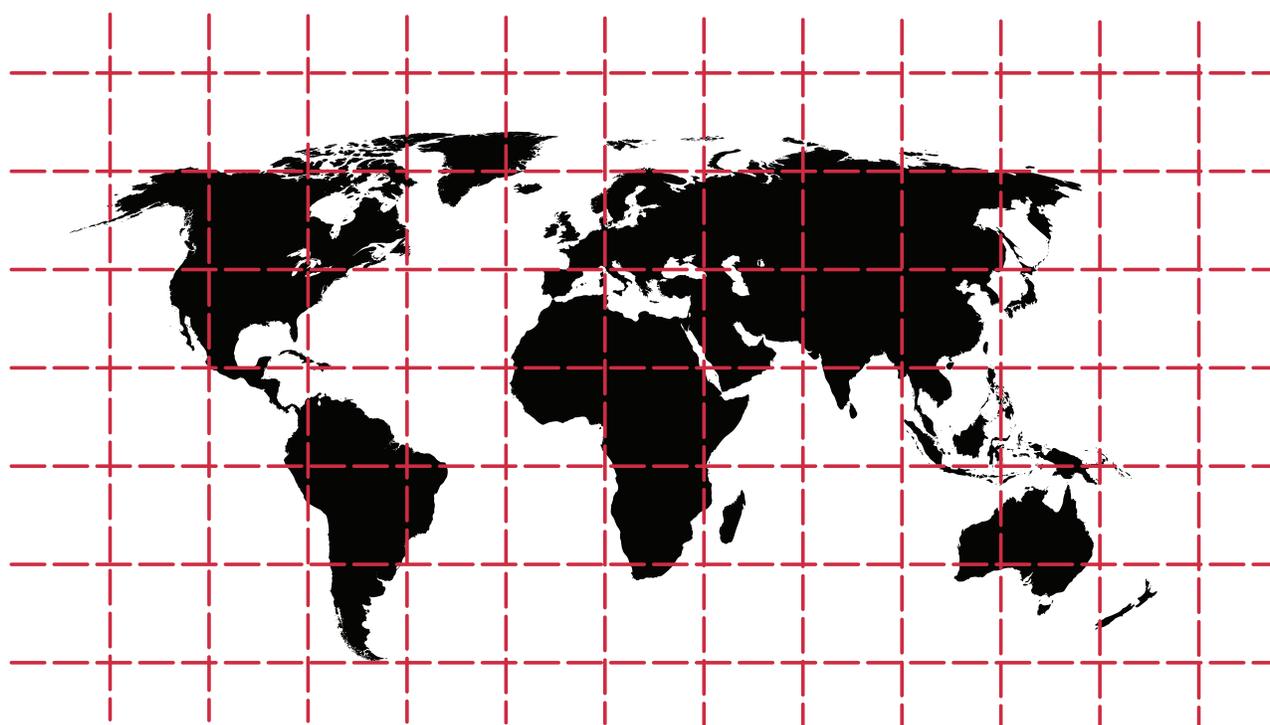




# REGULATING NEW TOOLS OF WARFARE

## INSIGHTS FROM HUMANITARIAN DISARMAMENT AND ARMS CONTROL EFFORTS



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As the tools and methods of warfare continue to evolve, it is critical that arms control, disarmament, and normative regimes also advance. Warfighting applications of today's [emerging technologies](#), including artificial intelligence (AI), outer space, and cyber capabilities are becoming more apparent and hold enormous potential for expansion if left unregulated. Such capabilities clearly have the potential to be used in harming civilians, violating international humanitarian law, and creating unpredictable and even unintended escalation of conflict. In this context, compliance with existing arms control measures and humanitarian principles is essential. Yet new arms control frameworks are also needed to mitigate these risks and maintain global commitments to disarmament.

Arms control and disarmament efforts can take many [forms](#). In addition to providing concrete security and stability dividends, a core objective must be humanitarian protection, [defined](#) as “the effort to protect the fundamental well-being of individuals caught up in certain conflicts or ‘man-made’ emergencies.” Some insights into how new agreements might progress can be found by examining existing arms control treaties.

The following provides an overview of humanitarian disarmament and arms control initiatives and situates them in the context of arms control more broadly. Next, we consider the specific challenges posed by emerging technologies and the current status of international discussions on these topics.

Turning to the lessons learned from previous humanitarian disarmament and arms control processes, we examine:

- Prospects for prevention and the importance of framing
- The role of norms
- The implications of institutional and procedural choices
- The importance of specific actors, including civil society, and the value of inclusion
- The shift in focus to use and intent
- The need to emphasize implementation.

Many of the lessons learned from previous treaty negotiation processes can be applied, but they must be adapted to new challenges.

We conclude that advocates of humanitarian arms control and disarmament efforts related to emerging technology should focus on building interlinked and multi-level governance responses, filling in the various pieces of a broader governance regime composed of many different parts.

Among the priority elements for building arms control regimes related to emerging technologies are the following:

- Preserving and enhancing humanitarian norms
- Pursuing restrictions on behaviours and operational uses of weapons
- Developing rules for peaceful use
- Creating processes and mechanisms for transparency and confidence building
- Maximizing the value of civil society and other stakeholders in the process.

Critically, there is a clear need for *sustained action*. Successful arms control measures and humani-

tarian protections are a result of a combination of state-centric and humanitarian-centric aims. The latter are a result of ongoing efforts to champion human interests, develop and promote strong norms, and put in place an array of institutions and mechanisms that allow values and stated commitments to become real protections for human beings.

## ARMS CONTROL AT A GLANCE

### Defining arms control

Arms control is the regulation and restriction of the development, testing, production, stockpiling, or use of certain weapons, usually through mutual consent. Broadly, it can be conceived as [encompassing](#) “all the forms of military cooperation among potential enemies that may reduce the risk of war, its scope and violence if it occurs, or the costs of being prepared for it.” More specifically, Hedley Bull’s classic [definition](#) involves “restraint internationally exercised upon armaments policy, whether in respect of the level of armaments, their character, deployment or use.” The goal is to prevent or, at least, minimize conflict and to control or limit the use of the most egregious weapons. This can take many forms.

Arms control can include disarmament, which involves eliminating or abolishing weapons. Many arms control agreements eliminate types or classes of weapons (the Chemical Weapons Convention) or reduce stockpiles of certain weapons (the Strategic Arms Reduction Treaty). However, arms control can also include a range of efforts to enhance the predictability of, and limit, conflict escalation; clarify the intentions of states; establish communication and transparency mechanisms that build confidence among states parties; and protect civilians and critical infrastructure from harm.

Measures that control or restrict the use of weapons include:

- *Structural restrictions* on the development, deployment, or quantity of specific weapons systems
- *Operational limitations* on the targets, uses, and missions of specific weapons or other military activities
- *Export and technology control regimes* that restrict the sale of specific weapons or the sharing of technological capabilities to prevent proliferation
- *Confidence-building mechanisms* such as information exchange, notifications, and other means of communication that build trust, increase transparency, and prevent misperceptions and unintended conflict escalation.

These techniques are complementary rather than exclusive and often overlap. They are used to promote two different, but not incompatible objectives: strategic stability among states and humanitarian protection.

### Strategic stability and humanitarian protection as drivers of arms control

Strategic stability is rooted in the national security of states. The aim of [strategic stability](#) is to calm relations between rival states by mitigating the drivers of conflict. Strategic stability has been [called](#) the “typical brainchild” of the Cold War. It gained momentum after the 1962 Cuban missile crisis, which highlighted the need for bilateral mechanisms to promote stable alliances between states. Agreements designed to promote this [stability](#) were generally between nuclear-weapon states and focused on specific types of nuclear weapons and their delivery systems. Some promoted crisis

stability by removing the incentive for states to launch a first strike in a conflict and seeking to ameliorate sources of unintended conflict such as misperceptions and miscommunication. Other agreements focused on arms race stability by eliminating the need to build up armaments.

Examples of such treaties include the 1963 Hotline Agreement, the 1971 Nuclear Accidents Agreement, the 1972 Incidents at Sea Agreement, the 1972 Anti-Ballistic Missile Treaty, the 1973 Agreement on the Prevention of Nuclear War, as well as a series of agreements limiting or reducing strategic nuclear weapons, including SALT, SORT, and START. All were bilateral agreements between what was then the Soviet Union and the United States. All attempted to decrease the chances of nuclear war between the two states by improving communications, clarifying intentions, and reducing the types and number of weapons each state possessed.

However, humanitarian imperatives – particularly the protection of civilians and combatants from the effects of indiscriminate or particularly heinous weapons – are also increasingly drivers of arms control. The end of the Cold War ushered in new conceptualizations of security, such as human security, and [recognition](#) that different forms of arms control would be needed to address the risks to humans posed by war, such as the effects of landmines, small arms violence, and explosive remnants of weapons. The development of humanitarian approaches to disarmament and arms control, which prioritize the protection of civilians by mitigating the impacts of conflict on humans and prohibiting certain weapons altogether, came out of this shift in international relations. The focus was no longer on states but on people. Emphasis was not only on stability but on “[ending human suffering](#)” through a drive to disarm.

[Humanitarian disarmament](#) and arms control efforts are based on the [recognition](#) that civilians are the main victims of armed conflict and attempt to mitigate this harm by regulating the use of certain weapons or banning them completely. Humanitarian approaches also prioritize positive obligations such as victim assistance and environmental remediation. The goal is [stronger](#) international humanitarian law and more comprehensive protection of civilians in new treaties and norms. Successful examples reviewed here include:

- Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines (Mine Ban Treaty) (1997)
- Convention on Cluster Munitions (2008)
- Arms Trade Treaty (2014)
- Treaty on the Prohibition of Nuclear Weapons (TPNW) (2017).

These treaties are multilateral, open to the broad international community of states, and have strong input from international civil society. Focused on mitigating the danger to civilians both during and after conflict while banning specific weapons systems, they also often include requirements to assist survivors of armed violence and give attention to the gendered dynamics of conflict, peace, and disarmament. For example, the Arms Trade Treaty (Art. 7.4) connects gender-based violence to small arms and light weapons, asking States Parties to consider this link in their decision to export arms. The preamble of the Treaty on the Prohibition of Nuclear Weapons notes the importance of ensuring women’s meaningful participation in arms control and disarmament negotiations.

However, while recently driving new momentum for arms control, humanitarian concerns are not new. Even within bilateral strategic stability agreements such as the 1979 Limitation of Strategic

Offensive Arms (SALT II) agreement between the United States and Soviet Union, there is recognition of the devastation that nuclear war would have on humankind. Moreover, some agreements to ban specific weapons of mass destruction, although strongly rooted in national security imperatives, contain the antecedents of humanitarian disarmament, including:

- Biological Weapons Convention (BWC, 1972)
- Chemical Weapons Convention (CWC, 1993).

These conventions are a result of over a century of [efforts](#) to restrict the impact of ‘inhumane’ weapons and promote peace and disarmament. The Biological Weapons Convention, which was opened for signature in 1972, was the [first](#) multilateral disarmament treaty to ban an entire category of weapons of mass destruction. Before that, the 1925 Geneva Protocol [limited](#) the use of chemical and biological weapons because of their humanitarian impacts as well as their destabilizing nature.

A focus on humanitarian protection is neither incompatible with, nor detached from, strategic considerations. Some agreements, including those related to chemical and biological weapons, have clearly been driven by both humanitarian concerns and the strategic desire to restrict the [proliferation](#) of such weapons. The process of negotiating humanitarian restrictions can even lower the perceived strategic value of certain weapons systems. Weapons including landmines and cluster bombs, once considered indispensable, are now widely rejected.

A more detailed taxonomy of the various approaches to disarmament and arms control is provided by Bonnie Docherty, who [argues](#) that the field has been revolutionized by the rise of humanitarian disarmament, which is unique not only in its priority, but also its processes.

### **Current context: New and emerging technology**

There is [renewed interest](#) in promoting various forms of arms control and ensuring humanitarian protections as a means of addressing dangers posed by emerging technologies. For example, multilateral efforts are under way to control the weaponization of new [autonomous](#), [cyber](#), and [space](#) technologies. Emerging technologies also bring forth new concerns. In some cases, these technologies amplify existing threats; for example, new cyber tech intensifies concerns about the vulnerabilities of nuclear weapons command, control, and communications.

Still, some elements of previous arms control processes provide useful reference points for new efforts to control the weaponization of a range of emerging technologies, which share some characteristics but also have unique features. These new technologies are [abstract](#), [complex](#), and evolving. They pervade the modern world. And they serve both military and non-military functions. All of these factors make it more difficult to convey the need to control them as weapons that could harm civilians. Given the fast pace at which new technology changes, it is also challenging to formulate long-term regulatory responses that are future-proofed.

Organizations such as the International Committee of the Red Cross (ICRC) have examined the applicability and relationship of international humanitarian law (IHL) to the use of some of these new technologies in conflict. Civil society has drawn on previous campaigns in their most recent call for humanitarian arms control and disarmament efforts to address harm to civilians and civilian infrastructure. The history of such activity will almost certainly help to identify pathways forward.

## HUMANITARIAN ARMS CONTROL AND DISARMAMENT: INSIGHTS AND ADAPTATIONS

We can learn important lessons about how to develop new measures to regulate the development and use of emerging technology for warfighting and weapons purposes by examining previous humanitarian disarmament and arms control efforts. Humanitarian perspectives have long offered a lens that is crucial to avoid military confrontations and devastating impacts on civilians, infrastructure, and the lived environment. These objectives remain relevant today.

Yet, emerging technologies present new challenges to disarmament and arms control efforts. In many instances, the concept of a “weapon” is elusive; in cyberspace it is [intangible](#). Often presenting general purpose capabilities, new technologies are not only dual-use, but “[omni-use](#),” with a wide range of military, civilian, and private sector applications. They also enable a greater level of remoteness from the user, introducing novel challenges related to anonymity and [attribution](#).

Adaptation is key. While the lessons of the past may not provide a detailed roadmap for the future, they do help us to identify the signposts along the way. Indeed, looking back, it is clear that there is more than one path to success, and that the work of arms control, disarmament, and humanitarian protection is never really finished. The most important lesson that we can learn is the value of persistence and creativity.

### Prioritize prevention

There is growing support among some states and civil society actors for new rules and restrictions to prevent the development and deployment of specific emerging technologies, including lethal autonomous weapons and space weapons, before they are used in, or used as, weapons in war. For example, an international coalition of civil society organizations, the [Campaign to Stop Killer Robots](#), has been calling for the prohibition of such weapons since 2012. Prevention of an arms race in outer space (PAROS) has been on the UN agenda since 1981.

But achieving a preventive ban on the development of weapons is far from easy and has seldom been achieved. The [1995 Protocol on Blinding Laser Weapons](#) is a major exception; a ban was adopted [before](#) the weapons were used in war. As Elvira Rosert and Frank Sauer [note](#), the pre-emptive ban was specifically focused on the principle of unnecessary suffering of combatants.

Instead, most weapons have been banned only after the harm they could cause has been demonstrated in warfare. The TPNW only came into effect 75 years after nuclear bombs were dropped on Hiroshima and Nagasaki; even then, the states that own nuclear weapons have yet to sign on. The drive to institute both the Biological Weapons Convention and the Chemical Weapons Convention achieved momentum only after the extensive use of these weapons in both World War I and World War II. Cluster munitions and anti-personnel mines were used extensively around the world before their devastating impacts on civilians produced public outrage in the 1970s against “weapons that may [cause unnecessary suffering or have indiscriminate effects](#).” A ban on anti-personnel mines was finally achieved in 1997 and the Cluster Munition Convention prohibiting cluster munitions was agreed upon in 2008.

A preventive ban on weapons related to emerging technologies may be even more challenging.

Many of these technologies are not weapons in and of themselves, but serve to enhance or enable military capabilities and weapons systems; anticipating and preventing specific applications re-

main difficult. Consider the use of artificial intelligence, which involves a wide range of applications across military functions. For example, AI can be used in weapons systems for targeting purposes, but it can also be used in cyberattacks and digital information warfare, and to facilitate logistics and communications. Military space and cyber capabilities involve not only a range of applications but represent entire domains of activity.

Nonetheless, it is possible to identify in advance the types of activities and applications that are likely to invite civilian harm and abuse, and to set limits. For example, the use of AI to select and engage human targets by weapons systems is in clear violation of international law; such use can and should be prohibited. Likewise, the use in outer space of weapons that cause environmental contamination or damage to critical civilian infrastructure can be forbidden. A humanitarian perspective is instructive in preventing unnecessary human suffering.

### Framing is key

Framed by the obligations of [international humanitarian law](#), the humanitarian approach to arms control and disarmament is centred on the preservation of human life and civilian protection from weapons. Making visible the impact of war and weapons on civilians is key to this effort. Consider the Million Faces petition organized by the International Action Network on Small Arms (IANSA), the Control Arms campaign, Oxfam International, and Amnesty International. At the time, this [photo petition](#), delivered to the UN Secretary-General, was the largest ever created. And it worked. Drawing on this approach, the more recent treaty to ban nuclear weapons also succeeded by [refocusing](#) debates on national security and deterrence to discussions of the disastrous [human](#) consequences of these weapons.

Focusing on the humanitarian effects when [medical](#) infrastructure is disrupted is one way to keep civilian harm and impacts at the heart of the message. Consider the current effort by the International Network on Explosive Weapons (INEW), a coalition of 31 civil society organizations, to ban the use of explosive weapons in populated areas (EWIPA). Its campaign emphasizes not only the direct human harm from such weapons, but also the [“reverberating effects”](#) produced by the initial loss of life, livelihoods, and critical infrastructure.

Such novel reframing is critical for renewed arms control and disarmament efforts aimed at emerging technology. However, this can be challenging if the effects on civilians are less obvious or tangible. In domains such as cyberspace and outer space, the harm to civilians is often indirect, with critical infrastructure the immediate target. Yet because space and cyber technology “permeate most aspects of civilian life,” this damage can still have deep [humanitarian](#) consequences. A focus on [“human-centric”](#) cyber security is emerging in response to the growing prevalence of cyber attacks on [public health infrastructure](#), including [hospitals](#).

Sometimes, a more nuanced expression of humanitarian protection works best. Debates about AI, for example, might examine broader ethical considerations of such factors as human dignity as the basis for [arguments](#) against the delegation of decisions over human life to machines. In each of these cases, the humanitarian imperative for disarmament and arms control remains.

### Progress can be incremental

Landmark treaties, such as those banning landmines and nuclear weapons, are undoubtedly dramatic moments in arms control. But these successes are sometimes preceded by a long process of

incremental change. It is significant that all six of the treaties featured here were preceded by less restrictive, less detailed agreements. Both the Biological Weapons Convention and the Chemical Weapons Convention are outcomes of earlier attempts to ban the use of such weapons under the 1925 Geneva Protocol. The CWC process took 25 years to reach a successful conclusion.

Banning landmines was a process that took decades. Anti-personnel mines were used extensively in World War II, causing great harm to both military personnel and civilians. However, the 1949 Geneva Conventions did not mention banning these weapons; it only [addressed](#) the issue of who should clear existing mines. The 1977 Additional Protocols to the Geneva Conventions also [failed](#) to regulate specific conventional weapons. At this point, a separate conference was held to discuss the possibility of developing another instrument. The outcome was the 1980 Convention on Certain Conventional Weapons (CCW). Protocol II dealt with “mines, booby-traps and other devices,” but still did not prohibit anti-personnel mines. Plagued by limited support and poor adherence, the agreement was initially viewed as a [failed](#) attempt to combined IHL and arms control. But it paved the way for additional progress. Because most states and civil society actors [agreed](#) that a total ban was necessary, work continued until anti-personnel mines were prohibited in the Mine Ban Treaty.

*Initial failures to restrict or ban certain weapons can motivate the international community to push for more robust restrictions. Each failure becomes a step toward an effective, robust treaty, further developing key norms of non-use, non-acquisition, and humanitarian principles.*

The narrative of incremental progress is also applicable to the development of the Arms Trade Treaty. This story began with a 1978 UN General Assembly [resolution](#) pointing to the need for negotiations to regulate the transfer of conventional weapons. Then came years of similar resolutions calling on states to ensure national controls and vigilance in arms transfers. In 1997, more comprehensive regulation, the International Code of Conduct on Arms Transfers, was proposed by Nobel peace laureates, led by Oscar Arias, the former president of Costa Rica. In 2000, the Framework Convention on International Arms Transfers, which was perceived as less ambitious, was produced. After this came more than a decade of work and activities, both within and outside the UN framework, before the ATT was adopted. Undoubtedly, the sustained efforts by civil society organizations advocating the control of international arms transfers helped maintain the momentum within the UN.

Initial efforts to address the harm of explosive weapons in populated areas (EWIPA) at the [2016 Review Conference](#) of the CCW failed. But following the October 2019 conference “Protecting Civilians in Urban Warfare” in Austria, Ireland announced that it would host [negotiations](#) to develop a political declaration to address the humanitarian impacts of the use of EWIPA, with a focus on conventional weapons that create a blast and fragmentation effect, such as artillery shells, grenades, and mortars. Like many other arms control initiatives, the declaration on EWIPA is driven by human suffering and the failure of previous treaties, notably the CCW, to alleviate that suffering.

Initial failures to restrict or ban certain weapons can motivate the international community to push for more robust restrictions. Each failure becomes a step toward an effective, robust treaty, further developing key norms of non-use, non-acquisition, and humanitarian principles.

Processes on emerging technologies currently under way, such as discussions on autonomous weapons, have encountered significant challenges. Already, the slow pace of discussion at CCW and rapid developments of technology are seen as indicators of likely failure. However, it is important to note that the CCW has been an [incubator](#) of sorts for a complex topic, allowing a wider number of states to better understand the issues and concerns regarding autonomy in weapons systems. So, while it is not ideal to have stalled discussions and slow responses, various efforts will encounter challenges and some may be preceded by weaker agreements that will need to be reinforced with more comprehensive ones.

## Norms matter but are part of a broader governance framework

Norms – rules of appropriate conduct – are at the heart of humanitarian arms control. Often treaties codify existing norms, especially those of non-use, and strengthen them. The Chemical and Biological Weapons Conventions are good examples, as is the Nuclear Ban Treaty, which also attempts to make these immoral weapons [illegal](#). The shift to humanitarian arms control and disarmament, specifically the banning of conventional weapons that impose unnecessary human suffering, such as landmines and cluster munitions, has resulted in a new [normative standard](#), sometimes referred to as “[new humanitarianism](#).” These treaties serve to [stigmatize](#) the use of such weapons, even among non-signatories.

In other cases, arms control processes create and promote new norms. The ATT has been key in establishing global control of previously unregulated arms [sales](#).

Norms are particularly important today, when formal arms control agreements seem to be on the [decline](#). A focus on norms can also help to get around roadblocks to legal agreements. Efforts at norm development are a core part of the arms control and disarmament process, as the effort to create a political declaration on explosive weapons in populated areas (EWIPA) demonstrates.

The creation of new political norms is also the objective of current UN discussions related to [outer space](#) and [cyberspace](#). A series of meetings of Groups of Governmental Experts (GGEs) has identified 11 voluntary norms of responsible state behaviour in cyberspace, which were consolidated and adopted by the United Nations General Assembly in Resolution 70/237 in 2015. This ongoing process was complemented by a parallel Open-Ended Working Group on norms, principles, and rules of responsible state behaviour, which was established in 2019 and added to this framework.

As well, in 2020, the United Kingdom initiated a process to consider threatening behaviour in outer space, with a focus on enhancing security through the identification of norms, principles, and rules of responsible behaviour (UN Resolution 75/36). Efforts to advance initial consultations are taking place under the auspices of an Open-Ended Working Group.

While humanitarian disarmament and arms control efforts are based on norms, norms are not a singular tool but are instead part of broader regimes of governance. Norms relate to behaviour, which can include actions related to the use or non-use of specific weapons; however, the regulation or restriction of specific technical capabilities and weapons hardware tends to fall beyond the scope of norms. For example, while there are strong humanitarian norms related to the protection of civilians in conflict, restrictions on specific weapons systems such as anti-personnel landmines proceeded through additional legal agreement. This example also demonstrates the value of formal agreements in instances when normative commitments are not well observed.

Formal disarmament and arms control agreements can also facilitate implementation and compliance with restrictions, by everyone. Unlike norms, formal treaties don't rely only on moral judgment and goodwill; they include methods of compliance, verification, accountability, compensation, and diplomatic engagement that are essential to protect civilians. Indeed, this is a key message of the International Campaign to Abolish Nuclear Weapons, which led the global effort to legally ban nuclear weapons, and also a finding of work by [Project Ploughshares](#) on norms and outer space security. Finally, in highly insecure environments, voluntary arms control commitments by states are often too vague to be [credible](#) and may encourage defection; this is particularly challenging in situations in which the perceived military advantage of defection is high and compliance is difficult to independently verify.

The limits of norms are tacitly recognized in UN discussions on cyberspace, which have produced a series of agreed norms of behaviour. Some states are now support moving to develop a [programme of action](#) that would act as a bridge between a legally binding agreement and purely voluntary measures by prioritizing implementation of these norms; others see a need for a formal treaty. Likewise, the Programme of Action (PoA) on Small Arms and Light Weapons helped to pave the way for a binding Arms Trade Treaty that, while more limited in scope, helped to formalize some of its core humanitarian objectives.

In discussions on autonomous weapons, CCW member states have thus far explored guiding principles and normative and operational frameworks. Industry has also become very active in developing norms on ethical and responsible development and use of AI. But many stakeholders believe that a multilateral instrument is needed to ensure that weapons that pose a risk to civilians are not developed and do not proliferate.

Norms and formal arms control agreements thus complement each other. Norms broadly shape and inform the acceptability of weapons and their uses. Often they precede formal restrictions, but not always. Norms and other non-binding political agreements can often serve as the first step in efforts to regulate or restrict specific types of weapons. But in many cases, efforts that move beyond norms are needed to make these fundamental commitments more robust and by establishing specific means, and mechanisms to implement them, to verify and address challenges with compliance, and to provide compensation for victims and remediate other harms such as environmental contamination. When it comes to the use of emerging technology in weapons systems and warfighting, both norms and formal agreements are needed.

### **Institutions influence process, legitimacy**

The institution that guides the drafting and negotiation of an agreement is also significant. Disarmament bodies have their own distinct and historically situated language, rules, and dynamics. These in turn influence the shape of discussions and final outcomes, and affect how decisions are reached, who participates in making them, and whether the results are considered legitimate.

Multilateral arms control measures have historically been developed within the United Nations (UN) system, in very specific venues. Review Conferences of the CCW and the UN Conference on Disarmament (CD) traditionally handle regulations of weapons and possible arms control measures.

But sometimes UN forums dedicated to arms control and disarmament forums – which work by consensus – experience political logjams. The CD, for example, has been unable to agree on a formal program of work for several decades. When key bodies move too slowly—or fail to regulate or limit

use of a weapon adequately – negotiations can take place through other means. Negotiation of some recent treaties, including the ATT and the Nuclear Ban Treaty, have been mandated by the UN General Assembly, which operates by majority vote.

The momentum for humanitarian arms control and disarmament initiatives has also developed outside of the UN. The Convention on Cluster Munitions and the Landmine Treaty were drafted outside of the UN, although UN agencies participate and the UN Secretary-General serves as a depositary for the treaties. Landmine Treaty [conferences](#) were held in Ottawa, Vienna, Bonn, Brussels, and Oslo. [Conferences](#) for the Convention on Cluster Munitions took place in Oslo, Lima, Vienna, Wellington, and Dublin. This non-UN activity has benefits and pitfalls. On the one hand, the willingness of states to negotiate outside of the UN and its arms control machinery offers hope that humanitarian issues won't be stymied by the interests of a few actors. On the other hand, key states may choose not to participate.

The United States, China, and Russia – all [major producers](#) of cluster munitions – were not present during the Convention on Cluster Munitions process and have not joined the treaty. The Nuclear Ban Treaty followed a similar process and outcome: no nuclear-armed state was part of the negotiations or has signed the treaty. The United States went so far as to pressure allies and smaller states not to participate in the treaty process.

Legitimacy is another consideration. For example, an initiative led by the European Union to develop an international code of conduct for outer space activities ultimately failed, not only due to substantive disagreements with the proposed code, but also because many states – particularly those from the global south – objected to what was viewed as a [non-inclusive](#) process developed outside of the mandate of the UN.

### Success requires inclusion

Historically, multilateral agreements, including the Biological Weapons Convention, the Chemical Weapons Convention, and the Arms Trade Treaty, have been reached through consensus-based decision-making processes, but in other cases, consensus rules have prevented any negotiation at all. Some arms control agreements such as the Convention on Cluster Munitions, the Mine Ban Treaty, and the TPNW have been negotiated in other forums, despite opposition by some states. While the agreement processes were open to participation by all states, some chose not to engage. In the face of known opposition, those states that desired an agreement nonetheless pursued it in forums in which consensus is not a requirement.

How important is consensus to success?

A focus on consensus can prevent any agreement at all, largely because in many forums consensus is being interpreted as unanimity, which means that any one country effectively has veto power. This was the case with attempts to regulate [anti-personnel mines](#) and [cluster munitions](#) within the CCW Review Conferences. When the process on cluster munitions moved outside of the UN system, the United States [warned](#) that it would “weaken the international humanitarian law” effort. Nonetheless, states affected by cluster munitions, as well as some of the biggest users, producers, and stockpilers of the weapons – including France, Germany, and the United Kingdom – did participate. The result was a relatively successful treaty with 110 states parties. A similar process on landmines produced a treaty with 164 states parties.

Effective agreements can also be achieved without the participation of all states that possess the weapons capability. Examples include the Mine Ban Treaty and the Convention on Cluster Munitions. Even though some key states have not yet signed on, these agreements have been able to establish a norm that stigmatizes use of such weapons and de-incentivizes their production. Countries that have not joined the treaties now permit such use only under very limited circumstances. For example, the United States, which [claims](#) that cluster munitions have legitimate military uses, has *not* used them since the 2003 invasion of Iraq (apart from one attack in Yemen in 2009).

Efforts to bring all major states into agreement can even dilute success in some ways. The Arms Trade Treaty is a great example of this. Because negotiators sought the support of major arms-exporting states, many argue that the agreement came at a price: a treaty that [lacks](#) an enforcement body and includes interpretive loopholes such as the concept “[substantial risk](#).”

So, while treaties that are negotiated using consensus might have more states parties and instill greater initial compliance, those that do not require consensus, or even the participation of all key players, might have stronger restrictions and wide-reaching normative effects. Sometimes the path to norms eschews consensus altogether in the name of principle. Consensus is neither sought nor required for the EWIPA declaration.

Agreements that lack consensus and the participation of key states build on well established humanitarian norms and existing restrictions on discrete types of weapons. Often, they codify norms of non-use into law. But when it comes to the use of emerging technologies, norms – the building blocks of arms control – are nascent. A focus on open and inclusive discussions that include states that possess core technical capabilities remains key.

While consensus by all states may not be necessary for success, it is essential that efforts be made to encourage and facilitate arms control processes that are open to all interested stakeholders that choose to engage. Participation by women is crucial. UN Security Council [Resolution 1325](#) urges states to “ensure increased representation of women” in all decision-making processes related to peace and conflict. In addition to a basic demand for equity, the use and consequences of weapons affect men and women differently. Minorities including LGBTQ+ also have different views and experiences. So do survivors. Each of these voices was essential to the establishment of the TPNW.

As noted above, civil society organizations are another key element of the successful negotiation and implementation of arms control agreements.

Industry is another stakeholder that is easily overlooked. The CWC shows the importance of involving industry in arms control agreements. Primarily concerned with the cost of compliance, inspections, loss of confidential business information, and shutdowns, industry was regularly consulted on the verification regime and the inspection process. As well, many of the dual-use capabilities in outer space, cyberspace, and AI are being developed by the private sector, which must be adequately engaged and onboard to create and implement a useful agreement.

The scientists and researchers that investigate and contribute to new technologies, especially those that are based on AI, must also be included in arms control processes, because they have the necessary knowledge to explain new technologies to legislators. But they can also be a group that should be regulated.

In some cases, both knowledge and developed technology are fundamentally fungible and potentially harmful. For this reason, the BWC bans not only the production and stockpiling of biological

weapons, but also related research activities. There is a movement under way to make [scientists](#) more accountable for their work. Because treaties govern the actions of states, additional layers of governance, such as [codes of conduct](#) might be needed for scientists and biological research.

However, there are some signs that arms control discussions may become less inclusive. For example, the numerous GGE processes that have dominated both cyber and outer space arms control discussions should be considered. GGEs are groups of usually 25 experts; these groups are generally [composed](#) of representatives of the five permanent members of the UN Security Council, along with representatives from a variety of geographic regions. Discussions are closed. While the [Chair](#) may provide substantive updates, final reports are only provided if all members of the group reach consensus. Even the move to an Open-Ended Working Group for cyber has been met with efforts to restrict or otherwise qualify participation from civil society, as reported [here](#). There is [evidence](#) that participation by women is insufficient.

The global COVID-19 pandemic has introduced additional obstacles to broad and inclusive participation in arms control processes. Many meetings have been repeatedly [postponed](#); others have proceeded virtually and experienced their own [drawbacks](#) through the loss of shared space and dialogue. The CCW discussions on autonomous weapons have occurred in-person for Geneva-based delegations when circumstances permitted. But smaller delegations have not been as present or have not had the support of colleagues from their national capitals who have expertise in the specific areas of discussion.

### The power of civil society and champion states

Successful agreements on humanitarian arms control and disarmament need the active involvement of both civil society organizations and likeminded states. Civil society organizations often work together through international coalitions such as IANSA, Control Arms, ICAN, and the International Campaign to Ban Killer Robots.

Middle powers and civil society actors can assume important roles in building support for the prohibition of certain weapons. They functioned in this way for the Mine Ban Treaty, the Convention on Cluster Munitions, the Arms Trade Treaty, and the Nuclear Ban Treaty, which all faced opposition from major states.

Let's look at the history of the ATT. As conflicts in Africa, Latin America, the Balkans, and the Middle East proliferated in the 1980s and 1990s, global support [grew](#) for the regulation of the supply and transfer of weapons. In conjunction with nongovernmental organizations (NGOs), Nobel Peace Prize laureates, led by Oscar Arias, [launched](#) the International Code of Conduct on Arms Transfers in May 1997. In 2000, it was followed by a less ambitious Framework Convention on International Arms Transfers, which attempted to solidify states' existing obligations.

In 2003, Amnesty International, Oxfam, the International Action Network on Small Arms (IANSA), and more than 100 other organizations formed the [Control Arms coalition](#), with the goal of creating an arms trade treaty. The Control Arms campaign included public demonstrations, policy publications, and government lobbying. The coalition launched the Million Faces petition, described earlier, which highlighted people around the world who had been affected by armed violence. In 2006, the petition was presented to UN Secretary-General Kofi Annan.

Smaller states, most of which are not major arms exporters, were most influential shortly before and

during UN negotiations of the ATT, sometimes working in conjunction with more powerful states. On July 24, 2006, Costa Rica, Japan, Argentina, Australia, Finland, Kenya, and the United Kingdom presented the draft resolution “Towards an arms trade treaty: establishing common international standards for the import, export and transfer of conventional arms.” The UN General Assembly adopted the [resolution](#) and established a Group of Governmental Experts to examine the viability of an arms trade treaty. After years of international pressure, the UN began the process to negotiate the ATT in 2008.

Networks of civil society and likeminded states, working together, can substantially influence treaties, particularly in the development of norms and the push for legally binding measures. [INEW](#) has been advocating for the regulation of explosive weapons since 2013, most recently in partnership with Ireland. States from the [Global South](#) have emerged as champions of a treaty on lethal autonomous weapons, emphasizing in particular the negative consequences of these weapons on developing countries and countries already suffering from armed violence.

### Focus on use, intent, and verification

Many of the most robust weapons bans, such as the Mine Ban Treaty, bar specific types of hardware and defined categories of weaponry. But a persistent argument against the adoption of arms control and disarmament measures for emerging technologies and warfighting applications is the pace at which such technologies change, quickly making such definitions outdated. Here, too, we can learn from past successes.

Rather than adopting a static notion of chemical weapons, the CWC focuses on use and intent, barring the use of *any* toxic chemicals for *all* non-peaceful purposes. A toxic chemical is loosely defined as “any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals.” This definition and the restrictions and controls in the treaty continue to apply as new chemical capabilities are developed.

A similarly broad requirement of “meaningful human control” has become central to debates on weapons applications of AI, sidestepping the need to define and ban specific AI weapons. An agreement for outer space that focuses on regulating behaviour rather than hardware can work in a similar way.

Above all, implementation is key. Too often the focus of arms control is achieving a written agreement to control, ban, or otherwise restrict certain weapons or their uses. But words need actions that can be verified by the international community. For example, the absence of a requirement for verification, with the resulting poor compliance are core [weaknesses](#) of several treaties, such as the BWC. Yet achieving action is possible.

The intrusive measures used to verify treaty compliance in some agreements will be a hard sell for new types of weapons capabilities that are both difficult to quantify and define. Instead, the notion of verification can be [broadened](#) to include oversight of all activities that contribute to the full implementation of a treaty. An array of mechanisms, institutions, and processes can be used both for compliance and to verify compliance. Measures can include not only physical observation but transparency and confidence-building measures, reporting, consultations, and data sharing.

And new and emerging technologies can help with verification and provide opportunities for creative approaches. Data is key. For example, AI could analyse data provided by states on the developments of certain weapons, or it could contribute to surveillance of sites relevant to arms control

agreements. While there is a [risk](#) that AI could also be used to manipulate information, other emerging tech such as [blockchain](#) is creating new ways to securely share data. Critically, implementation and verification of arms control regulations do not reside in any one tool, but are an ongoing process and commitment by an international community that includes civil society.

The humanitarian disarmament community is already using open-source intelligence to [monitor](#) different agreements and to track the humanitarian impacts of conflicts. In outer space, commercial operators are emerging as essential sources of space situational awareness data, which can be used to monitor and corroborate on-orbit behaviours.

## LOOKING TO GOVERNANCE REGIMES FOR EMERGING TECH

Arms control consists of a constellation of norms, rules, and restrictions, as well as a range of both formal and informal agreements and mechanisms for implementation and compliance, such as export controls, verification measures, meetings, consultations, and even external organizations. In other words, arms control requires a regime of moving parts, or what Peter Van Ham calls a [security ecosystem](#).

Going forward, advocates of humanitarian arms control and disarmament efforts related to emerging technology should focus on building a security ecosystem with interlinked and multi-level governance responses, filling in gaps with various pieces of a broader governance regime. Many of the lessons learned from previous treaty negotiation processes can be applied, but they must be adapted to new challenges.

The use of emerging technologies in warfare threatens indiscriminate and diffuse harm to civilians. No single tool can provide adequate protection. What is needed is a broad, multilayered governance process that may include treaties, but could also rely on non-legally binding instruments, as well as innovative mechanisms and processes for implementation. Wide participation from diverse stakeholders is also essential.

Among the priority elements for building arms control regimes related to emerging technologies are the following:

- **Preserving and enhancing norms.** Norms of non-use and civilian protection are at the heart of humanitarian arms control and disarmament agreements and must remain prominent. As new technologies with multiple uses and a broad range of users continue to emerge, humanitarian principles will continue to be relevant and must be reinforced.
- **Pursuing restrictions on behaviours and operational uses of weapons.** Many new technologies are not dedicated weapons but enablers of the use of force, with both positive and negative applications. Banning these technologies would not be feasible or desirable. This set of conditions drives discussions on norms of behaviour in both cyber space and outer space. However, bans on specific uses and applications of emerging technology are feasible. Such bans might include restrictions on:
  - ◇ **Applications**, such as the use of AI for targeting or engagement purposes;
  - ◇ **Targets**, such as critical infrastructure. Other examples might include restrictions on autonomous weapons that target personnel;
  - ◇ **Effects**, such as those that create indiscriminate harm or environmental damage. This

is the logic behind growing momentum for a kinetic anti-satellite [test ban treaty](#) in outer space.

Less dangerous applications of new systems could be regulated through monitoring or rules for peaceful use (see below). A layering of prohibitions and restrictions could produce protections for civilians.

- **Developing rules for peaceful use.** Governance must include not only military uses, but also dual-use civilian applications that can be repurposed as weapons and contribute to misperception and mistrust. Such rules would provide extra protection for civilians.
- **Creating processes and mechanisms for transparency and confidence building.** Innovative approaches and new technologies that gather and share data should be leveraged to support the implementation of norms and other agreements, as well as verifying compliance.
- **Maximizing the value of civil society and other stakeholders in the process.** States should actively seek to employ these sectors as well as the perspectives of women, LGBTQ+, and possible survivors in the development of norms, rule-making, implementation, and verification.

The lessons and possible ways forward examined here are not exhaustive and are offered for consideration during future discussions on arms control and disarmament efforts on emerging technologies. As we have seen in past examples, there will no doubt be a need to find new paths forward and creative approaches to the unique challenges that emerging technologies and new domains of military activity pose. But a continued commitment to humanitarian principles is essential. New technologies and tools of warfare are already having an impact on the global security environment and on armed conflicts. As these tools are developed and used more broadly, their humanitarian impacts will be more readily observed.

Anticipating and highlighting risks, misuses, and broad impacts on global stability constitute critical first steps in any attempt to avoid unnecessary human suffering because of these technologies. In some cases, pre-emptive bans and limitations are critical; in others, new norms of behaviour would prevent the direst consequences. A multilayered governance response will most effectively address the security and humanitarian concerns and ensure that the international agreements and norms that are created are effective. What this looks like will no doubt vary across different technologies.

Ultimately, arms control is a process, and the diplomatic engagement that it entails, albeit slow and often frustrating for advocates, plays an important role in protecting civilians and reducing risk to global stability. Failed efforts and first steps should not be lamented but valued as steppingstones to the next advance. Many actors must take many steps to reach the goal: a broad and effective governance regime.

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