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Revisiting Arms Control Paradigms in the Age of LAWS: Towards a Framework for Human Control

Lethal Autonomous Weapons Systems or LAWS bring with them a host of concerns about subjects like ethics and accountability. So far, the efforts to govern them have been marred by divergent points of view of different countries. This document looks at the constraints in terms of governing LAWS through existing arms control paradigms, and explores what India's considerations are keeping its interests in mind.

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Executive Summary

Lethal Autonomous Weapons Systems, or LAWS, have been the subject of much debate and controversy because they transfer critical decisions from humans to machines, leading to concerns about ethics, transparency and accountability. While autonomous functions already exist in various forms across militaries worldwide, the idea of automating part of the decision-cycle for lethal action has sparked debates about the potential for mis-targeting. However, states with advanced artificial intelligence (AI) capabilities continue to develop the capacity to design and deploy such systems. Arms control discussions on this subject have been challenging both because states are unable to agree on a concrete definition of what actually constitutes LAWS and because there are differing perspectives on the nature of the arms control mechanisms that need to be established. This paper presents the different stances of governments on the governance of LAWS. It also explores how previous paradigms of arms control have operated and what the specific challenges that LAWS present. Finally, it explores India's considerations and how it can move forward in these discussions.

The key takeaways are as follows:

- There is a significant debate regarding the necessity of a legally binding instrument to govern LAWS. Some governments advocate

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for such an instrument, while others prefer non-binding measures. Additionally, although there is a consensus on the importance of "meaningful human control" over LAWS, the definition and implementation of this concept remain contested.

- Historical arms control efforts have taken various forms, including non-proliferation treaties, agreements regulating weapon use, outright bans (often driven by humanitarian concerns), and arms-limitation treaties. These paradigms offer potential frameworks but also highlight the unique challenges LAWS pose to the international system.

- Governing LAWS presents several unique challenges. AI, the underlying technology, is dual-use, making monitoring difficult. The lack of a universal definition for LAWS hinders the creation of specific legal instruments or widely accepted norms. Furthermore, the perceived military advantage LAWS offer makes governments hesitant to agree to strict limitations.

- The ability of some autonomous and semiautonomous systems to loiter for extended periods heightens some of the risks associated with error and target-misidentification, and the autonomous capabilities of such systems need to be regulated accordingly.

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I. Introduction

Lethal Autonomous Weapons Systems (LAWS), sometimes dubbed 'killer robots', are subject to multiple debates. There are disagreements about their definitions, the binding instruments or guidelines that should govern them, and whether they should be employed in combat at all. This document seeks to explore all three questions. It then seeks to identify India's strategic considerations with respect to LAWS to come closer to an appropriate Indian position on the issue.

In the absence of a formally agreed-upon definition globally, the following working definition of LAWS is being used for the purposes of clarity for this paper: A Lethal Autonomous Weapons System is any system capable of independently performing the critical functions of locating, identifying, selecting, and engaging a target using lethal force without direct human intervention or final authorisation at the point of engagement.

Arms controls can take several forms- including restricting the production of certain weapons, setting conditions for their use, and banning them. There are broadly two factors behind why countries try to restrict the production or use of certain weapons. One is to advance their own strategic interests, whether by increasing stability or conferring military advantage. The second

is to proscribe the development, stockpiling, or use of particular capabilities, nominally on humanitarian grounds, though the actual motivations of states maybe more complex.[1] The challenge with LAWS is that both strategic and humanitarian concerns drive the moves to impose restrictions on them.

Historically, arms controls for weapons systems that can cause civilian casualties, cause additional damage beyond what is deemed necessary for gaining a strategic advantage, or have any degree of autonomy have been successful. For instance, anti-personnel land mines (APL)[2] that explode when stepped on, have been successfully restricted, and signatories of the Ottawa convention have even destroyed their APLs.[3] The advocacy for their ban was mainly predicated on humanitarian concerns, since APLs do not discriminate between targets. APLs are sometimes compared to LAWS since with both types of weapons, there is no human intervention at the point of engagement.[4] The subsequent sections will explore different states' stances on governing and restricting LAWS, and the challenges posed by the lack of a definition, before coming to arms control and LAWS.

II. Stances and Definitions

Despite numerous conversations about LAWS in international forums, the conspicuous absence of a widely agreed-upon definition hinders conversations about its governance. The phrase 'lethal autonomous weapons systems' defines two important criteria– that such weapons can deliver lethal payloads and do so autonomously. However, states have not been able to agree on the details, including what constitutes a lethal capability and what constitutes autonomy.

The result has been a wide variety of definitions. The International Committee of the Red Cross (ICRC)[5] defines LAWs as "any weapon system with autonomy in its critical functions, capable of selecting (i.e., searching for, detecting, identifying, tracking, selecting) and attacking (i.e., using force against, neutralising, damaging, or destroying) targets without human intervention." The CCW acknowledges the lack of a standard definition, but has published a compilation of definitions and characteristics of LAWS put forward by different countries. For instance, in 2023 Pakistan's characterisation to the CCW[6] was "LAWS are not one or two types of weapons. Instead, they are a capability category i.e. a weapon system incorporating autonomy in its critical functions, specifically in target selection and engagement. The challenges associated with these weapon systems stem from this capability, which lends itself to layers of

A state's publicly stated stance on Lethal Autonomous Weapons Systems (LAWS) might differ from its actual development practices due to strategic interests. China, for example, publicly supports negotiating a legally binding instrument within the UN CCW framework to regulate LAWS, emphasising human control and specifically calling for a ban on the *use* of fully autonomous systems. However, China is simultaneously known to be investing heavily in military AI, drone swarming and actively developing various autonomous weapon systems. This suggests a potential divergence where the stated position supports limitations (particularly on use) while national practice prioritises technological advancement and capability development.

unpredictability and cascading impacts". Similarly, a group of countries including Australia, Canada, Japan, the United Kingdom, The United States and the Republic of Korea acknowledge that leaps in AI may enable "novel and more sophisticated weapons with autonomous functions, including those weapon systems that, once activated, can identify, select, and engage targets with lethal force without further intervention by an operator".

The varied definitions reflect the differing interests of states. Technologically advanced states with the potential to develop LAWS tend to favour definitions with a higher threshold, thereby maximising their freedom of action. Conversely, many states lacking this capacity advocate for more restrictive definitions. However, as some states participating in the CCW have argued, a precise definition may not be a prerequisite for advancing discussions on governance. The current lack of a commonly agreed-upon definition also complicates advocacy for specific arms control proposals.

This definitional challenge is not unprecedented. Many technologies have proven difficult to define initially. In the cases of anti-personnel land mines and biological weapons, the initial focus was on prohibition, driven by a general understanding of their potential for devastating consequences, even before formal definitions were established. However, while definitional clarity can aid policymakers in specifying what is prohibited or regulated, absolute precision may not be essential for achieving normative prohibition.

When it comes to regulations for LAWS, there are two broad groups of parties: those who advocate for a legally binding instrument (LBI) and those who are against an LBI– even if they support non-binding measures. Some states like the United Kingdom seem to be ambiguous about their approach to binding legislations and prioritise 'meaningful human control' or MHC in the development of LAWS. Others such as Israel oppose the idea of a legally binding instrument and maintain that existing measures suffice. The following table examines different countries' stances on LAWS and how they have evolved. The table also looks at whether governments believe that international humanitarian law in its present form is adequate to govern LAWS or whether they believe that there is a need for stronger, legally binding instruments. The green icon in the sixth column indicates the readiness of countries to adopt legally binding instruments, whereas the red icon indicates an opposition to the same, and an orange icon indicates some ambiguity in the stance of the country.

Table 1: Country–wise stances on LAWS

Entity	Initial Stance (approx.)	Current Stance	Key Policy Documents/Statements	Stance on the Adequacy of Existing IHL	On LBI
United States (US)	Emphasis on existing IHL, responsible development (DoD Dir. 3000.09 - 2012)	Opposes ban; supports responsible development, non-binding measures (e.g., codes of conduct, political declaration) within CCW; emphasises "appropriate levels of human judgment"; leads Political Declaration on Responsible Military Use of AI.	DoD Dir. 3000.09[7] (updated 2023); DoD AI Ethical Principles[8] (2020); Responsible AI Strategy[9] (2022);	Current processes may need consideration if LAWS are developed, notes ongoing legislative interest.	🟡
China (PRC)	Expressed concerns, called for ban on use of fully autonomous weapons (2018)	Officially supports LBI negotiations within CCW to regulate LAWS, primarily focusing on banning the use of fully autonomous systems; abstained on recent UNGA resolutions outside CCW; emphasises human control.	CCW[10][11]/UNGA statements; UN SG Submission (2024).[12]	Supports new LBI for use of fully autonomous systems, citing IHL challenges.	🟡
Russian Federation	Expressed concerns (early 2010s), then shifted to opposing restrictions.	Strongly opposes ban or LBI; views CCW as sole forum; actively developing autonomous capabilities.	CCW/UNGA statements; UN SG Submission (2024).	Adequate	🔴
United Kingdom (UK)	Early user of the term "MHC"; consistent emphasis on IHL adequacy.	Opposes ban; supports non-binding measures within CCW; emphasises "context-appropriate human involvement" & "meaningful human control"; developing AI under Defence AI Strategy.	Defence AI Strategy[13] (2022); UK Defence AI Ethical Principles[14]; CCW[15]/UNGA statements.	Adequate	🟡

Israel	Emphasis on existing IHL, participation in CCW from start.	Opposes LBI; views CCW as sole forum; argues LAWS can uphold IHL; emphasises context & human input.	CCW[16]/UNGA statements; UN SG Submission[17] (2024).	Adequate	🔴
India	Active in CCW (chaired GGE 2017-18); balancing stance.	Opposes LBI as "premature"; views CCW as sole forum; supports non-binding measures (political declaration); highlights potential benefits (precision); actively developing AI.	CCW[18]/UNGA statements; UN SG Submission (2024); Defence AI initiatives (DAIC/DAIPA)[19]; ETAI Framework[20] (2024).	Adequate	🟡
Pakistan	First state to call for ban (2013); strong NAM/CCW advocate.	Strongly supports LBI within CCW (two-tier: prohibit/regulate); emphasises ethical use, IHL, security risks (regional arms race concerns); submitted LBI proposals.	CCW[21]/UNGA statements; UN SG Submission (2024); CCW Working Papers[22] (e.g., WP.5/2023).	Insufficient	🟢
France	Key role in initiating talks; co-authored proposals w/ Germany.	Supports LBI within CCW (two-tier: prohibit fully autonomous, regulate others); emphasises human control throughout lifecycle.	CCW[23]/UNGA statements; UN SG Submission (2024[24]); Franco-German working papers[25].	Insufficient (Requires new LBI to ensure IHL compliance and human control).	🟢
Germany	Proponent of regulation; co-authored proposals w/ France.	Strongly supports LBI within CCW (two-tier: prohibit/regulate); emphasises human control ("decision over life and death").	CCW[26]/UNGA statements; UN SG Submission (2024); Franco-German working papers[27]	Insufficient (Requires new LBI to ensure IHL compliance and human control).	🟢
South Korea	Deployed SGR-A1; cautious approach in CCW.	Opposes LBI now ('premature'); supports CCW as sole forum; supports two-tier discussion; developing AI; co-hosted REAIM.	CCW[28]/UNGA statements; UN SG Submission (2024); CCW Joint Working Paper (WP.4/Rev.2).	Applicable, but requires careful consideration (Supports prohibiting non-compliant systems; questions if	🟡

				human involvement is sole path to IHL compliance).	
Austria	Joined call for ban (2018); leading advocate.	Strongly supports LBI (two-tier: prohibit/regulate); emphasises ethical/moral concerns; hosted 2024 Vienna Conference; key proponent of UNGA Res L.77.	CCW[29]/UNGA statements; UN SG Submission (2024); Vienna Conference Chair's Summary[30]; UNGA Res L.77 proponent.[31]	Insufficient	
Brazil	Joined call for ban (2017); active CCW participant.	Strongly supports LBI (preferably in CCW); emphasises MHC as essential for IHL/ethics; supports ICRC definition.	CCW[32]/UNGA statements; UN SG Submission (2024); CCW Working Paper (WP.1/2024[33]).	Insufficient (Requires new LBI to ensure MHC and IHL compliance).	
South Africa	Expressed concerns; active in NAM/African Group.	Supports LBI; emphasises need for direct, meaningful human control/supervision (African Group position).	National statements at CCW[34]/UNGA; Statements on behalf of African Group[35].	Insufficient (Requires new LBI to ensure human control and address IHL challenges).	
Chile	Expressed concerns early in CCW.	Supports LBI (two-tier: prohibit/restrict); emphasises threats to civilian safety, need for human control under IHL/IHRL.	CCW[36]/UNGA statements; UN SG Submission (2024).	Insufficient (Requires new LBI to ensure human control and protect civilians).	
Stop Killer Robots	Formed 2012/13 advocating treaty.	Advocates new legally binding treaty (prohibit systems targeting humans or lacking MHC; regulate others with MHC). MHC is central.	Campaign statements, website[37], publications, participation in CCW/UN forums.	Insufficient	

Article 36	Focused on harm reduction; introduced "MHC" concept.	Advocates new rules/standards for MHC over individual attacks (predictability, transparency, user capacity, accountability); prohibits targeting people. MHC implied by IHL but needs explicit rules.	Policy briefings, legal analyses, participation in CCW GGE, website[38].	Insufficient (Existing IHL implies need for human control, but new specific rules are needed to define and ensure it).	🟢
UN CCW GGE on LAWS	Forum established 2014/2017 to discuss LAWS.	Mandated to formulate "elements of an instrument" by 2026; achieved consensus on 11 Guiding Principles (incl. IHL applicability, human responsibility); deeply divided on definition, IHL sufficiency, MHC, need for LBI. Operates by consensus.	11 Guiding Principles (2019)[39]; Annual Reports; Mandates.	Divided (Consensus on IHL applicability, but no consensus on sufficiency).	🟡
UN Secretary-General	Increasingly vocal concerns over several years.	Declares LAWS without human control "morally repugnant"; explicitly recommends states conclude a legally binding instrument by 2026 (prohibit non-compliant systems, regulate others).	"New Agenda for Peace" (2023); Reports pursuant to UNGA Res 78/241; Public statements.	Insufficient	🟢
ICRC	Long-standing engagement as guardian of IHL.	Views LAWS as immediate humanitarian concern; recommends new legally binding rules (prohibit unpredictable systems & those targeting persons; strictly regulate others with limits & human supervision).	Official statements, recommendations[40] (esp. 2021), participation in CCW GGE, publications.	Insufficient	🟢

A few trends emerge when looking at the different stances of countries and organisations globally:

a) There appears to be a strong consensus on the need for some level of human control. However, such statements may also be interpreted as negotiating gambits, given that several states are aggressively pursuing the development of autonomous systems.
b) The governments of Pakistan, Germany, France, Austria, and Brazil have been vocal in their support for legally binding instruments to either support or regulate LAWS. This approach is likely driven by a blend of strategic concerns, a desire to avoid arms racing, and ethical or legal considerations.
c) Another set of countries, including the United States, Israel and the United Kingdom, call for non-binding measures such as codes of conduct within the CCW. This position may, in part, be driven by their interest in retaining the option to develop and use LAWS while also emphasising responsible development. Since non-binding measures are open to interpretations, these may also serve to discourage the development of LAWS by less powerful states including adversaries of advanced military powers.
d) The US, China, Russia, and South Korea are among those actively investing in developing AI for civilian purposes and, by extension, military functions. This likely influences their stance on LAWS, perhaps as a means to avoid restrictions on these technologies.

In arms control, **legally binding instruments**, like treaties (e.g., CWC, NPT), create formal obligations under international law for signatory states. Compliance is expected, and violations can carry legal repercussions, though enforcement can be challenging. **Non-legally binding instruments**, such as political declarations or codes of conduct, express political commitments or shared understandings but do not create legal duties. Adherence relies on political will rather than legal enforceability.

III. Existing Arms Control Paradigms and LAWS

Arms control refers to bilateral or multilateral agreements between states to control the development, production, or use of certain kinds of weapons or certain features of weapons. These can take many forms, including but not limited to treaties, legally binding instruments, international law, or non-binding agreements.

Arms control can be categorised into four buckets:

a) Non-proliferation regimes: These agreements seek to prevent the use of certain weapons by preventing access to the underlying technologies that enable their development.[41] The Nuclear-Non-Proliferation Treaty (NPT)[42] is an example of such an agreement, and has helped limit the spread of nuclear weapons beyond the handful of states that had already developed them when the treaty was ratified. Backing for the NPT was also in part due to the devastating use of nuclear weapons against the Japanese cities of Hiroshima and Nagasaki in 1945.[43]
b) Agreements regulating the use of weapons: These agreements restrict certain use cases of particular weapons or prohibit their use.[44] For instance, Protocol I of the CCW forbids the use of weapons that create

fragments that cannot be detected in the body through X-rays, such as fragments of glass.[45] This is on the grounds that it causes 'unnecessary harm' beyond what is needed to gain a tactical advantage.

c) Bans: In the case of bans, access to the technology is not restricted, but the development, stockpiling or use is prohibited.[46] Many bans have been portrayed as humanitarian in nature such as prohibition on permanently blinding lasers. These are reasonably successful, perhaps due to the low military utility of such devices.

d) Arms-limitation treaties: Arms-limitation treaties allow the production or possession of certain weapons, but put a cap on the number a party can hold during peacetime conditions. For instance, the 2011 New Strategic Arms Reduction Treaty (START) between the United States and limits the number of nuclear weapons each party can deploy.[47] These agreements serve to manage competition and reduce risks.

Arms control initiatives are primarily motivated by either strategic or humanitarian motives. For instance, the NPT was largely driven by nuclear weapon states seeking to prevent other states from being able to develop their own arsenals. However, the treaty was justified as a first step towards complete nuclear disarmament.

Publicly stated humanitarian motives can make an effort at arms control more likely to be successful, since there is normative pressure to reach an

agreement. The feasibility of arms control is also determined by a cost-benefit analysis of how horrible the perceived results of using a weapon are versus the perceived military advantage. Blinding lasers and weapons that generate undetectable fragments were restricted on these very grounds: that the perceived horribleness outweighs the mlitary advantage they would provide.

Restricting dual-use technologies is challenging because they possess legitimate civilian applications alongside potential military uses. Imposing broad restrictions risks stifling beneficial innovation in fields like medicine or industry. Crafting regulations precise enough to target only harmful military applications without negatively impacting legitimate civilian activities is a significant hurdle for arms control. This inherent duality makes defining the scope of restrictions and ensuring compliance exceptionally difficult.

On the other hand, LAWS are more difficult to restrict for several reasons. First, AI, which is the underlying technology that is needed to develop the autonomous functions of LAWS, is a dual-use technology. By their very nature, dual-use technologies are harder to monitor, and consequently it is harder to enforce compliance. Additionally, dual-use or general-purpose technologies (GPTs),[48] tend to have widespread diffusion across sectors, make it harder to push for non-proliferation. Finally, when states are developing advanced AI capabilities, in the absence of public disclosure, it is difficult to discern the intent behind a state's actions.

Second, the lack of a globally supported definition of LAWS only compounds this problem since arms control mechanisms are more likely to be successful if they are highly specific in their recommendations.

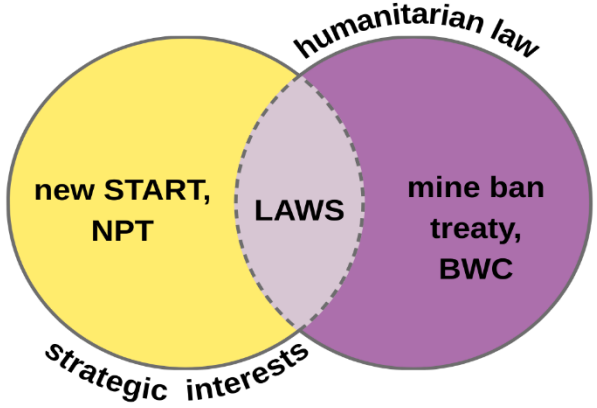
Third, AI is perceived as a technology that can provide 'game-changing'[49] military advantage. Its use for information processing, target identification, decision support, logistics, and platform autonomy has made its development and diffusion a top priority for militaries.

Against these factors are the inhibitors that will arise from within militaries themselves. Advanced militaries deploying LAWS will have reason to exercise caution. One, they will be concerned about mistargeting, which brings risks such as inadvertent escalation, lost opportunities to strike crucial targets, and civilian casualties. Two, they are likely to demand that the AI capabilities on LAWS be explainable and show a high degree of alignment, thus adhering to some of the priorities and constraints implicit in the idea of 'commander's intent'.

Some states call for 'meaningful human control' for LAWS, but little agreement exists on what this means.

These many factors mean that efforts to restrict LAWS are motivated by both strategic concerns and concerns about the adequacy of existing international humanitarian law as a means of governing them. This means efforts to establish arms control mechanisms for LAWS need to incorporate both these angles into their rhetoric in order to be successful.

Figure 1: Arms control agreements & the motivations behind them



Author's visualisation

Israel's Lavender AI system reportedly identifies potential human targets in Gaza, assigning risk scores. While officially described as a decision-support tool implying Human-in-the-Loop (HITL) control, sources claim minimal human verification ("rubber stamp," 20 seconds) occurred in practice.[5] This reliance, driven by speed and scale, raises concerns about automation bias and suggests a *de facto* shift towards Human-on-the-Loop (HOTL), diminishing meaningful human control over lethal decisions despite human final authorisation.

IV. Considerations for India and Recommendations

India neighbours its two adversaries, China and Pakistan, both of whom are nuclear-armed. China enjoys a major lead in military adoption of AI. For instance, in recent years, the PLA has unveiled an 'AI commander[50]' for training and war-games. Chinese companies have also demonstrated advances in drone-swarming, and has emerged as one of the biggest exporters of unmanned combat aerial vehicles. Therefore, China is well-placed to develop and deploy LAWS. Notwithstanding vague statements from Beijing that call for a ban on 'fully-autonomous' weapons, China has strong incentives to develop such capabilities and potentially share them with Pakistan as well.

Consequently, it is in India's interest to have a clear stance on LAWS. Instead of caution and ambiguity, it may be more productive for India to advocate for the governance of LAWS in ways that further its strategic interests.

To understand the factors that are likely to influence the direction arms control efforts for LAWS will take, it is worth looking at previous arms control paradigms and examining various determinants of the nature of the arms control. As explored previously, there are a number of factors that

impact the nature and success of an arms control treaty. For the purpose of this document, we will be looking at some of the most significant arms control agreements in the last few decades through the following parameters:

- Whether the military utility of the technology or weapons system is high or low.
- The current stage of development of the technology. In this context, a 'high' technological state refers to technologies that are already in reasonably advanced stages of development among contracting states.
- Whether the strategic demand for the technology is high or low– this looks at the strategic and operational needs of the contracting states partaking in the arms control agreement.
- Whether the ease of verification of compliance to arms control is likely to be high or low– depending on the nature of the technology itself.
- Whether there has been significant normative development against the use of the technology internationally. In the case of LAWS, since there is no certainty that they have been used despite reports that they may have been, the diffusion of norms against them has not been particularly prevalent.
- If the technology is perceived to be 'horrible' or not– in terms of the effects it has in its deployment.

Paul Scharre argues that arms control efforts are more likely to succeed when a weapon is seen as morally or viscerally "horrible"—evoking public outrage or ethical discomfort. This perception can drive international consensus and normative pressure, even without a clear legal framework. In the case of LAWS, their potential for indiscriminate killing and lack of accountability contribute to their perceived horribleness, strengthening calls for regulation or prohibition.

A 2020 UN report suggested a Turkish Kargu-2 drone may have autonomously "hunted down" soldiers in Libya, potentially the first LAWS kill without direct human command. While Turkey denied autonomous use and the report lacked certainty, the incident underscores verification challenges. Autonomy is software-defined, making external confirmation difficult as attacks can look identical to manual ones. This ambiguity significantly impedes verifying compliance with potential arms control treaties regulating LAWS

As with the previous table, red, green and yellow indicators are used to indicate how conducive a parameter is to a complete ban of the weapons system/technology. Red indicates that it is not conducive to the requirements for a complete ban, whereas green indicates that it is very conducive. For verifiability this works in a diametrically opposite manner to other parameters, since low verifiability of compliance makes it difficult to prohibit.

Table 2: Factors influencing arms control

Existing Arms Control Paradigms	Military Utility	Technological State	Strategic demands	Ease of verification	Normative development	Perceived horribleness	Nature of Arms Control
NPT-Nuclear weapons	🔴 High	🔴 High	🔴 High	🔴 High	🟢 High	🟢 High	Non-proliferation
CWC-Chemical weapons	🟡 Medium	🟡 Medium	🟡 Medium	🟡 Medium	🟢 High	🟢 High	Complete ban
BWC-Biological weapons	🟢 Low	🟡 Medium	🟢 Low	🔴 Very low	🟢 High	🟢 High	Complete ban
Ottawa Treaty-Landmines	🟡 Medium	🟢 Low	🟡 Low	🟢 High	🟢 High	🟢 High	Complete ban

Author's visualisation

While *Table 2* looks at previous paradigms through these parameters, *Table 3* below looks at the two broad groups of states that are currently advocating for different approaches towards arms control for LAWS

through the same parameters. The first row looks at current and potential users of LAWS. These are states with advanced AI capabilities as well as the strategic requirements that warrant the possible development of LAWS. Such states tend to be against a legally binding instrument or have a more ambiguous stance (*Table 1)*. The second row looks at non-users– who are typically states with little to no need to develop advanced military technologies given their relatively benign strategic environment or states with much lower AI capabilities. The normative development on both fronts is relatively low, since there is no experience of the use of LAWS in combat.

Table 3: Factors influencing arms control for LAWS

LAWS	Military Utility	Technological State	Strategic demands	Ease of verification	Normative development	Perceived horribleness
Current/Potential Users	🔴 High	🔴 High	🔴 High	🔴 Low	-	🟢 High
Non-Users	🟢 Low	🟡 Moderate-low	🟢 Low	🔴 Low	-	🟢 High

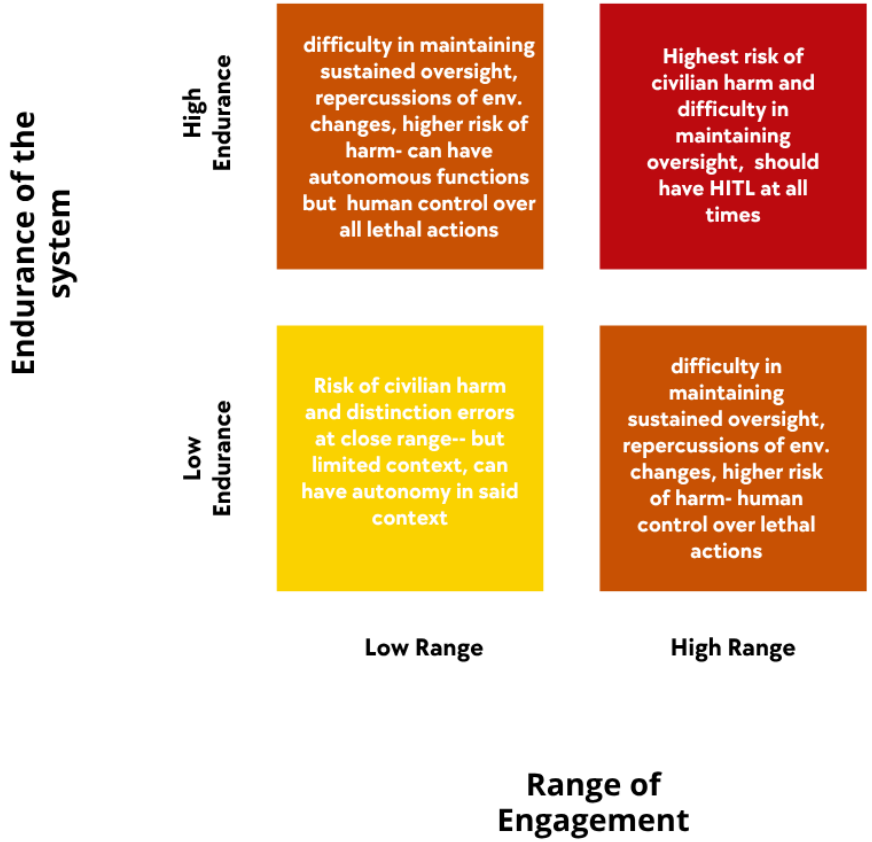
Author's visualisation

A few clear trends emerge from this examination of the criteria. One, complete ban on LAWS is very unlikely given their high military utility and the lack of normative development. Two, while LAWS fulfil solely military purposes, AI itself is a dual-use technology, rendering it more challenging to verify compliance.

IV.I LAWS and Loitering

Figure 2 (pictured below) looks at the risks posed by different kinds of autonomous systems based on their range and endurance.

Figure 2. Loitering and risks posed



The risk from mistargeting by LAWS is directly proportional to its ability to loiter. LAWS that can loiter for longer periods due to their higher endurance and range, are more likely to strike the wrong targets simply because the potential set of targets increases.

Loitering refers to the ability of an unmanned or fully autonomous vehicle to remain near a target area—airborne or underwater for different domains—for extended periods, while waiting for a target to be identified or to attack a specific target. Typically this is for surveillance or strike purposes. Israel's Harop is an example of a loitering munition that is designed to loiter for extended periods before striking a target.

As seen in the matrix above, the risks are highest with systems that have high endurance as well as a high operational range (the quadrant in red). Systems with either high endurance *or* high range (pictured in orange) pose a lower but still significant level of risk. Finally, systems that are stationary or have very limited range, likely pose the lowest levels of risk.

Additionally, context-specific guidelines may need to be established separately for the use of LAWS in land, sea and airborne engagements, since each poses different challenges for mistargeting and adherence to the laws of armed conflict.

In land-based conflict, surrender is the act of ceasing resistance and yielding to the enemy, often to preserve life or signal defeat. It is typically indicated by visible gestures such as raising hands, laying down arms, or displaying a white flag—recognised internationally as a symbol of truce or surrender. These signals must be respected under the laws of armed conflict. Once accepted, surrendering forces are entitled to humane treatment as prisoners of war under the Geneva Conventions.

Given the unlikelihood and unfeasibility of a complete ban, India must advocate for an agreement that prioritises human accountability in the combat employment of LAWS, while not placing restrictions on domestic research and development or access to critical technology. Given these factors, the following recommendations are proposed for the development of a normative framework that is focused on the development of LAWS with human oversight:

a) States are ultimately responsible for all the actions undertaken by their LAWS in combat.
b) To manage risks, states must constrain the ability of LAWS to engage targets based on both their range and endurance as well as the environment in which they operate (land, sea, air). Any future measures on LAWS must therefore include guidelines on how these constraints can be implemented.
c) LAWS should be completely excluded from the nuclear forces of any state.
d) Once there is wider normative development along these principles, India should advocate for a legally binding treaty that commits states to only developing LAWS in accordance with these principles that keep responsible use in mind.

Landmines function like primitive autonomous weapons by activating without human intervention when specific triggers—like pressure or proximity—are met. However, they pose less dynamic threat compared to modern autonomous systems because they lack mobility, range, and endurance. Once deployed, landmines remain stationary and passive, incapable of adapting to new targets or conditions. Their limited scope makes them tactically inflexible, though they remain a long-term hazard.

V. Conclusion

India must advocate a series of non-binding measures on the combat employment of LAWS. Such measures are likely to be vague since major powers are unlikely to agree upon a working definition of LAWS in this decade.

Non-binding measures carry the risk of uneven application, with more powerful states applying the rules differently on less powerful states. Therefore, India must ensure that the measures leave little room for discriminatory use against it.

Legally binding measures (LBIs) are only likely to develop after LAWS and other AI-based capabilities are used extensively in combat. Until such a time, India must continue to hold the position that the push for LBIs are premature.

VII. References

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