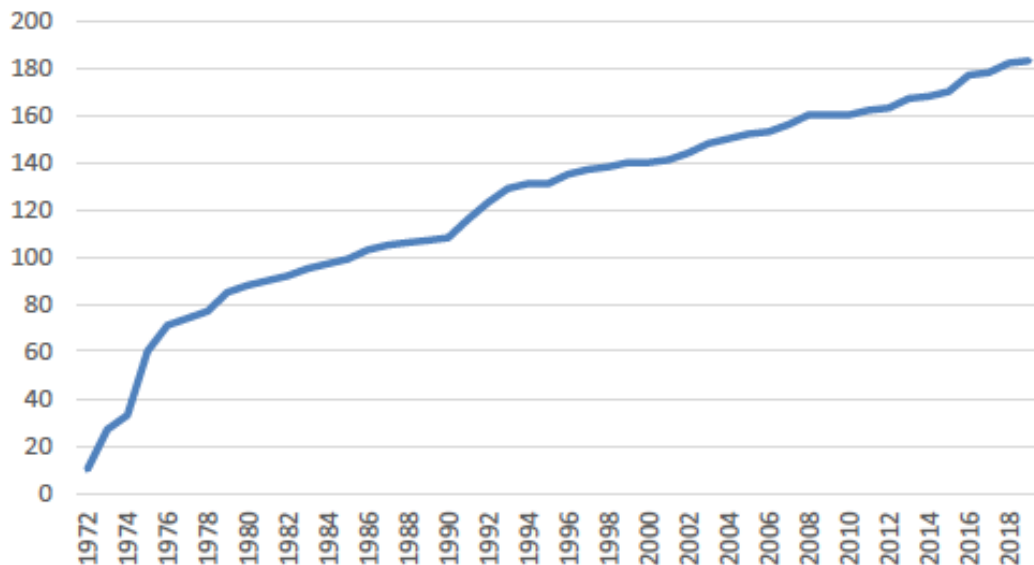
United Nations Geneva, "Membership of the Biological Weapons Convention",

<https://bit.ly/2QBCfia>.

Universality has been a concern of BWC Review Conferences since the first one in 1980 when the Final Declaration included the following: "[.../ *The Conference calls upon all signatory States that have not ratified the Convention to do so without delay and upon those States that have not signed the Convention to join the States Parties to it to eliminate the risk of biological warfare.*" (BWC, Article XIV, Final Declaration of the First Review Conference, 1980) Similar declarations were mainly present in all the Review Conferences that followed; The Seventh Review Conference held in 2011, has pointed out the role of States Parties in promoting the Convention by stating that: "[...] *the primary responsibility for promoting the universality of the Convention rests with the States Parties. The Conference urges States Parties to take action to persuade non-parties to accede to the Convention without delay. It particularly welcomes action by States Parties and regional initiatives to provide assistance and support that*

would lead to wider accession to the Convention". (BWC, Article XIV, Seventh Review Conference, 2011, p. 19)

Fig.2. Adherence to the BWC 1972-2022



Source: Meeting of the States Parties to the BWC, *Report on Universalisation Activities*, BWC/MSP/2019/3, 2019, 5.

While the last Final Declaration of the Eighth Review Conference in 2016 insisted on the importance of universalisation and affirmed that: *"The Conference reiterates the high importance of universalisation, in particular by affirming the particular importance of the ratification of the Convention by signatory states and accession to the Convention by those which have not signed the Convention, without delay. States Parties agree to continue to promote universalisation"*. (BWC, Article XIV, Eighth Review Conference, 2016, p. 20)

To achieve universalisation of the Convention, it is essential to understand the reasons behind not joining the Convention. Only after that will be possible to respond and create a comprehensive strategy for future activities that could be adopted or devised. There are several reasons for the

non-universality of the Convention, and they can be broadly categorised as follows:

2.1 Perception of Threats and Prioritisation

Biological weapons are considered one of the three pillars of Weapons of Mass Destruction, alongside nuclear and chemical weapons. However, biological weapons are the least well understood by most people, and sometimes even experts think only of nuclear weapons when addressing WMD. The reason, according to Filippa Lentzos, is that biological weapons have never been used openly on battlefields. Moreover, their development has always been shrouded in intense secrecy. (Lentzos, 2019). Therefore, the prevailing discourse is that biological weapons did not threaten national security and were always treated with inferiority.

Less common, some countries have demonstrated a lack of interest in BWC and see no need to join as irrelevant to their country in developing, producing, stockpiling or otherwise acquiring or retaining biological weapons. (McLaughlin, 2009, p. 66). While other countries have acknowledged the importance of joining the BWC and argue that the risks of a threat by biological weapons are less compared to light weapons and landmines, for example, the second category poses a far greater threat to them than biological weapons. Therefore, the threat of biological weapons is ranked their low priority in the agenda, compared to more pressing files facing their governments, such as political instability, poverty, health, hunger, desertification and drought, and economic crises. (Feakes, 2009)

Moreover, the poor quality of the national implementation of the treaty obligations by many state parties has raised questions about their compliance and long-term commitment to the convention. Hence, the lack of an effective monitoring system that assures the compliance of states parties with the provisions of the Convention demotivates the international community, in general, to participate more in the process of strengthening the convention and dissuades the states that are not part of it to consider joining the convention or to invest more in the process, such as the case with Israel, Egypt and Syria. (Chandre Gould, Amelia du Rand, 2009)

2.2 Lack of awareness

One of the primary reasons for certain states' failure to commit themselves to the BWC is a simple lack of reliable and accurate information about the Convention, its provisions, or details related to biotechnology in general. Countries like Haiti, Somalia, Chad, Comoros, Djibouti, Eritrea, Kiribati, Federated States of Micronesia, Namibia, South Sudan, and Tuvalu (They represent 11 out of 14 non-states parties to the BWC) have limited awareness and preparedness for a biological breach. The countries mentioned lack adequate education and/or training on research ethics of biology and a low level of awareness among scientists about national and international conventions, laws and regulations related to their research. (Organization, 2015)

Due to the pervasive lack of awareness of the Convention and the Administrative management, some states are unsure which relevant stakeholders within their governments need to be consulted or which department or agency should bear the responsibility of BWC's related matters. This very concern was raised by the representative from the Government of the United Republic of Tanzania -before joining the convention in 2019-that, his government was unsure where to house this responsibility, illustrating that it was a matter of ongoing debate on whether this is a preserve of the military, Ministry of Foreign Affairs or another department. (McLaughlin, 2009, pp. 66-67)

Awareness of the Convention among governments has improved significantly during the last decade due to the efforts of the Implementation Support Unit with the aid of some States Parties. However, the deficit is still present, and many States still need to party to the Convention and need more awareness and other issues related to the lack of resources.

2.3 Burden of Resources

One of the most commonly cited obstacles to joining the Convention is the financial cost, especially for smaller countries. Indeed, approximately 80% of states that are not part of the BWC have been categorised by the UN as an LDC (Least Developed Countries), meaning that the vast majority of countries that are not a party to the BWC are amongst the poorest in the world where poverty, human resource weakness, and economic vulnerability are their main characteristics. (United Nations publication, 2018)

The cost of joining the convention, including the enactment and execution of national legislation as well as the attendance in the different meetings held by the convention, or the participation in several events like Confidence Building Measures entails a cost and commitment of people to prepare and execute those tasks; this places a high resource burden on governments.

It is worth mentioning that any ratification of BWC means that the States Parties are obliged to translate the commitments in the Convention into effective national action, based on the Article IV of the Convention which requires to "take any necessary measures to prohibit and prevent the development, production, stockpiling, acquisition, or retention of the agents, toxins, weapons, equipment and means of delivery specified in Article I of the Convention, within the territory of such State, under its jurisdiction or under its control anywhere". (BWC, Article IV, 1972). These necessary measures depend on the circumstances and legal systems of each State Party; as such, there can be different approaches to implementing the provisions of the Convention nationally. However, what is certain is that the new State's Parties will bear the brunt of these obligations, especially for small states with limited resources in administration or technical capacities to implement Convention properly.

2.4 Competing interests of regional powers in the Middle East

For many of the states that did not join yet, the BWC is low down on their list of priorities for the reasons already discussed and categorised above; many such states can be expected to participate in the given time and

continued awareness-raising and assistance from the ISU, International Organizations, and other existing BWC States Parties. On the contrary, persuading countries like Egypt, Syria or Israel to join the Convention will be much more challenging; (Egypt and Syria are signatory states, while Israel is a non-singed nor ratified state) given that the three countries in question are highly suspected of possessing biological weapons programs and the high value of such ambiguity in each state's tactical and strategic doctrine.

What draws attention to this case is that each country perceives their security as requiring the insecurity of others, leading them to adopt offensive military postures. At the same time, there is virtually no regional arms control culture or constituency in the region. (Kaye, 2004)

On the one hand, Israel has repeatedly claimed that its failure to join the BWC to date is due to difficult regional security circumstances. Only after solving these regional threats will Israel consider joining the BWC. On the other hand, Egypt and Syria use the exact reasons for their refusal to join the BWC, as they believe they are subject to double-standard and selective reporting.

Pursuing the universality of BWC alone without reference to the broader issues around non-proliferation and disarmament would be naïve. With that being said, any universalisation of the BWC, which includes Israel, Syria and Egypt, depends more upon significant political changes within the Middle East region, making the political climate more conducive to accession.

The problem of universality in BWC consists of two aspects or dimensions, quantitative and qualitative:

Quantitative universality bears on the number of independent states that adhere to a particular global treaty and thus directly relates to the strength of the norm. For a worldwide agreement like the BWC, which has clear security implications for each participant, universal membership is ideal. However, no global treaty has ever attracted universal adherence. (Not every independent state is even a member of the United Nations). (Holy See and Palestine are observers, while other disputed territories like Kosovo or Western Sahara).

In the same context, the quantitative universality or near-universality

may also give rise to the so-called "universality paradox", whereby a state may decide to remain outside the BWC because it believes it can acquire a significant relative advantage over the parties to the Convention by maybe developing or retaining its biological weapons, or whereby a state party decides to defect from the treaty to obtain a similar gain. (Zanders, 2002, p. 24) These possibilities underscore the critical importance of the provisions in the BWC that offer States Parties the possibility to complain to the Security Council of the United Nations of any alleged breach, (BWC, 1972) because they significantly reduce the relative advantages a country might hope to gain from staying outside or defecting from the Convention.

Qualitative universality refers to the necessity of the global treaty to remain relevant to all parties during its lifespan to ensure universal compliance. The BWC is of unlimited duration. This implies that the questions regarding universality pertain to the present and the mid and long-term future. This future perspective adds a crucial qualitative dimension to the concept of universality. In particular, the political, security and technological context in which the BWC must operate changes constantly, like the constant changes like threats the BWC regime faces, especially with the massive developments in science in general and especially the field of biotechnology.

2. Dual-use in Science and Technology

The twenty-first century has been called the age of biotechnology. (Sean Harper, Beth Seidenberg, 2019), (KMA Gartland and others, 2013, p. 6) Advances in biotechnology and biological sciences are occurring at an unprecedented pace, enhanced by the effects of globalisation and ever-improving information and communication technology capabilities. On the one hand, such scientific advances can bring unparalleled benefits to human health and its welfare by improving medicines, vaccines and disease diagnosis. On the other hand, the technology surrounding this field could also be harmful and misused due to the inherently dual-use nature of biology. (Alexander Kelle, Kathryn Nixdorff, Malcolm Dando, 2008, p. 10) These technologies pose a dual-use dilemma in recognising the fine line between peaceful and malevolent uses. (Technology, 2009, p. 1) Indeed, many

emerging technologies with the potential to do the best are also capable of the most significant harm. (Tucker, 2012, p. 1) The situation is more critical because viruses and pathogenic bacteria are available from natural sources and are self-replicating. Hence, they are impossible to detect from a distance with the currently available technologies nor to monitor and track reliably quantitatively. As a result, the proof of acquiring biological weapons entails fewer technical obstacles and has a lower chance of discovery than constructing a nuclear device, for example. (Tucker, 2012, pp. 2, 3)

Dual-use in biology means the character of being used either for peaceful purposes, such as medicine, prevention, protection, or for non-peaceful purposes, such as development and production of biological weapons. The pathogens, toxins and genetic elements with such character are called dual-use biological agents; and the equipment with such character is called dual-use biological equipment. (James B. Petro, Theodore R. Plase, Jack A. McNulty, 2003, pp. 161-168); (Donald M. Atlas, Malcolm Dando, 2006, pp. 276-286); (Eileen R. Choffnes, Stanley M. Lemon, David A. Relman, 2006, pp. 28-29)

According to biologists, developing technologies across multiple disciplines in biological sciences will facilitate an entirely new class of fully engineered agents referred to as Advanced Biological Warfare agents. Emerging biotechnologies likely will lead to a paradigm shift in BW agent development; future biological agents could be intentionally engineered to target specific human biological systems, representing a leap from the traditional model of BW agent development that focuses on the naturally occurring agent, not the target organism. (Krishnan, 2017, p. 110) The developments in the life sciences during the last two decades have raised the political salience and urgency of the dual-use dilemma. In 1999, a report by the British Medical Association titled: "Biotechnology, Weapons, and Humanity" wrote: "We are concerned that the emerging sciences of genetic engineering and biotechnology may be developed for malign purposes. Therefore, the social and ethical safeguards that may prevent conflict escalation and weapons development need to be discussed urgently." (Association, 1999, p. 1)

In the same context, in 2004, the World Health Organization (WHO)

sounded the alarm, warning that: "every major new technology of the past has come to be intensively exploited, not only for peaceful purposes but also for hostile ones. Therefore, prevention of the hostile exploitation of biotechnology rises above the security interests of individual states and poses a challenge to humanity generally." (Organization, Public Health Response to Biological and Chemical Weapons: WHO Guidance, 2nd ed. , 2004)

Bill Gates from his side, during his speech at the 53rd Munich Security Conference, pointed out that: " [...] the next epidemic could originate on the computer screen of a terrorist intent on using genetic engineering to create a synthetic version of the smallpox virus [...] or a super contagious and deadly strain of the flu [...] Whether it occurs by a quirk of nature or at the hand of a terrorist, epidemiologists say a fast-moving airborne pathogen could kill more than 30 million people in less than a year[...]." (Gates, 2017)

This speech brought attention to another issue regarding the dual use of Biotechnology, the growing concern surrounding non-state actors' ability to develop and exploit biology and life sciences for malicious purposes. (Revill, 2017, p. 626) History reveals little about the willingness and ability of non-state actors to use biological weapons, mainly because there have been very few confirmed cases of groups or individuals obtaining or deploying biological agents. (Enemark, 2006, p. 911) Still, Many indicators stipulate that certain types of Non-State groups have planned or are planning to carry out attacks involving chemical, biological, radiological or nuclear (CBRN) weapons. (Stephanie E. Meulenbelt, Maarten S. Nieuwenhuizen, 2015, p. 832)

Many of the developments mentioned above are at the leading edge of current capabilities. They are expensive and complicated to acquire and deploy successfully. Using them for prohibited purposes would require the resources of a state. (Academies, 2015, p. 41) This situation may dramatically change soon since there are reasonable grounds that biology is getting relatively more straightforward, accessible and progressing exponentially. (Schatz, 2015, pp. 14-17)

Therefore, BWC States Parties pay continuing attention to these new science and technology trends. Any effort to control the use of pathogenic

micro-organisms for offensive military purposes must consider the dual-use nature of many of these organisms and related equipment and processes. (Alexander Kelle, Kathryn Nixdorff, Malcolm Dando, 2008, p. 10) Science and Technology developments can be regarded in at least three respects concerning the implementation of the convention:

- Ensuring that the prohibitions against biological warfare are effectively maintained (Article I);
- Identifying areas of life sciences and technological development that require regulatory or other governance measures to manage associated risks (Article IV);
- Science and technology also affect the Article X of the convention by helping or hindering the practical tasks related to the operation and implementation of the treaty. (John Hart, n.d.) Regulatory systems to support national implementation became subject to concerns about relevance in the face of rapidly evolving science and technology. Improving the ability to investigate allegations of the use of biological weapons will depend on advances in the scientific underpinnings of microbial forensics and enhanced international cooperation. (atherine Bowman, Kathryn Hughes, Jo L. Husbands K, 2011, pp. 17-18) Accordingly, the development in science and technology is one of the main challenges the BWC faces.

3. The Problem of Verifying Compliance

The international security environment has changed considerably over the past decade, with corresponding implications for non-proliferation, arms control and disarmament. These changes have also impacted verification in general and led to a greater emphasis on compliance with obligations under existing treaties, agreements and commitments. They have also fostered a greater realisation of the need to respond to non-compliance with arrangements in force and to build national capacities to implement them more fully and effectively. (Experts, 2008, pp. paragraph 1, 9)

Verification is one of the central elements of any arms control agreement. A UN Panel of Government Experts identified verification as "a tool to strengthen international security. It involves the collection, collation

and analysis of information to make a judgement as to whether a party is complying with its obligations. Such obligations may derive from treaties, agreements or arrangements or from decisions of competent multilateral organs such as the Security Council." (Experts, 2008, p. 11) Verification aims to maintain and build confidence in compliance among parties to an agreement. But at the same time, it should establish confidence that non-compliance would be detected, (Guthrie, 2000, p. 152), and any breach or detection of it needs a clear and assured consequence. (Dahlman, 2010, p. 3) It is worth mentioning that each treaty and agreement has its own governing and implementing organisation, and these are of different kinds, varying in size and mandate; the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), for example, presents the International Atomic Energy Agency (IAEA) as a verification regime, while the IAEA is not a party to the NPT, it is entrusted with crucial verification responsibilities deriving from the Treaty.

The Chemical Weapons Convention (CWC) from its side established a sophisticated, multifaceted legal and procedural framework for verification administered by the Organisation for the Prohibition of Chemical Weapons (OPCW). The OPCW ensures the implementation of the provisions of the CWC, including the international verification of compliance.

The Comprehensive Nuclear-Test-Ban Treaty (CTBT) has yet to enter into force at the time of writing. However, it still has its verification system known as The Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO). It is tasked with verifying the ban on nuclear tests, operates a worldwide monitoring system, and may conduct on-site inspections. (CTBTO, 1996, p. 17)

While all mentioned agreements above have their verification regime, the BWC, the first multilateral disarmament treaty banning an entire category of weapons, does not have a legally binding verification mechanism or an institutional body to implement the Convention at the international level assessing states' compliance.

In the efforts to promote transparency, reduce and prevent the occurrence of ambiguities, doubts and suspicions related to compliance with the Convention, and facilitate international cooperation in peaceful

biotechnological activities, States Parties to the BWC between 1986 and 1991 agreed upon and elaborated Confidence Building Measures involving information and data exchanges.

Furthermore, the discussion on a verification mechanism began at the Third Review Conference in 1991. States parties decided to establish an open-ended ad hoc group. The Ad Hoc Group of Governmental Experts, which came to be known as VEREX Group, became the negotiating body assigned to produce a legally binding instrument and identify potential verification measures. A Special Conference of States Parties held in September 1994 considered the VEREX report at Special Conference (Special Conference, 1994, pp. 126-128), and the State Parties agreed to establish an ad hoc group. The Ad Hoc Group met 24 times between 1995 and 2001 and continuously negotiated a protocol for verification and compliance with the BWC. Open to all States parties “to consider appropriate measures, including possible verification measures, and draft proposals to strengthen the Convention, to be included, as appropriate, in a legally binding instrument.” (Nations, Vol.26, 2011, pp. 49-50)

However, at the last session of the Ad Hoc Group, the United States opposed this draft. It withdrew its support for the Verification Protocol, citing blatant risks to the economic viability of its pharmaceutical and biotech industries.

Later, at the Fifth Review Conference in 2001, the Verification Protocol was suspended indefinitely with the United States persistence that the Ad Hoc Group no longer meet. They claimed that the BWC was unverifiable and that too much transparency could give rise to espionage against its pharmaceutical industry. (Mahley, 2001) Suggests that States Parties seek other mechanisms for strengthening the treaty other than multilateral verification. Russia and China, too, were uncomfortable with the additional protocol. To avoid a complete termination of the multilateral process to strengthen the BWC, the State Parties agreed to hold annual meetings (Meeting of Experts and meeting States Parties) as substitute programs on the following topics: national measures to implement the BWC, including national legislation; national measures to enhance safety in handling pathogenic microorganisms and toxins; improvements to international

response capabilities in case of intentional deployment of biological weapons and outbreaks of diseases; strengthening of national and international efforts to identify and combat infectious diseases; and codes of conduct for scientists.

While the threat from biological weapons is growing, the primary multilateral instrument intended to prevent the misuse of biotechnology has been weakened by the failed draft protocol. Most developments undermining the prohibition of biological weapons are related to the lack of transparency and verification for the biological weapons ban. Because the BWC has no verification mechanism, violations of the Convention may go undetected. For this reason, parties to the Convention cannot be sure that all states comply with their obligations not to develop, produce or stockpile biological agents for hostile purposes. In the long run, this can undermine the very basis of the BWC. (Olivier, 2002, p. 176)

When the Biological Weapons Convention was opened for signature in 1972, the founders of the convention, mainly the United States and the Soviet Union, perceived that the final shape of the Convention was adequate to tackle the challenges that the international community was facing at that time, without any other mechanisms or structures to assist the implementation of the Convention. However, this perception soon changed after the Information Age and the rapid pace of science and technology, especially in biology. This revolution has created many challenges to keep the Convention relevant.

The chapter aimed to answer the question: Why does the Biological Weapons Convention need institutional strengthening? This question was answered by looking into the different issues and challenges the BWC faces, starting from the problem of universality. Then the rapid pace in science and technology and its impact on the relevance of the BWC and how it led to the failure of creating a verification protocol.

The first issue addressed in this chapter is the problem of universality. While the Implementation Support Unit strives to achieve the universality of the Convention, 14 countries are not part of the Convention, and persuading them to join is still tricky. Another problem also arises in quality; many States Parties need to know the support required to implement the Convention on

its national level.

A significant issue facing the BWC is monitoring the rapid development in science and technology and the dual use of biological agents. All the attempts to create an effective verification regime have failed. One such obstacle lies in the dual-use nature of the materials, equipment, and know-how fundamental to legitimate research laboratories and international industries. Many experts still believe that creating a 100% effective verification can only partially be closed. Even if it is doable, it can only be done by sacrificing the beneficial science that depends on these dual-use items.

When addressing the challenges facing the BWC regime, it is crucial to identify the immense diversity among the issues; each relates to a different part of the BWC regime. However, the most important conclusion is that all the problems or challenges share one particular feature: the need for a well-organised structure by which these issues could be addressed.

In the same context, the issues' diversity and complexity make it nearly impossible to be addressed unilaterally depending on national capacities only. These challenges necessitate a political will and complicity among States Parties. At this moment, the institutional strengthening of the Convention could provide this solid footing or a platform by which States Parties could interact and create a mutual understanding to synthesise reasonable solutions to these problems.

In contrast, the road toward the solution is not that easy; there is another type of diversity and complexity in this sense, too; each State Party's capabilities and needs also vary according to the national interest of each part. Thus, the perspectives of the solutions differ too. As a result, different attempts and proposals have been suggested, but only some of them were unanimously agreed upon. The second chapter will address all these attempts to strengthen the structure of the BWC.

4. CONCLUSION

The Biological Weapons Convention is a legally binding treaty prohibiting the development, production, acquisition, transfer, stockpiling and use of biological and toxin weapons. It was opened for signature on April

10, 1972, and entered into force on March 26, 1975. The BWC is of unlimited duration and represents the first multilateral disarmament treaty banning an entire category of weapons of mass destruction. The Convention is comparatively short and comprises only 15 articles. The BWC has reached 183 States' Parties, four Signatory States, and ten states have neither signed nor ratified the agreement, which keeps it from being universal (as of May 2020).

The historical records indicate that the negotiations for the BWC took only 3 years to conclude; neither the United States nor the Soviet Union anticipated a requirement for a verification regime. They both perceived that the final shape of the Convention was adequate to achieve its purposes.

In many senses, the fundamental objectives of the Convention have been respected. Yet, the first multilateral disarmament treaty failed to address the new challenges that emerged continuously, predominantly demonstrated by the rapid development of science and technology. The problem of dual-use in the biotechnology field, especially that developing biological weapons in terms of pathogens, toxins and know-how, became accessible to many states. Ensuring that states do not create new arsenals for the future became the primary concern of the international community.

Soon enough, the concerns became a reality when several States Parties -notably the Soviet Union and Iraq- continued their large-scale biological weapons program. The inability to deter States Parties' non-compliance exposed the institutional deficit of the Convention, which highlighted the need for reliable verification measures.

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