



**General Assembly First Committee**

**Topic A: The Role of Science and Technology in Disarmament**

*“The WORLD is over-armed and peace is under-funded.” - United Nations Secretary-General Ban Ki-moon<sup>1</sup>*

**Introduction**

Disarmament - the process of reducing, limiting, or eliminating weapons, especially weapons of mass destruction (WMDs) - has been a prominent goal of the United Nations (UN) since the earliest days of the organization’s existence.<sup>2</sup> Whether through resolutions of the UN General Assembly (UNGA), specialized bodies, agencies, and commissions, or multilateral treaties, one way that the UN pursues the goal of maintaining international peace and security outlined by the *Charter of the United Nations (Charter)* is through disarmament.<sup>3,4</sup> The specific connection between science and technology to disarmament, first formally addressed in General Assembly resolution *A/RES/43/77A* in 1988, has been moved to the forefront of security discussions due to the ever-more-rapid development of versatile and challenging scientific and technological developments.<sup>5</sup>

Science and technology have direct connections to militarism across a variety of use cases. Advances in munitions technologies, especially nuclear weaponry, were of high interest throughout much of the 20th century.<sup>6</sup> Growth in logistics and transport technologies increased the reach and responsiveness of global militaries, and improvements in computing technologies opened an entire new dimension for potential conflict.<sup>7</sup> At the same time, scientific progress has also allowed international agencies to respond to those pressing arms concerns. Computing technology has improved weapons tracking capabilities, and expanding observational technologies make it more difficult for individual actors to arm themselves without notice.

One area of opportunity for Member States to use science and technology in the pursuit of disarmament is addressing cutting-edge technologies.<sup>8</sup> Innovative tools in the fields of autonomous weapons systems and machine learning have drawn the scrutiny of many bodies on the international stage, from individual Member States to bodies such

---

<sup>1</sup> Ki-moon. “The World is over-armed and peace is under-funded.” United Nations Office for Disarmament Affairs. 2012.

<sup>2</sup> “Disarmament.” United Nations. N.d.

<sup>3</sup> Ibid.

<sup>4</sup> *Charter of the United Nations*. United Nations. 1 UNTS XVI. 1945.

<sup>5</sup> *Scientific and Technical Developments and Their Impact on International Security*. United Nations General Assembly. A/RES/43/77A. 1988.

<sup>6</sup> “Disarmament.” United Nations. N.d.

<sup>7</sup> *Securing Our Common Future: An Agenda for Disarmament*. United Nations Office for Disarmament Affairs. 2018.

<sup>8</sup> Ibid.

as the United Nations Institute for Disarmament Research (UNIDIR).<sup>9</sup> Aforementioned computing advancements - and the ubiquity of computing tools across global society - require states to have responses to cyberattacks.<sup>10</sup> Recent years have seen new options in biotechnology prompt more discussion of bioweapons.<sup>11</sup> Perhaps the most attention-grabbing new technologies are related to the rapid growth of artificial intelligence (AI) research. Whatever the scientific advancement, it is the onus of the General Assembly First Committee to incorporate these burgeoning tools to create a world where disarmament is a priority and the goals outlined in the *Charter* are preserved.

## **Background**

The UN largely draws its responsibilities towards disarmament from Article I of the *Charter*, which establishes a broad umbrella of maintaining international peace and security.<sup>12</sup> To that end, the UN has taken a number of steps over the years to leverage science and technology for the maintenance of international peace and security, and disarmament as a particular factor of that goal. The very first resolution passed by the UNGA in 1946, *A/RES/1(I)*, established the United Nations Atomic Energy Commission to address questions raised by atomic energy.<sup>13</sup> The later 1961 establishment of the United Nations Disarmament Commission (UNDC), in its exploration of ways to achieve global disarmament, often linked science and technology to ongoing development and refinement of nuclear weapons.<sup>14</sup>

Following those early attempts, the global community began to rely on treaties that put into place technological methods of verification to keep signatories in accord. The 1963 *Partial Test Ban Treaty*, the 1968 *Non-Proliferation Treaty (NPT)*, and the 1974 *Comprehensive Nuclear-Test-Ban Treaty (CTBT)* all marshaled scientific surveying tools in the quest for nuclear disarmament.<sup>15,16,17</sup> The relative success of those tools encouraged later agreements such as the 1992 *Chemical Weapons Convention* to further rely on scientific methods of compliance verification.<sup>18</sup>

---

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

<sup>11</sup> Ibid.

<sup>12</sup> *Charter of the United Nations*. United Nations. 1 UNTS XVI. 1945.

<sup>13</sup> *Establishment of a Commission to Deal with the Problems Raised by the Discovery of Nuclear Energy*. United Nations General Assembly. A/RES/1(I). 1946.

<sup>14</sup> "United Nations Disarmament Commission." United Nations Office for Disarmament Affairs. N.d.

<sup>15</sup> "Frequently Asked Questions." Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization. N.d.

<sup>16</sup> "IAEA Safeguards Overview." International Atomic Energy Agency. N.d.

<sup>17</sup> "Frequently Asked Questions." Comprehensive Test Ban Treaty Organisation. N.d.

<sup>18</sup> "Preventing the Re-Emergence of Chemical Weapons." Organisation for the Prohibition of Chemical Weapons. N.d.

*A/RES/43/77A* was the first specific resolution to connect science, technology, and disarmament.<sup>19</sup> It highlighted the clear connections between the fields and set out a principle of mobilizing science and technology for purposes of human improvement, as opposed to military uses.<sup>20</sup> The resolution, like many of its time, discussed nuclear weapons disarmament, and embraced confidence-building and transparency measures to ensure compliance with other agreements.<sup>21</sup> It also represented a major step toward the eventual approval of the *CTBT*, recognizing that the potential of nuclear explosion testing for civilian purposes was outweighed by the danger of military applications.<sup>22</sup> A more recent resolution on the topic is the 2018 *A/RES/73/48*.<sup>23</sup> This document called for, among other actions, greater attention to regulation of emerging technologies, especially for compliance with existing arms control and disarmament treaties.<sup>24</sup> That idea would be further expanded on in 2020 in *A/RES/75/32*, which called for Member States to pursue global governance models that would inhibit military escalation.<sup>25</sup>

In 2018, the UN Secretary-General António Guterres launched the *UN Secretary-General's Agenda for Disarmament (Disarmament Agenda)*, seeking to re-center disarmament discussion on multilateral efforts and bring emerging technologies including AI and cyberwarfare into disarmament conversations.<sup>26</sup> The *Disarmament Agenda* was constructed with several objectives, including revitalizing disarmament efforts, preventing the spread of new and emerging technologies, promoting arms control and disarmament measures, addressing the humanitarian impact of weapons, and supporting the global disarmament infrastructure.<sup>27</sup> In pursuing those goals, it adds a third pillar - new and emerging technologies - to the traditional core discussions of nuclear disarmament and conventional arms control.<sup>28</sup> While recent years have seen use of some of these concerns, including allegations of chemical warfare and mobilization of cyber technologies in current conflicts, the *Disarmament Agenda* provides a reference point for modern iterations of disarmament diplomacy.<sup>29</sup>

## **Current Situation**

Modern disarmament uses science and technology in several ways to achieve munitions reduction. Certain traditional technologies, especially those related to

---

<sup>19</sup> *Scientific and Technical Developments and Their Impact on International Security*. United Nations General Assembly. A/RES/43/77A. 1988.

<sup>20</sup> Ibid.

<sup>21</sup> Ibid.

<sup>22</sup> Ibid.

<sup>23</sup> *Treaty on the Prohibition of Nuclear Weapons*. United Nations General Assembly. A/RES/73/48. 2018.

<sup>24</sup> Ibid.

<sup>25</sup> *Advancing responsible State behaviour in cyberspace in the context of international security*. United Nations General Assembly. A/RES/75/32. 2020.

<sup>26</sup> *Securing Our Common Future: An Agenda for Disarmament*. United Nations Office for Disarmament Affairs. 2018.

<sup>27</sup> Ibid.

<sup>28</sup> Ibid.

<sup>29</sup> Ibid.

monitoring, have been in place since the first nuclear weapons treaties. Ongoing improvements to monitoring networks may involve technological advancements in logistical supply and more powerful sensors and surveying tools, especially to UN bodies and specialized agencies. The International Atomic Energy Agency (IAEA), established in 1956, in its mission to ensure compliance with agreements such as the *NPT*, uses powerful modernized satellite imaging technologies.<sup>30</sup> In another case, the United Nations Office for Disarmament Affairs (UNODA), created in 1997, coordinates implementation of new technologies and promotes best practices.<sup>31</sup> This can be through its role as the Secretariat of the Conference on Disarmament, a forum for discussion, or through the UNODA's United Nations Regional Centers for Peace and Development, which provide tailored lenses for specific regions to better actualize global goals.<sup>32,33</sup>

UNIDIR is itself a union of science and technology and disarmament, attempting to provide a forward-looking perspective on current and future challenges that may arise.<sup>34,35</sup> While action-oriented institutions such as UNODA are often reactive, responding to events as they happen, UNIDIR's research status sets it apart.<sup>36</sup> An area it has been active in recently is the explosion of AI technologies. Through tools like its AI Policy Portal, UNIDIR is able to point Member States at recommendations from each other and work done in the field.<sup>37</sup> A common thread in the work of UNIDIR is its emphasis on peaceful uses of technology, providing pathways for scientific developments beyond military usage.<sup>38</sup>

Some newer technologies are used to combat other emerging technologies. Automated systems have been enacted to improve arms trade monitoring, allowing authorities to track and regulate the flow of arms in real time. AI and machine learning tools enable analysts at initiatives like the United Nations Register of Conventional Arms to more easily identify suspicious trade patterns or discrepancies in reporting.<sup>39</sup> Advanced biological and chemical analytics devices expand the resources available to enforcement agents for agreements such as the *Chemical Weapons Convention*.<sup>40</sup>

As another example, the *CTBT* incorporates a number of technologies, including the International Monitoring System (IMS), On-Site Inspections (OSIs), and data analysis to

---

<sup>30</sup> "IAEA Safeguards Overview." International Atomic Energy Agency. N.d.

<sup>31</sup> "About Us." United Nations Office for Disarmament Affairs. N.d.

<sup>32</sup> "Conference on Disarmament." United Nations Office for Disarmament Affairs. N.d.

<sup>33</sup> "Regional Disarmament Overview." United Nations Office for Disarmament Affairs. N.d.

<sup>34</sup> "About UNIDIR." United Nations Institute for Disarmament Research. N.d.

<sup>35</sup> "Science and Technology." United Nations Institute for Disarmament Research. N.d.

<sup>36</sup> "Our Impact." United Nations Institute for Disarmament Research. N.d.

<sup>37</sup> "About us." United Nations Institute for Disarmament Research. N.d.

<sup>38</sup> "Science and Technology." United Nations Institute for Disarmament Research. N.d.

<sup>39</sup> "The UN Register of Conventional Arms (UNROCA): Developments, Trends, Challenges and Opportunities." United Nations Secretariat. 2022.

<sup>40</sup> "Responding to the Use of Chemical Weapons." Organisation for the Prohibition of Chemical Weapons. N.d.

achieve compliance.<sup>41,42</sup> The IMS, for example, is made up of a network of monitoring stations that scan for seismic, hydroacoustic, infrasound, and radionuclide anomalies that could indicate violations of testing prohibitions.<sup>43</sup> An OSI, prompted by suspicious events, may use tools such as ground-penetrating radar, drone observations, or sampling devices to identify and collect physical evidence.<sup>44</sup> Evidence collected may be run through machine learning programs to identify patterns and detect nuclear events at greater and more accurate speeds.<sup>45</sup>

For an example of a non-nuclear use case for technology in disarmament, the *Programme of Action on Small Arms and Light Weapons (PoA)* is also improved by technological advancements. Increasingly smaller and more compact measures such as radio frequency identification tags and digital barcoding systems keep arms in legal markets and prevent diversion to illicit markets.<sup>46</sup> The iTrace database, funded by the European Union, utilizes modern computing technologies to keep better records, share information on arms origins, and unravel complex economic activity to keep arms manufacturers and traders accountable.<sup>47</sup>

## **Future Outlook**

Scientific progress's continual development requires that the global community continuously adapt in kind. New technologies can be used for peaceful purposes, but their potential for military exploitation and conflict make them a pressing part of the disarmament conversation. As new investments in technology continue to result in powerful and dangerous new options for bad actors, the UN General Assembly First Committee will only find itself more called upon to provide direction and perspective to put those technologies to use for good.

---

<sup>41</sup> "The International Monitoring System." Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization. N.d.

<sup>42</sup> "Overview of an On-Site Inspection." Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization. N.d.

<sup>43</sup> "The International Monitoring System." Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization. N.d.

<sup>44</sup> "Overview of an On-Site Inspection." Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization. N.d.

<sup>45</sup> "International Data Centre." Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization. N.d.

<sup>46</sup> "Small arms: Tracing." United Nations Office for Disarmament Affairs. N.d.

<sup>47</sup> "iTrace." Conflict Armament Research. N.d.

## Bibliography

“About Unidir.” United Nations Institute For Disarmament Research. N.D.  
<https://Unidir.Org/Who-We-Are/About-Unidir/>

“About Us.” United Nations Institute For Disarmament Research. N.D.  
<https://Aipolicyportal.Org/About-Us>

“About Us.” United Nations Office For Disarmament Affairs. N.D.  
<https://Disarmament.Unoda.Org/About/>

*Advancing Responsible State Behaviour In Cyberspace In The Context Of International Security.* United Nations General Assembly. A/Res/75/32. 2020.  
<https://Documents.Un.Org/Doc/Undoc/Gen/N20/353/99/Pdf/N2035399.Pdf>

*Charter Of The United Nations.* United Nations. 1 Unts Xvi. 1945.  
<https://Www.Un.Org/En/About-Us/Un-Charter/Full-Text>

“Conference On Disarmament.” United Nations Office For Disarmament Affairs. N.D.  
<https://Disarmament.Unoda.Org/Conference-On-Disarmament/>

“Disarmament.” United Nations. N.D. <https://Www.Un.Org/En/Global-Issues/Disarmament>

*Establishment Of A Commission To Deal With The Problems Raised By The Discovery Of Nuclear Energy.* United Nations General Assembly. A/Res/1(I). 1946.  
<https://Documents.Un.Org/Doc/Resolution/Gen/Nr0/032/52/Pdf/Nr003252.Pdf>

“Frequently Asked Questions.” Preparatory Commission For The Comprehensive Nuclear-Test-Ban Treaty Organization. N.D.  
<https://Www.Ctbto.Org/Resources/Information-Materials/Frequently-Asked-Questions>

“IAEA Safeguards Overview.” International Atomic Energy Agency. N.D.  
<https://Www.Iaea.Org/Publications/Factsheets/laea-Safeguards-Overview>

“International Data Centre.” Preparatory Commission For The Comprehensive Nuclear-Test-Ban Treaty Organization. N.D. <https://Www.Ctbto.Org/Our-Work/International-Data-Centre>

“The International Monitoring System.” Preparatory Commission For The Comprehensive Nuclear-Test-Ban Treaty Organization. N.D.  
<https://Www.Ctbto.Org/Our-Work/International-Monitoring-System>

“iTrace.” Conflict Armament Research. N.D. <https://Www.Conflictarm.Com/Itrace/>

Ki-Moon, Ban. "The World Is Over-Armed And Peace Is Under-Funded." United Nations Office For Disarmament Affairs. August 30th, 2012.  
<https://Disarmament.Unoda.Org/Update/20120830/>

"Our Impact." United Nations Institute For Disarmament Research. N.D.  
<https://Unidir.Org/What-We-Do/Impact/>

"Overview Of An On-Site Inspection." Preparatory Commission For The Comprehensive Nuclear-Test-Ban Treaty Organization. N.D. <https://Www.Ctbto.Org/What-We-Do/On-Site-Inspection/Overview>

"Preventing The Re-Emergence Of Chemical Weapons." Organisation For The Prohibition Of Chemical Weapons. N.D. <https://Www.Opcw.Org/Our-Work/Preventing-Re-Emergence-Chemical-Weapons>

"Regional Disarmament Overview." United Nations Office For Disarmament Affairs. N.D.  
<https://Disarmament.Unoda.Org/Disarmsec/About/>

"Responding To The Use Of Chemical Weapons." Organisation For The Prohibition Of Chemical Weapons. N.D. <https://Www.Opcw.Org/Our-Work/Responding-Use-Chemical-Weapons>

*Scientific And Technical Developments And Their Impact On International Security.* United Nations General Assembly. A/Res/43/77a. 1988.  
<https://Documents.Un.Org/Doc/Resolution/Gen/Nr0/530/56/Pdf/Nr053056.Pdf>

"Science And Technology." United Nations Institute For Disarmament Research. N.D.  
<https://Unidir.Org/Focus-Area/Science-Technology/>

*Securing Our Common Future: An Agenda For Disarmament.* United Nations Office For Disarmament Affairs. 2018. <https://Unoda-Epub.S3.Amazonaws.Com/I/Index.Html?Book=Sg-Disarmament-Agenda.Epub>

"Small Arms: Tracing." United Nations Office For Disarmament Affairs. N.D.  
<https://Disarmament.Unoda.Org/Convarms/Small-Arms-Tracing/>

*Treaty On The Prohibition Of Nuclear Weapons.* United Nations General Assembly. A/Res/73/48. 2018.  
<https://Documents.Un.Org/Doc/Undoc/Gen/N18/419/68/Pdf/N1841968.Pdf>

"The UN Register Of Conventional Arms (UNROCA): Developments, Trends, Challenges And Opportunities." United Nations Secretariat. 2022.  
<https://Documents.Unoda.Org/Wp-Content/Uploads/2022/02/2022-02-16-Background-Paper-By-Unoda-For-The-2022-Unroca-Gge.Pdf>

“United Nations Disarmament Commission.” United Nations Office For Disarmament Affairs. N.D. <https://Disarmament.Unoda.Org/Institutions/Disarmament-Commission/>