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International Discussions Concerning Lethal Autonomous Weapon Systems

Lethal autonomous weapon systems (LAWS), or weapons designed to independently select and engage targets without the need for manual human control, could enable military operations in communications-degraded or -denied environments where traditional systems may not be able to operate. LAWS, colloquially known as “killer robots,” are not yet in widespread development. However, as technology advances—particularly artificial intelligence (AI)—a larger number of countries may consider developing and operating LAWS. This could hold potential implications for congressional oversight, defense investments, military concepts of operations, treaty-making, and the future of warfare.

Furthermore, incorporation of new technology into weapons systems could create a number of potential legal, ethical, strategic, and operational challenges. For this reason, some members of the international community seek through international discussions to constrain—if not ban—LAWS.

International Forum for LAWS Discussions

The international community examines the implications of LAWS in discussions held primarily under the auspices of the United Nations Convention on Certain Conventional Weapons (CCW), a multilateral arms control agreement to which the United States became a party in 1982. The CCW’s purpose is to “ban or restrict the use of specific types of weapons that are considered to cause unnecessary or unjustifiable suffering to combatants or to affect civilians indiscriminately.”

Since 2014, the CCW has convened annual meetings of States Parties, observers, and members of civil society to discuss the legal, ethical, technological, and military facets of LAWS. These meetings were elevated in 2017 from informal Meetings of Experts to a formal Group of Government Experts (GGE). After each session of the GGE, the session’s chair produces a draft report that details session proceedings and offers conclusions and recommendations for future work. States Parties then adopt the final report by consensus.

What Are LAWS?

Definitions. No single, universally accepted definition of LAWS is used in international discussions. However, in November 2024, the CCW GGE provisionally found consensus on the following:

A lethal autonomous weapon system can be characterized as an integrated combination of one or more weapons and technological components that enable the system to identify and/or select, and engage a target, without intervention by a human user in the execution of these tasks.

This definition is similar to that outlined in Department of Defense Directive (DODD) 3000.09, “Autonomy in Weapon Systems,” which defines LAWS as “weapon system[s] that, once activated, can select and engage targets without further intervention by an operator.” These definitions’ principal characteristic is the role of the operator with regard to target selection and engagement decisions, rather than the technological sophistication of the weapon system.

Status. Although the pursuit of LAWS is not yet widespread, some analysts have argued that Israel’s Harpy loitering munition—which the weapon’s manufacturer, IAI, describes as being fully autonomous—qualifies. Israel has reportedly exported the Harpy to Chile, China, India, South Korea, and Turkey. Some analysts have additionally argued that LAWS have been used in the Ukraine-Russia conflict; however, such claims have not been verified by U.S. defense officials.

Table 1. State Stances on Preemptive LAWS Ban

Support		Oppose ^b	Other ^c
Algeria	Holy See	Australia	China
Argentina	Iraq	France	
Austria	Jordan	Germany	
Bolivia	Mexico	India	
Brazil	Morocco	Israel	
Chile	Namibia	Russia	
Colombia	New Zealand	South Korea	
Costa Rica	Nicaragua	Spain	
Cuba	Pakistan	Turkey	
Djibouti	Panama	United Kingdom	
Ecuador	Peru	United States	
Egypt ^a	Uganda		
El Salvador	Venezuela		
Ghana ^a	Zimbabwe ^a		
Guatemala			

Source: CRS consolidation of data from multiple sources.

Notes: CCW discussions on LAWS exclude existing weapons systems. Therefore, States Parties consider any potential LAWS ban to be preemptive.

- State is not party to the CCW.
- States that oppose a preemptive LAWS ban do not necessarily share the same alternative approach to managing LAWS.
- See section below on China.

Debate About Approaches to Managing LAWS

The CCW has considered proposals to ban LAWS, as well as proposals to regulate or issue political declarations about them.

Arguments Supporting Preemptive LAWS Ban. In addition to the states listed in **Table 1**, approximately 165 nongovernmental organizations have called for a preemptive ban on LAWS due to ethical concerns. These concerns include a perceived lack of accountability for use

and a perceived inability to comply with the proportionality and distinction requirements of IHL. Some analysts have also raised concerns about LAWS's potential operational risks. For example, Center for a New American Security analyst Paul Scharre has noted that risks could arise from “hacking, enemy behavioral manipulation, unexpected interactions with the environment, or simple malfunctions or software errors” and could potentially result in civilian or noncombatant casualties. Although such risks could be present in automated systems, they could be heightened in autonomous systems, in which the human operator would be unable to physically intervene to terminate engagements—potentially resulting in wider-scale or more numerous instances of fratricide, civilian casualties, or other unintended consequences.

Those supporting a preemptive ban on LAWS have additionally appealed to the Martens Clause, which appears in the 1899 Hague Convention preamble and states that weapons use should conform to the “principles of humanity and the dictates of the public conscience.” These analysts believe that LAWS contravene that requirement; however, others have noted that the Martens Clause has not been used previously to ban a weapons system and, furthermore, that the legal status of the Martens Clause is questionable and instead constitutes “merely a recognition of ‘customary international law.’”

Arguments Opposing Preemptive LAWS Ban. A number of countries have voiced their opposition to a preemptive ban on LAWS. These countries have noted the potential military utility of LAWS, which could operate in communications-degraded or -denied environments where traditional systems may not be able to operate. LAWS could also potentially enable new concepts of operations, such as *swarming*, in which large formations of autonomous vehicles could be deployed to overwhelm defensive systems. (Some proponents of a ban have argued that swarms of autonomous vehicles could alternatively provide states or terrorist organizations with comparatively inexpensive weapons of mass destruction.)

Countries opposing a preemptive ban have additionally noted the potential humanitarian benefits of LAWS, which may be able to “strike military objectives more accurately and with less risk of collateral damage or civilian casualties” than traditional systems. These countries contend that human operators will remain accountable for the deployment of the systems and for ensuring that the systems’ use complies with IHL. Finally, some countries are concerned that a preemptive ban on LAWS could inhibit research into technologies that may provide civilian benefits (e.g., elder care robots).

Alternative Approaches to Managing LAWS. States have alternatively proposed that the CCW focus on enhancing transparency in weapons development and sharing best practices for weapons review processes. For example, Australia has hosted two expert meetings “to discuss mechanisms for voluntary exchanges, common understandings, and the possible elements of good practice” regarding legal reviews. Australia is publishing public reports based on the findings of these meetings.

Furthermore, in 2019, States Parties agreed to a set of “guiding principles” for LAWS. States Parties agreed—among other principles—that international humanitarian law (IHL) would apply to LAWS, that humans must remain responsible for decisions about the use of force, and that states must consider the risks of LAWS acquisition by, or proliferation to, terrorists. Similarly, in November 2023, the State Department issued the “Political Declaration on Responsible Military Use of AI and Autonomy,” which notes that “military use of AI must be in compliance with applicable international law.” Approximately 60 states—notably excluding Russia and China—have endorsed the declaration, as of November 2024.

Positions of the United States, Russia, and China

Although the CCW operates by consensus, the United States, Russia, and China—as leading military powers—are likely to be particularly influential in determining the trajectory of international discussions of LAWS.

United States. The U.S. delegation to the CCW has consistently opposed any preemptive ban on LAWS, arguing that LAWS could potentially provide a humanitarian benefit and that existing IHL is sufficient to govern the development and use of LAWS.

Russia. The Russian delegation to the CCW has also opposed a preemptive ban on LAWS, noting that LAWS could “ensure the increased accuracy of weapon guidance on military targets, while contributing to lower rate of unintentional strikes against civilians and civilian targets.” It has also argued there is no proper legal precedent for a preemptive international ban on an entire class of weapons.

China. The Chinese delegation distinguishes between “unacceptable” and “acceptable” LAWS. The delegation supports a ban on “unacceptable” LAWS, which it defines as systems that are (1) lethal, (2) autonomous, (3) incapable of termination, (4) capable of killing indiscriminately, and (5) capable of autonomous learning. Analysts note that such weapons would be unable to comply with IHL and therefore would be inherently illegal. China does not support a ban on other “acceptable” LAWS.

Potential Questions for Congress

- To what extent are U.S. strategic competitors developing LAWS? How, if at all, should this affect authorizations and appropriations for U.S. LAWS and counter-LAWS research and development?
- How should the United States balance ethical considerations about LAWS with military necessity? What regulations, if any, should the United States place on the development and/or fielding of LAWS?

If the United States chooses to develop and deploy LAWS, are current weapons review processes and legal standards for their employment in conflict sufficient?

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