

## Strengthening the Biological and Toxin Weapons Convention at the 9th Review Conference: Advancing Effective Action on Biological Security Education, Awareness, and Outreach

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### Summary

Today, there is an urgent need for reconciling the benefits that are likely to be accrued from the continuous advancement of the life sciences with the potential risks arising from the availability, accessibility, and affordability of the knowledge, tools, and technologies necessary for conducting scientific work. Within the context of the BTWC, biological security education and awareness are considered essential to strengthening the full and effective implementation of the Convention. The paper reviews the proceedings of the Meetings of Experts in 2018 and 2019 and the Meetings of States Parties in 2017, 2018, and 2019, to identify practical options for promoting effective action on enhancing biological security education, awareness-raising, and outreach at the 9th Review Conference of the BTWC.

### 1. Introduction

The progress of biotechnology over the past few decades promises to make a significant contribution to health, socio-economic development, and environmental protection. At the same time, the global diffusion of cutting-edge life science capabilities with multiple adaptive uses increases the risk of accidental and deliberate misuse of life science knowledge and materials against humans, animals, or plants. Thus, there is an urgent need for reconciling the benefits that are likely to be accrued from the continuous advancement of the life sciences with the potential risks arising from the availability, accessibility, and affordability of the knowledge, tools, and technologies necessary for conducting scientific work. This requires the implementation of an integrated and comprehensive approach of complementary and mutually reinforcing elements which seek to guarantee that the life sciences are used only for peaceful, prophylactic, and protective purposes. It is helpful to think of this required approach as a systematically organised 'web of prevention' which integrates both the efforts to prevent the unintentional (accidental) release of biological agents and toxins, including naturally occurring diseases (biosafety) and the efforts to prevent the deliberate release of biological agents and toxins (biosecurity) into a coherent policy and regulatory framework.<sup>1</sup> The value of the web of prevention has been recognized by the States Parties to the Biological and Toxin Weapons Convention (BTWC), the principal international agreement that prohibits the development, stockpiling, acquisition, and retention of biological weapons. The Fifth Review Conference of the BTWC held in 2002 agreed an Inter-Sessional Programme of Work to discuss and promote common

understanding and effective action on the following topics:

- i. the adoption of necessary national measures to implement the prohibitions set forth in the Convention, including the enactment of penal legislation;
- ii. national mechanisms to establish and maintain the security and oversight of pathogenic microorganisms and toxins;
- iii. enhancing international capabilities for responding to, investigating and mitigating the effects of cases of alleged use of biological or toxin weapons or suspicious outbreaks of disease;
- iv. strengthening and broadening national and international institutional efforts and existing mechanisms for the surveillance, detection, diagnosis and combating of infectious diseases affecting humans, animals, and plants;
- v. *the content, promulgation, and adoption of codes of conduct for scientists.*<sup>2</sup>

Since 2002, BTWC States Parties have held annual meetings preceded by meetings of experts as part of an Intersessional Process intended to inform States Parties' considerations as regards the strengthening of the Convention. The current Intersessional Programme, 2018-2020 focuses on sets of issues under five headings in Meetings of Experts each summer and Meetings of States Parties later each year. These headings are:

MX1: Cooperation and assistance with a particular focus on strengthening cooperation and assistance under Article X.

MX2: Review of developments in the field of science and technology related to the Convention.

MX3: Strengthening national implementation.

MX4: Assistance, response and preparedness.

MX5: Institutional strengthening of the Convention.

The Eight Review Conference of the BTWC in 2016, when considering Article IV on the national implementation of the Convention noted the value of national implementation measures to:

- “(a) *implement voluntary management standards on biosafety and biosecurity;*
- (b) *encourage the consideration of the development of appropriate arrangements to promote awareness among relevant professionals in the private and public sectors and throughout relevant scientific and administrative activities;*
- (c) *promote amongst those working in the biological sciences awareness of the obligations of States Parties under the Convention, as well as relevant national legislation and guidelines;*
- (d) *promote the development of training and education programmes for those granted access to biological agents and toxins relevant to the Convention and for those with the knowledge or capacity to modify such agents and toxins;*
- (e) *encourage the promotion of a culture of responsibility amongst relevant national professionals and the voluntary development, adoption and promulgation of codes of conduct;*

- (f) *strengthen methods and capacities for surveillance and detection of outbreaks of disease at the national, regional and international levels, noting that the International Health Regulations (2005) are important for building capacity to prevent, protect against, control and respond to the international spread of disease; and*
- (g) *prevent anyone from developing, producing, stockpiling, or otherwise acquiring or retaining, transporting or transferring and using under any circumstances, biological agents and toxins, equipment, or their means of delivery for non-peaceful purposes”.*<sup>3</sup>

When considering Article VII of the Convention on international assistance in case of alleged use of biological weapons, the Eighth Review Conference recognized:

*“capacity building at the national and international levels as the most immediate imperative for enhancing and strengthening the capacity of the States Parties to promptly and effectively detect and respond to the alleged use or threat of use of biological weapons.”*<sup>4</sup>

The Conference also noted that:

*“the International Health Regulations (2005) are important for building capacity to prevent, protect against, control and respond to the international spread of disease; such aims are compatible with the objectives of the Convention”.*

When considering Article X of the Convention on international cooperation and assistance, the Eighth Review Conference agreed on the value of:

*“working together to promote capacity building in the fields of vaccine and drug production, disease surveillance, detection,*

*diagnosis, and containment of infectious diseases as well as biological risk management. The Conference affirms that building such capacity would directly support the achievement of the objectives of the Convention.”*<sup>5</sup>

The Conference further:

*“(a) encourages the States Parties to continue strengthening existing international organizations and networks working on infectious diseases, in particular those of the WHO, FAO, OIE and IPPC, within their respective mandates;*

*(b) notes that the role of these organizations is limited to the epidemiological and public/animal/plant health aspects of any disease outbreak, but recognises the added value of information exchange with them;*

*(c) encourages States Parties to improve communication on disease surveillance at all levels, including between States Parties and with the WHO, FAO, OIE and IPPC;*

*(d) calls upon States Parties to continue establishing and/or improving national and regional capabilities to survey, detect, diagnose and combat infectious diseases as well as other possible biological threats and integrate these efforts into national and/or regional emergency and disaster management plans;*

*(e) urges States Parties in a position to do so to continue supporting, directly as well as through international organizations, capacity-building in States Parties in need of assistance in the fields of disease surveillance, detection, diagnosis and combating of*

*infectious diseases and related research”.*

It is thus evident that the topics that are being considered under the Meetings of Experts are underpinned by a common understanding among BTWC States Parties that biosafety and biosecurity efforts are mutually reinforcing for ensuring that the life sciences are not misused for hostile purposes. It is also evident that promoting biological security education and awareness, including as part of capacity building for preventing and countering deliberate disease outbreaks is essential to strengthening the full and effective implementation of the Convention. This paper advances the argument that upholding the norm of biological prohibition requires the systematic and integrated consolidation of biological security education, awareness-raising, and outreach efforts within the framework of the BTWC. The paper reviews the proceedings of the Meetings of Experts in 2018 and 2019 and the Meetings of States Parties in 2017, 2018, and 2019, in order to examine how the issue of biological security education, awareness-raising, and outreach has been addressed by

BTWC States Parties and identify practical options for promoting effective action on enhancing biological security education, awareness-raising, and outreach at the Ninth Review Conference of the BTWC.

## **2. BTWC Intersessional Programme, 2018-2020**

The purpose of this section is to examine how the issue of biological security education, awareness, and outreach has been addressed in the proceedings of the current BTWC Intersessional Process, 2018-2020. To this end, relevant Working Papers submitted by States Parties, as well as the Chairs' summaries of the Meetings of Experts in 2018 and 2019 are reviewed.

### *2.1 2017 Meeting of the States Parties (MSP)*

The final report of the 2017 MSP sets out the structure for the current Intersessional Programme, 2018-2020. Table 1 shows the topics that are relevant to biological security education to be considered under each Meeting of Experts.

**Table 1: Biological security education in the context of the BTWC Meeting of Experts<sup>6</sup>**

**MX1: Cooperation and assistance, with a particular focus on strengthening cooperation and assistance under Article X**

- Promotion of capacity building, through international cooperation, in biosafety and biosecurity and for detecting, reporting and responding to outbreaks of infectious disease or biological weapons attacks, including in the areas of preparedness, response, and crisis management and mitigation;

**MX2: Review of developments in the field of science and technology related to the Convention**

- Development of a voluntary model code of conduct for biological scientists and all relevant personnel, and biosecurity education, by drawing on the work already done on this issue in the context of the Convention, adaptable to national requirements;

**MX3: Strengthening national implementation**

- Measures related to Article IV of the Convention;

**MX4: Assistance, response and preparedness**

- Exploration of means to prepare for, respond to and render assistance in case of the possible hostile use of biological agents and toxins against agriculture, livestock as well as the natural environment;

**MX5: Institutional strengthening of the Convention**

- Consideration of the full range of approaches and options to further strengthen the Convention and its functioning through possible additional legal measures or other measures in the framework of the Convention.

Examples of relevant Working Papers (WP) that were tabled by States Parties at the MSP in 2017 are shown in Table 2.

**Table 2: Working Papers Addressing Biological Security Education**

**Article IV**

BWC/MSP/2017/WP.19: This WP reports on the public-private partnership measures, including workshops, seminars, and on-site education programmes implemented by the Republic of Korea to prevent the misuse of biotechnology and raise awareness of the BTWC within the biotechnology industry and academic community.<sup>7</sup>

BWC/MSP/2017/WP.22: This WP puts forward a set of key points to be considered with regard to the implementation of biological security education and awareness including:

- The need to reach out, engage with, and build networks among stakeholders, including staff and students to ensure that learning will be effective.
- The need to develop appropriate teaching materials that take into account national circumstances.
- The benefits of international collaboration and shared experience and expertise.
- The benefits of using online technologies to facilitate communication and learning.
- The importance of sustainability.<sup>8</sup>



## **Article VII**

BWC/MSP/2017/WP.11: This WP reports on a bio-preparedness field training exercise organised by Portugal underlining the value of such exercises in developing strong working multiagency relationships and strengthening command, control and coordination in a real incident, both nationally and internationally.<sup>9</sup>

## **Article X**

BWC/MSP/2017/WP.17: This WP outlines biosafety and biosecurity activities, including training implemented by Global Partnership Member Countries.<sup>10</sup>

### *2.2 2018 Meeting of Experts and Meeting of States Parties*

This subsection reviews the Summary Reports submitted by each of the five Chairs of the Meeting of Experts (Table 3). Whilst no consensus was reached by States Parties on the outcomes of the Meetings of Experts at the MSP in 2018, the Chairs' Summary Reports still provide an overview of the main issues considered at each Meeting of Experts.

**Table 3: Considerations on Biological Security Education and Awareness at MX/2018**

#### **MX1: BWC/MSP/2018/MX.1/3**

“29. States Parties highlighted the importance of promoting South-South cooperation in the field of capacity-building for detecting, reporting and responding to outbreaks of infectious disease or biological weapons attacks. It was proposed that further measures to facilitate such initiatives should be encouraged.

30. While noting that there is no agreed definition of biosafety and biosecurity in the Convention, some States Parties emphasized the need to take measures to broaden practical cooperation in these two areas for building capacity in developing States Parties, with the aim of shaping tailored solutions. [...]

32. The Meeting discussed the following practical measures: a database to serve as the reference on regulatory frameworks for biosafety and biosecurity; effective training provision and manuals that will help States Parties in crafting tailored biological risk management systems as well as in establishing, operating and maintaining laboratories for high-consequence pathogens.”<sup>11</sup>

#### **MX2: BWC/MSP/2018/MX.2/3**

“9. At the level of scientific institutions, it was noted that they have an ethical and legal responsibility to ensure that biosecurity standards are maintained and for instilling a positive and transparent culture. [...] Some States Parties also noted that there could be *a role for*

self-governance which has the advantage that researchers' have a high level of familiarity with the given subject and the fact that it can allow for a more flexible response than regulation and legislation.

12. [...] Many States Parties spoke in favor of the need for voluntary codes of conduct, and several States Parties described national examples of such codes. It was emphasized that codes of conduct could be a useful tool to raise awareness among scientists about the risks of misuse, while taking into account the right balance between scientific freedom (a major driver of economic development), on one hand, and the potential risks posed by research outcomes being maliciously used by non-state actors or as a weapon of war, on the other.

13. Many States Parties also expressed the view that any such code of conduct should be voluntary in nature, but that it should be developed with the active participation of the scientific community to ensure that it has feasibility and is seen as being relevant to those at whom it is aimed. [...]

15. [...] A large number of States Parties expressed the view that the issue of codes of conduct was a topic on which progress could be made, with some States Parties considering that the MSP in 2018 could call for continued discussion on proposals and suggestions related to this topic. The participation of the scientific community in the discussion should take place during the intersessional programme, without pre-established timelines, and within a negotiation process led by States Parties.”<sup>12</sup>

### **MX3: BWC/MSP/2018/MX.3/3**

“4. [...] Some States Parties noted the importance of implementing an effective national biosecurity regime, including the development of a biosecurity culture to address these risks. In addition, the adoption of codes of conduct and specific training for personnel involved in the handling and transport of agents was mentioned as other possible measures. Furthermore, some States Parties informed the Meeting of Experts about their national biosecurity strategies as well as ongoing and continuous efforts to further strengthen national implementation of the Convention. [...] Additionally, the value of legislative or regulatory measures, awareness raising efforts, and biosafety and biosecurity training and education programmes were noted. Moreover, the benefit of a comprehensive approach at the domestic level including engagement with international partners, industry and academia was underlined by several States Parties.

8. States Parties shared different views regarding the implementation of Article III; [...] proposals referred to [...] regular outreach including industry and academia.”<sup>13</sup>

### **MX4: BWC/MSP/2018/MX.4/3**

“11. [...] several delegations described measures that they have adopted or are in the process of implementing at the national level to be ready to respond to infectious disease outbreaks, including of a deliberate nature. These included national response plans, rapid response teams,

training of experts CBRN specialized units, collaboration between the public health and enforcement authorities, as well as table-top and full-fledged field exercises, both national and with international elements, aimed at testing readiness.”<sup>14</sup>

**MX5: BWC/MSP/2018/MX.5/3**

“5. States Parties made reference to a number of challenges facing the Convention, for example rapidly evolving developments in science and technology, proliferation, pandemics, together with the threat of use of biological agents or toxins for terrorist purposes, which underline the urgency of strengthening the Convention. [...] States Parties expressed the view that such developments in science and technology and the nature of armed conflict should be kept under review.

8. [...] With regard to Article VII, several States Parties referred to the need to enhance its operationalization [...] and the need for capacity-building at the national level to assist developing countries in improving their preparedness was also raised.”<sup>15</sup>

### 2.3 2019 Meetings of Experts

This subsection reviews the Summary Reports submitted by each of the five Chairs of the Meeting of Experts (Table 4).

**Table 4: Considerations on Biological Security Education and Awareness at MX/2019**

**MX1: BWC/MSP/2019/MX.1/2**

“24. The Meeting heard examples of successful programmes, and several elements for successful outcomes were identified: [...]

ii) Training of scientists in biosafety and biosecurity was highlighted as an important component of twinning programmes; [...]

27. Some States Parties highlighted that building health system capacity and resilience through workforce development is a crucial element to disease outbreaks management, as health professionals are the first line of defence when it comes to detecting infectious diseases. A robust and resilient health system will be better prepared to manage outbreaks regardless of their origin, whilst at the same time continuing to maintain core healthcare functions.”<sup>16</sup>

**MX2: BWC/MSP/2019/MX.2/2**

“18. A number of States Parties stressed the crucial importance of awareness-raising and education as a complementary and effective measure to reduce risks regarding dual-use research of concern. Some also remarked on the benefits of open online training and education



material. Additionally, some States Parties emphasized the importance of incorporating the Convention's provisions as well as biosafety and biosecurity related topics into university curricula. [...]

20. Many States Parties expressed the view that any code [of conduct] should be aspirational in nature and could thereby be conducive to norm-setting and strengthening the objectives of the Convention. In this regard, such a code should promote responsible behaviour of scientists and emphasize ethical and moral norms and values. It was also stressed that any such code cannot be imposed by governments but should be developed in close collaboration with, and the active participation of, the scientific community in order to ensure its acceptability and relevance.”<sup>17</sup>

**MX3: BWC/MSP/2019/MX.3/2**

“6. Some States Parties referred to the benefits of developing a comprehensive approach at the domestic level including engagement with international partners, industry and academia. [...] Some States Parties reiterated the importance of implementing an effective national biosecurity regime, including the development of a biosecurity culture within relevant institutions. Additionally, the value of legislative or regulatory measures, awareness-raising efforts, and biosafety and biosecurity training and education programmes was mentioned. [...]

26. States Parties shared possible ways in which to strengthen effective export control measures. For example, regular outreach to all stakeholders including private industry and academia was highlighted as one element, in addition to offering countries technical support to develop and/or strengthen export control systems and build national capacities.”<sup>18</sup>

**MX4: BWC/MSP/2019/MX.4/2**

“19. [...] Various delegations took the floor and shared their national experiences concerning strengthening national health systems and national response capabilities, including by means of national response plans, specialized response units, and regular table-top and field exercises, including the participation of relevant international organizations. [...]

20. [...] It was also stressed that in order to mitigate the consequences of the use of biological and toxin weapons, it was crucial to develop and strengthen the national capacities of States Parties. Some delegations reported on regional capacity building initiatives, including on biosafety, biosecurity, risk-assessment, disease diagnostics and outbreak management.”<sup>19</sup>

**MX5: BWC/MSP/2019/MX.5/2**

“17. [...] States Parties also shared experiences regarding different types of exercises they had conducted and noted the benefit of these activities to strengthen coordination at the national and international levels. The linkage between Article VII and Article X was also underlined by some States Parties. [...]

20. Noting the implications of the rapid advances in science and technology, many States Parties expressed support for establishing a more structured approach under the Convention to the review of such developments. [...] Additionally, broad support was expressed towards a voluntary model code of conduct for scientists based on a concrete proposal developed by two States Parties. With regard to this proposal, some stressed the key role of the scientific community in the development of a new code and recalled that many national codes already exist.<sup>20</sup>

#### 2.4 2019 Meeting of States Parties

The 2019 Meeting of the States Parties to the BTWC “noted the value of the work of the Meetings of Experts and the discussions that took place”.<sup>21</sup> During MSP/2019, the Chair of the Meeting and the Chairs of MXs/2019 submitted an *Aide Memoire* which compiles in a factual manner the proposals made during MXs/2019:

“4. The *Aide Memoire* is meant to assist States Parties in the lead-up to the 2021 Review Conference, in order to review the implementation of the Convention and to facilitate its operationalization. It is considered by the Chairpersons as a tool to link the meeting of experts with the meeting of states parties. As such, it is an evolving document which can be updated throughout the intersessional process.”<sup>22</sup>

Key proposals on the implementation of biological security education and awareness are presented in Table 5.

**Table 5: Key Proposals with Relevance to Biological Security Education**

***Aide Memoire, BWC/MSP/2019/CRP.1***<sup>23</sup>

MX 1

- “Setting up a voluntary trust fund [...]”
- “Promoting among States Parties understanding on specific measures for the transfer and exchange of information, materials and equipment including mobilizing adequate resources; enabling capacity building in States in need; [...] exchanging scientists and providing training opportunities.”

MX 2

- “Developing a model code of conduct for biological scientists and all relevant personnel, and biosecurity education, adaptable to national requirements, in order to prevent the misuse of dual-use research while ensuring that research for peaceful purpose is not hampered.”
- “Considering the applicability of already available frameworks and principles to the BTWC context, including by tapping into academic material when relevant.”

### MX 3

- “Agreeing on a set of elements and principles for effective national export control, which could be established at the national level and could include: [...] regular outreach to all stakeholders including industry and academia.”
- “Establishing, at the national level, a list of all relevant government agencies and organizing meetings with BWC focal points from other ministries, bio-safety associations, and the private sector to exchange views and enhance cooperation on CBM implementation.”

### MX 4

- “Increasing cooperation and information-sharing, at the local, national, and international levels to prepare for and respond to naturally occurring and intentional threats to agriculture, livestock, or the environment.”
- “Identifying the linkages and synergies with Article-X, recognizing that strengthening surveillance, detection and response capabilities of national health systems, including through the establishment of a voluntary fund for assistance and capacity building, would help to tackle both infectious disease outbreaks of a natural origin and also enhance preparedness to mitigate the consequences of deliberate bio-events.”

### MX 5

- “Enhancing the role of the ISU to support national implementation and Intersessional Work Programmes.”
- “Intensifying of outreach and universalisation activities.”

Two Working Papers submitted to the MSP/2019 by Germany and Portugal, respectively addressed the issue of biological security education, awareness-raising, and training. WP 3 provides an overview of Germany’s implementation of Article X with a special focus on the “German Biosecurity Programme” which aims at reducing biological security risks by “fostering sustainable knowledge and capabilities based on long-term relationships and learning and making use of concepts such as the training-of-trainers approach”:<sup>24</sup>

*“10. [...] A newly established code of conduct for scientists in Tunisia raises awareness of questions of dual-use in*

*biological research. Moreover, Germany assisted its Tunisian partners with the development of a biosecurity curriculum for health experts.*

*11. [...] Activities [in Georgia, Kazakhstan, Kosovo, Ukraine, Egypt, Pakistan, Cameroon, Mauritania and Sierra Leone] include establishing methods for the detection and diagnostics of highly pathogenic bacteria and implementing international laboratory standards, educating young scientists, building national and international scientific networks and supporting awareness on dual-use and bioethics.”<sup>25</sup>*

WP 4 submitted by Portugal reports on “a bio-preparedness field training exercise [CELULEX19] to support the development of sound international assistance capabilities to respond, investigate and mitigate disease outbreaks, including those due to alleged use of biological and toxin weapons”:<sup>26</sup>

*“32. CELULEX19 focused on investigating the suspected deliberate use of a zoonotic agent on livestock with the intent to cause harm. The exercise considered potential consequences to animal and human health, as well as larger societal, economic and ecological impacts. The wide scope of the exercise scenario enabled CELULEX19 to test different concepts and several types of evidence and samples, including biomedical (human and animal), environmental and post-mortem. The exercise adopted a comprehensive and integrated approach to investigating the alleged use of biological weapons.”*

33. In CELULEX19, several International Organisations participated with experts and teams as training audiences and observers. Cooperation between States Parties and the International Organisations in charge of responding to outbreaks of human, animal or plant disease enables the global health security community to learn from previous experiences, and it further strengthens and enhances the BWC.”<sup>27</sup>

### 3. Conclusions

The profound multifaceted implications of the COVID-19 pandemic have highlighted both the dangers that a disease outbreak can cause to the whole of modern society and the urgent need for enhancing the existing mechanisms for countering the hostile misuse of the life sciences and upholding the international norms of biological prohibition and disarmament. The preceding sections demonstrate that there is a growing recognition among States Parties of the vital

role that biological security education, awareness, and outreach among those engaged in the life sciences whether in government, industry, or academia can play in strengthening the implementation of all elements of the BTWC. The underlying assumption of this paper is that engaging the global life science community with the Convention is an essential condition both for ensuring effective biological security governance and for reducing the risk that the life sciences could be accidentally or deliberately misused for causing harm to humans, animals, or the environment. Within this context, the 2021 Ninth Review Conference of the BTWC constitutes a pivotal moment for promoting effective action on biological security education, awareness-raising, and outreach. In particular, it is critical that specific mechanisms in this area are put in place under the Convention, in order to facilitate the process of fostering a biological security culture in the life sciences. Such mechanisms could include but be not limited to:

- **Establishing an Assistance and Implementation Biosafety and Biosecurity Training Clearinghouse.** Biosafety and biosecurity constitute essential elements of the implementation of the BTWC. The Assistance and Cooperation Database under Article X of the Convention shows that the requests for assistance in the area of Bio-risk Management which covers biosafety and biosecurity account for the largest proportion of all submitted assistance requests (31.4%).<sup>28</sup> The second-largest share of assistance requests covers a related area, namely Capacity Building, Training and Education (29.4%). Taken together, these assistance requests make up more than half (60.8%) of all submitted requests for assistance under the BTWC. The proposed Clearinghouse would seek

to address the need for practical guidance on the implementation of biosafety and biosecurity by providing up-to-date information on existing capacity building resources, training material, and promising practices, including methodologies for field and table-top exercises (Articles III, IV, and VII). It would further help promote awareness and understanding of the roles that different international organisations, government agencies, and civil society actors, e.g. academia, industry, professional associations, non-governmental funding bodies, science publishers etc., can play in strengthening biosafety and biosecurity (Article I). As such, the Clearinghouse could be of use to States Parties when developing their assistance requests (Article X). The Clearinghouse could be based upon the existing BTWC National Implementation Resource Repository<sup>29</sup> that could be further developed and re-designed with interactive features.

- **Establishing a Biological Security Code of Conduct for the Life Sciences under the Convention.** It is important that the relevance of the BTWC to life science professional practice is institutionalised. A Biological Security Code of Conduct for the Life Sciences would be instrumental in raising awareness of the Convention among life science professional communities and could contribute to promoting the establishment of designated academic curricula in this area. Moreover, the development of a Biological Security Code of Conduct under the Convention would further reaffirm States Parties' unequivocal commitment to the objectives of the BTWC and help ensure that the efforts to foster biological education, awareness and outreach continue to gather momentum.<sup>30</sup>

- **Establishing a Biological Security Workshop Series for Engaging Life Science Stakeholders with the Convention.** It is important that biological security is considered within the overarching frame of the international prohibition regime. Regular outreach and awareness-raising of the Convention among different life science sectors (e.g. public health, agriculture, bio-economy, research) and stakeholders (e.g. government agencies, private companies, professional associations, researchers, prospective scientists, funders, publishers) are key in this regard. The proposed Workshop Series would serve a two-fold purpose. First, the workshops would provide a platform for the consideration of practical steps and initiatives that different stakeholders could undertake in support of the implementation of the BTWC (Article I, III, and IV). Second, the workshops could be utilised for organising field and table-top exercises for strengthening capacities for preventing and countering biological events, including deliberate biological attacks (Article VII and X). To maximise impact and substantiate the Intersessional Process by providing an additional forum for stakeholder engagement with biological security, the Workshop Series could feature online and in-person regional events. The organisation of the workshops could be supported through a fund of voluntary contributions by States Parties and administered by the Implementation Support Unit (ISU).

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## Endnotes:

- <sup>1</sup> Tatyana Novosiolova, Simon Whitby, Malcolm Dando, and Graham S. Pearson, *Strengthening the Biological and Toxin Weapons Convention: The Vital Importance of a Web of Prevention for Effective Biosafety and Biosecurity in the 21<sup>st</sup> Century*, Bradford Briefing Paper, November 2019, University of Bradford, available at <https://bradscholars.brad.ac.uk/handle/10454/17580>.
- <sup>2</sup> Fifth Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, *Final Document*, BWC/CONF.V/17, 19 November – 7 December 2001 and 11-22 November 2002, Geneva, Switzerland, [https://www.unog.ch/bwcdocuments/2001-11-5RC/BWC\\_CONF.V\\_17.pdf](https://www.unog.ch/bwcdocuments/2001-11-5RC/BWC_CONF.V_17.pdf).
- <sup>3</sup> Eighth Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, *Final Document*, BWC/CONF.VIII/4, 7-25 November 2016, Geneva, Switzerland, [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/19831FF45AE88E89C12580D80038951C/\\$file/BWCCONF.VIII4+English+.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/19831FF45AE88E89C12580D80038951C/$file/BWCCONF.VIII4+English+.pdf).
- <sup>4</sup> Eighth Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, *Final Document*, BWC/CONF.VIII/4, 7-25 November 2016, Geneva, Switzerland, [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/19831FF45AE88E89C12580D80038951C/\\$file/BWCCONF.VIII4+English+.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/19831FF45AE88E89C12580D80038951C/$file/BWCCONF.VIII4+English+.pdf).
- <sup>5</sup> Eighth Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, *Final Document*, BWC/CONF.VIII/4, 7-25 November 2016, Geneva, Switzerland, [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/19831FF45AE88E89C12580D80038951C/\\$file/BWCCONF.VIII4+English+.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/19831FF45AE88E89C12580D80038951C/$file/BWCCONF.VIII4+English+.pdf).
- <sup>6</sup> Table 1 is based on the Meeting of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, *Report of the Meeting of States Parties*, BWC/MSP/2017/6, 4-8 December 2017, Geneva, Switzerland, <https://undocs.org/en/bwc/msp/2017/6>.
- <sup>7</sup> Republic of Korea, *Implementation of Articles IV and X of the Biological Weapons Convention*, BWC/MSP/2017/WP.19, 5 December 2017, Geneva, Switzerland, <https://undocs.org/BWC/MSP/2017/WP.19>.
- <sup>8</sup> Ukraine, Japan, and UK, *Awareness-Raising, Education and Outreach: Recent Developments*, BWC/MSP/2017/WP.22, 6 December 2017, Geneva, Switzerland, <https://undocs.org/bwc/msp/2017/wp.22>.
- <sup>9</sup> Portugal, *Biopreparedness Field Training Exercises: National and International Capacity-Building*, BWC/MSP/2017/WP.11, 1 December 2017, Geneva, Switzerland, <https://undocs.org/BWC/MSP/2017/WP.11>.
- <sup>10</sup> Canada et al., *International activities of Global Partnership Member Countries related to Article X of the Biological and Toxin Weapons Convention*, BWC/MSP/2017/WP.17, 7 December 2017, Geneva, Switzerland, <https://undocs.org/BWC/MSP/2017/WP.17>.
- <sup>11</sup> Annex I (*Summary Report* submitted by the Chair) to the *Report of the 2018 Meeting of Experts on cooperation and assistance, with a particular focus on strengthening cooperation and assistance under Article X*, BWC/MSP/2018/MX.1/3, 7 November 2018, Geneva, Switzerland, <https://undocs.org/BWC/MSP/2018/MX.1/3>.
- <sup>12</sup> Annex I (*Summary Report* submitted by the Chairman of the Meeting of Experts on Review of Developments in the Field of Science and Technology Related to the Convention) to the *Report of the 2018 Meeting of Experts on review of developments in the field of science and technology related to the Convention*, BWC/MSP/2018/MX.2/3, 12 November 2018, Geneva, Switzerland, <https://undocs.org/BWC/MSP/2018/MX.2/3>.
- <sup>13</sup> Annex I (*Summary Report* submitted by the Chair) to the *Report of the 2018 Meeting of Experts on strengthening national implementation*, BWC/MSP/2018/MX.3/3, 11 October 2018, Geneva, Switzerland, <https://undocs.org/bwc/msp/2018/mx.3/3>.

- <sup>14</sup> Annex I (*Summary Report* submitted by the Chairperson of the Meeting of Experts on Assistance, Response and Preparedness) to the *Report of the 2018 Meeting of Experts on assistance, response and preparedness*, BWC/MSP/2018/MX.4/3, 12 November 2018, Geneva, Switzerland, <https://undocs.org/bwc/msp/2018/mx.4/3>.
- <sup>15</sup> Annex I (*Summary Report* submitted by the Chair) to the *Report of the 2018 Meeting of Experts on institutional strengthening of the Convention*, BWC/MSP/2018/MX.5/3, 8 November 2018, Geneva, Switzerland, <https://undocs.org/bwc/msp/2018/mx.5/3>.
- <sup>16</sup> Annex I (*Summary Report* submitted by the Chairperson of the 2019 Meeting of Experts on Cooperation and Assistance, with a Particular Focus on Strengthening Cooperation and Assistance under Article X) to the *Report of the 2019 Meeting of Experts on cooperation and assistance, with a particular focus on strengthening cooperation and assistance under Article X*, BWC/MSP/2019/MX.1/2, 26 September 2019, Geneva, Switzerland, <https://undocs.org/BWC/MSP/2019/mx.1/2>.
- <sup>17</sup> Annex I (*Summary Report* submitted by the Chairperson of the Meeting of Experts on Review of Developments in the Field of Science and Technology Related to the Convention) to the *Report of the 2019 Meeting of Experts on review of developments in the field of science and technology related to the Convention*, BWC/MSP/2019/MX.2/2, 8 October 2019, Geneva, Switzerland, <https://undocs.org/BWC/MSP/2019/mx.2/2>.
- <sup>18</sup> Annex I (*Summary Report* submitted by the Chairperson of the Meeting of Experts on Strengthening National Implementation) to the *Report of the 2019 Meeting of Experts on Strengthening National Implementation*, BWC/MSP/2019/MX.3/, 1 November 2019, Geneva, Switzerland, <https://undocs.org/BWC/MSP/2019/mx.3/2>.
- <sup>19</sup> Annex I (*Summary Report* submitted by the Chairman of the Meeting of Experts on Assistance, Response and Preparedness) to the *Report of the 2019 Meeting of Experts on assistance, response and preparedness*, BWC/MSP/2019/MX.4/2, 8 October 2019, Geneva, Switzerland, <https://undocs.org/BWC/MSP/2019/mx.4/2>.
- <sup>20</sup> Annex I (*Summary Report of the 2019 Meeting of Experts on Institutional Strengthening of the Convention* submitted by the Chairperson) to the Report of the 2019 Meeting of Experts on Institutional Strengthening of the Convention, BWC/MSP/2019/MX.5/2, 4 October 2019, Geneva, Switzerland, <https://undocs.org/BWC/MSP/2019/mx.5/2>.
- <sup>21</sup> Meeting of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, *Report of the 2019 Meeting of States Parties*, BWC/MSP/2019/7, 11 December 2019, Geneva, Switzerland, <https://undocs.org/bwc/msp/2019/7>.
- <sup>22</sup> Chairperson of the 2019 Meeting of States Parties and the Chairpersons of the 2019 Meetings of Experts to the Biological Weapons Convention, *Aide Memoire*, BWC/MSP/2019/CRP.1, 5 December 2019, Geneva, Switzerland, [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/0FF096B58C226620C12584CB0041F093/\\$file/BWC\\_MSP\\_2019\\_CRP\\_1.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/0FF096B58C226620C12584CB0041F093/$file/BWC_MSP_2019_CRP_1.pdf).
- <sup>23</sup> Chairperson of the 2019 Meeting of States Parties and the Chairpersons of the 2019 Meetings of Experts to the Biological Weapons Convention, *Aide Memoire*, BWC/MSP/2019/CRP.1, 5 December 2019, Geneva, Switzerland, [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/0FF096B58C226620C12584CB0041F093/\\$file/BWC\\_MSP\\_2019\\_CRP\\_1.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/0FF096B58C226620C12584CB0041F093/$file/BWC_MSP_2019_CRP_1.pdf).
- <sup>24</sup> Germany, *Report on Germany's Implementation of Article X with a special focus on the "German Biosecurity Programme"*, BWC/MSP/2019/WP.3, 28 November 2019, Geneva, Switzerland, <https://undocs.org/en/BWC/MSP/2019/WP.3>.
- <sup>25</sup> Germany, *Report on Germany's Implementation of Article X with a special focus on the "German Biosecurity Programme"*, BWC/MSP/2019/WP.3, 28 November 2019, Geneva, Switzerland, <https://undocs.org/en/BWC/MSP/2019/WP.3>.
- <sup>26</sup> Portugal, *Investigating Alleged Use of Biological Agents Against Agriculture, Livestock and the Natural Environment: A Practical Approach*, BWC/MSP/2019/WP.4, 2 December 2019, Geneva, Switzerland, <https://undocs.org/en/BWC/MSP/2019/WP.4>.

- <sup>27</sup> Portugal, *Investigating Alleged Use of Biological Agents Against Agriculture, Livestock and the Natural Environment: A Practical Approach*, BWC/MSP/2019/WP.4, 2 December 2019, Geneva, Switzerland, <https://undocs.org/en/BWC/MSP/2019/WP.4>.
- <sup>28</sup> Biological and Toxin Weapons Convention, *Article X: Assistance and Cooperation Database*, available at <https://bwc-articlex.unog.ch/>.
- <sup>29</sup> Biological and Toxin Weapons Convention, *National Implementation – Resource Repository*, available at [https://www.unog.ch/80256EE600585943/\(httpPages\)/0A20E57D9F8424B8C12581D8007EC32E?OpenDocument](https://www.unog.ch/80256EE600585943/(httpPages)/0A20E57D9F8424B8C12581D8007EC32E?OpenDocument).
- <sup>30</sup> Simon Whitby, Cheng Tang, Lijun Shang, and Malcolm Dando, 'After COVID-19: Time to Agree A Biosecurity Code of Conduct Under the Biological and Toxin Weapons Convention', *CBW Magazine*, vol.13:2 (2020), <https://idsa.in/cbwmagazine/after-covid-19>.