

# MP-IDSA

## *Issue Brief*

# US Cluster Munitions for Ukraine: Military Context and Legal Considerations

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## **S***ummary*

The US decision to supply cluster munitions to Ukraine has been criticised by several human rights groups and several US allies like Germany, the United Kingdom, Canada, New Zealand, and Spain. It is pertinent to note that the US, Ukraine and Russia are not signatories to Convention on Cluster Munitions while Russia has also used various types of such ammunitions in the current conflict with Ukraine. These types of ammunitions are expected to aid Ukraine's counter-offensives against Russian fortifications.

On 7 July 2023, the US Department of Defense (DoD) announced additional security assistance to meet Ukraine's critical security and defence needs. The package included additional air defence munitions, armoured vehicles, anti-armour weapons, and other equipment. In addition, the package will provide Ukraine with additional artillery systems and ammunition, including the highly effective and reliable dual-purpose improved conventional munitions (DPICM), a type of cluster munition.<sup>1</sup>

This decision to transfer DPICM to Ukraine has become controversial as more than 100 countries have outlawed this type of munitions under the Convention on Cluster Munitions (CCM).<sup>2</sup> The decision was quickly criticised by human rights groups. Several US allies including Germany, the United Kingdom, Canada, New Zealand, and Spain also expressed their unease with the decision being signatories to the Cluster Munition Convention which has outlawed the use, production, storage and transfer of cluster munition.<sup>3</sup> The US, Ukraine and Russia are not signatories to CCM.

The US DoD claimed that the decision to transfer DPICM was arrived at after extensive consultations with the US Congress and US allies and partners. Jake Sullivan, the US National Security Advisor, argued that the US allies which are signatories to the Oslo convention indicated that they understand the US decision and recognised the difference between the use of cluster munitions by Russia, the aggressor, and Ukraine, which is defending itself.<sup>4</sup> Further, the Ukrainian government has assured the US of the “responsible use” of DPICM, including that it will not use the rounds in civilian-populated urban environments.<sup>5</sup> In an interview with CNN, President Joe Biden said that his decision to provide Ukraine with cluster munitions was a “difficult decision”.<sup>6</sup>

The Brief examines the military context of the extant transfer of DPICM to Ukraine along with relevant legal considerations.

## Cluster Ammunition and its operational value

Cluster munitions can, in general terms, be defined as “weapons that open in mid-air and disperse smaller sub-munitions—anything from a few dozen to hundreds—

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<sup>1</sup> [“Biden Administration Announces Additional Security Assistance for Ukraine”](#), U.S. Department of Defense, 7 July 2023.

<sup>2</sup> [“Convention Text”](#), The Convention on Cluster Munitions, 30 May 2008.

<sup>3</sup> [“US Allies React to Decision to Send Cluster Munitions”](#), VOA, 8 July 2023.

<sup>4</sup> David Smith, [“End Justifies Means for Biden in Sending Cluster Bombs to Ukraine”](#), *The Guardian*, 7 July 2023.

<sup>5</sup> [“Under Secretary of Defense for Policy Dr. Colin Kahl Holds Press Briefing”](#), U.S. Department of Defense, 7 July 2023.

<sup>6</sup> Jeremy Herb, [“CNN Exclusive: Biden Says Sending Cluster Munitions to Ukraine Was ‘difficult Decision,’ but ‘They Needed Them’”](#), *CNN Politics*, 7 July 2023.

into an area. They can be delivered by aircraft or from ground systems, such as artillery, rockets and missiles”.<sup>7</sup> They contain sub-munitions or bomblets with impact fuses designed to detonate on impact with the ground or hard surface. They could also be fused to create an air burst at a prescribed height from the ground. A typical Cluster munition ordnance, depending on its design, can release explosive sub-munition ranging from several dozen to over 600.

Cluster munitions have emerged as weapons of choice for militaries due to their ability to create destructive effects over an area much larger than the one created by the effects of equivalent munitions with singular warheads.<sup>8</sup> The criteria of ‘economy of force’ is accomplished through the use of cluster munition since one munition can be used to suppress, kill or destroy multiple targets within its impact area. Employment of such area weapons needs fewer platforms (aircraft, artillery tubes, etc.) delivering fewer munitions for desired effects which reduces the logistics burden and the exposure of forces to hostile fire. Similarly, cluster munitions allow a numerically smaller force to engage and degrade a larger adversary.

Cluster munitions have evolved since their initial use in World War II and their employment has shifted from countering mass infantry attacks to attacking massed armour and vehicle formations. The changes in operational employment have contributed towards technological enhancements in submunitions design for enhanced terminal effects and delivery, leading to the development of dual-purpose and combined-effects munitions. The design of these new sub-munitions incorporated a shaped charge to penetrate armour or entrenched targets. The metal casing of some submunitions was also scored to produce uniform fragment sizes and patterns to enhance the anti-personnel effect.

Cluster munitions were deployed extensively in the Vietnam War. During that conflict, the US dropped some 260 million of them on neighbouring Laos, making it the country with the world's highest level of cluster munition contamination. The US Army also used the ‘Steel rain’ of DPICM to break Iraqi’s soldier’s will to fight both during the Gulf War of 1991 and the invasion of Iraq in 2003.<sup>9</sup>

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<sup>7</sup> [“German Understanding of Cluster Munitions: Presented by the Federal Republic of Germany”](#), 8 March 2006. The text of the definition reads: (a) Cluster munitions means a munition, which contains submunitions with explosives. These are deployed by means of delivery and are designed to detonate on impact with a statistical distribution in a pre-defined target area; (b) Cluster munition delivery means include artillery shells, missiles or aircraft; (c) The characteristics of cluster munitions are a lack of an autonomous target detection capability and a usually high number of dangerous duds that pose serious humanitarian concerns after the use, and (d) The term “cluster munitions” does not cover direct-fire munitions, flares and smoke ammunition, sensorfused ammunition with an autonomous target detection capability, submunition without explosives and landmines.

<sup>8</sup> Mark Hiznay, [“Operational and Technical Aspects of Cluster Munitions”](#), United Nations Institute for Disarmament Research Disarmament Forum, 2006, pp. 15–25.

<sup>9</sup> [“Why Are Cluster Munitions So Dangerous?”](#), *The Economist*, 7 July 2023.

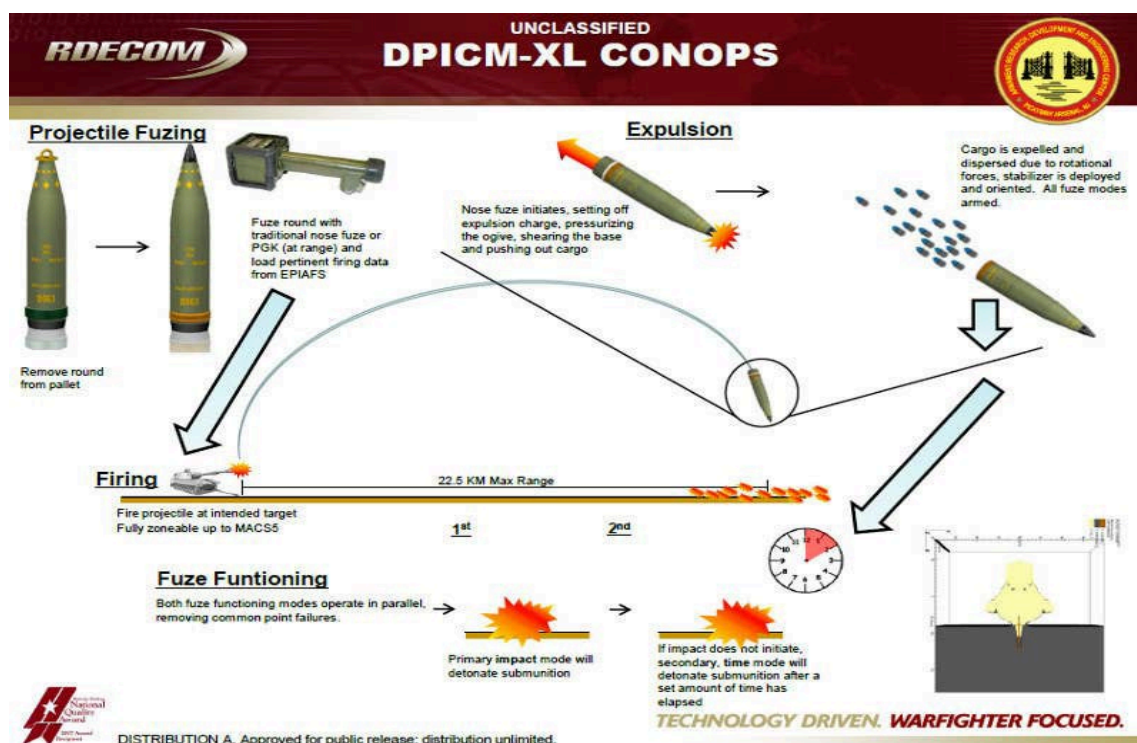
## Dual-purpose improved conventional munition (DPICM)

DPICM is a general category of ordnance with the US Army and includes various types of artillery shells and rockets loaded with a variety of sub-munitions. It includes shells for 105mm, 155mm, and 203mm howitzers, as well as 227mm artillery rockets that can be fired from the M270 Multiple Launch Rocket System (MLRS) and M142 High Mobility Artillery Rocket System (HIMARS) launchers.<sup>10</sup>

DPICM is an evolved version of the Improved Conventional Munition (ICM) series of cluster munitions. ‘Dual-purpose’ denotes the fact that the DPICM sub-munitions, also referred to as ‘grenades’, are designed to be effective against both armoured vehicles, as well as soft-skin unarmored vehicles and troops.

Though there are multiple types of DPICM sub-munitions, they are all designed in the same basic way, with a shaped charge intended to defeat armour surrounded by a casing specifically structured to send lethal fragments flying in all directions. The sub-munitions are similar in size and weight to a typical hand grenade. DPICM-filled artillery rounds and other munitions generally eject the sub-munitions from the rear of the projectile or warhead after it reaches a set point in its trajectory.<sup>11</sup>

### US Army Briefing Slide on DPICM-XL projectile



**Source:** Joseph Trevithick, “[What DPICM Cluster Munitions Are And Why Ukraine Wants Them So Bad](#)”, *The Drive*, 6 July 2023.

<sup>10</sup> Joseph Trevithick, “[What DPICM Cluster Munitions Are And Why Ukraine Wants Them So Bad](#)”, *The Drive*, 6 July 2023.

<sup>11</sup> John Paul Rathbone, “[Military Briefing: Cluster Bombs Offer Ukraine Swifter End to War](#)”, *Financial Times*, 11 July 2023.

DPICM munitions which are being supplied to Ukraine are newer versions with GPS guidance for precision. These are also “lethality-enhanced ordnance” whose warhead effect has been tailored through computer modelling for its intended effect and also to limit unexploded ordnance (UXO) hazards. The munition is designed to detonate at a preset altitude and release bomblets as per the computer-generated pattern.<sup>12</sup>

## Why Ukraine needs it?

As a result of extensive Russian fortifications, particularly minefields and extensive trench lines, Ukraine's counteroffensive has so far been difficult to get rolling.<sup>13</sup> When classical artillery fires round with unitary warheads, for example, trenches may withstand this type of indirect fire very well. Even less effective is direct fire, such as that from cannons and tank guns. To saturate them from above, it may require a sizable number of unitary high-explosive artillery rounds launched indirectly. Even then, they may not be as effective against well-entrenched forces.

According to sources, Ukraine's employment of artillery has had to be reduced or limited as a result of munitions shortages. There are reports that Ukraine has been compelled to cut or limit the use of artillery because it has shortages of munitions. The resultant ‘artillery’ or ‘ammunition’ diet has been attributed as a critical factor hindering the progress of the Ukrainian counter-offensive. Ukraine’s forces need to create gaps in the Russian defence line to push through with armoured formations.<sup>14</sup>

Ukrainian artillery is essential for suppressing Russian indirect and direct fire, allowing Ukrainian infantry to assault Russian trenches and break the defence line. Therefore, one of the most important factors in determining how the fight will turn out is increasing the effectiveness of Ukrainian artillery fire.<sup>15</sup>

Cluster munition artillery shells and rockets can cover much more ground and do so faster with a smaller number of total shells. Combine this with the fact that the submunitions that are deployed from them can fall directly into trenches, resulting in devastating effects. The effectiveness of artillery fire against entrenched infantry is substantially multiplied by DPICMs fired from 155mm howitzers and multiple-launch rocket systems. Since each DPICM can discharge up to 88 bomblets over a field-sized area, they are especially useful against infantry and artillery that are on

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<sup>12</sup> [“Why Are Cluster Munitions so Dangerous?”](#), no. 9.

<sup>13</sup> Andrew E. Kramer, Eric Schmitt and David Guttenfelder, [“Minefields and Menace: Why Ukraine’s Pushback Is Off to a Halting Start”](#), *The New York Times*, 26 June 2023.

<sup>14</sup> Isabelle Khurshudyan, [“Facing Critical Ammunition Shortage, Ukrainian Troops Ration Shells”](#), *The Washington Post*, 10 April 2023.

<sup>15</sup> [“Giving Ukraine Cluster Munitions Is Necessary, Legal and Morally Justified”](#), RUSI, 10 July 2023.

open terrain. Additionally, they might be employed to deliver suppressive fire, which would aid Ukrainian sappers in clearing the extensive minefields defending Russian defensive lines.<sup>16</sup>

## Why Cluster Munition is Controversial

The fundamental criticisms of cluster munitions are that they disperse large numbers of sub-munitions imprecisely over an extended area, that they frequently fail to detonate and are difficult to detect, and that sub-munitions can remain explosive hazards for decades. Cluster munitions’ bomblets are generally designed to explode or ignite upon hitting the ground, but historically their failure rate is the highest among all classes of weapons, with lasting and often devastating consequences for civilians. Civilian casualties are primarily caused by munitions being fired into areas where soldiers and civilians are intermixed, inaccurate cluster munitions landing in populated areas, or civilians traversing areas where cluster munitions have been employed but failed to explode.<sup>17</sup>

Two technical characteristics of submunitions—failure rate and lack of a self-destruct capability—have been at the core of the criticism of cluster munition. There exist significant discrepancies among failure rate estimates. While a few manufacturers claim a submunition failure rate of 2 to 5 per cent, field reports have recorded failure rates of 10 to 30 per cent. Several factors influence submunition reliability. In addition, factors impacting higher failure rates of submunition include delivery technique, age of the submunition, air temperature, landing in soft or muddy ground, getting caught in trees and vegetation, and submunition being damaged after dispersal, or landing in such a manner that their impact fuzes fail to initiate. In addition, submunitions without a self-destruct capability are of specific concern since they can remain an unexploded ordnance (UXO) hazard for decades, thereby increasing the potential for civilian casualties.<sup>18</sup>

In order to address humanitarian concerns about UXO, some nations are developing ‘smart’ or sensor-fuzed weapons with greater reliability and a variety of self-destruct mechanisms intended to address the residual hazard of submunitions. The US has argued that DPICM shells being sent to Ukraine are an improved version of

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<sup>16</sup> John Paul Rathbone, “[Military Briefing: Cluster Bombs Offer Ukraine Swifter End to War](#)”, 11 July 2023.

<sup>17</sup> Dinakar Peri, “[Cluster Munitions: Civilian Killer](#)”, *The Hindu*, 9 July 2023.

<sup>18</sup> Andrew Feickert and Paul K. Kerr, “[Cluster Munitions: Background and Issues for Congress](#)”, Congressional Research Service, 9 March 2022.

ammunition and has an estimated failure rate of 2.35 per cent or less, far better than the usual rate that is common for cluster weapons.<sup>19</sup> However, the cluster munitions in question contain older grenades which as per the US DoD's study are known to have a failure rate of 14 per cent or more.<sup>20</sup>

## International Attempts to Regulate Use

All weapons carry a certain amount of risk, but cluster bombs have been said to represent a special danger to people since they routinely leave behind a lot of unexploded bomblets and have a huge area of effect. These unexploded bomblets can continue to pose a threat for decades after combat has ended.<sup>21</sup>

To address these humanitarian concerns, the States-Parties to the U.N. Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons (CCW), based on recommendations of the Group of Experts, decided in 2006 to “negotiate a proposal to address urgently the humanitarian impact of cluster munitions”.<sup>22</sup> Negotiations to evolve rules, norms and technical solutions to minimise humanitarian concerns emanating from cluster munition were held in 2008 and 2009, but the parties did not reach an agreement on a new proposal. The experts' group continued negotiations in 2011 based on a Draft Protocol on Cluster Munitions. However, the CCW states parties could not reach a consensual agreement on a protocol during their November 2011 review conference.<sup>23</sup>

Described as “frustrated with the CCW process”, several CCW members—led by Norway, initiated negotiations in 2007 outside of the CCW to ban cluster munitions. On 30 May 2008, they reached an agreement, Convention on Cluster Munitions (CCM), to ban cluster munitions. The US, Russia, China, Israel, Egypt, India, and Pakistan did not participate in the talks or sign the agreement. On 3–4 December 2008, 94 states signed the convention in Oslo, and four of those signatories also ratified it at the same time. France, Germany, and the United Kingdom were among the 18 NATO members who are signatories of the CCM. Six months following the

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<sup>19</sup> John Ismay, “[Cluster Weapons U.S. Is Sending Ukraine Often Fail to Detonate](#)”, *The New York Times*, 8 July 2023.

<sup>20</sup> “[GAO Report on Military Operations: Information on U.S. Use of Land Mines in the Persian Gulf War](#)”, United States General Accounting Office, September 2002, p. 32.

<sup>21</sup> “[Cluster Munitions: What Are They and What Is the Problem?](#)”, ICRC, August 2010.

<sup>22</sup> “[Summary Record of the 10<sup>th</sup> Meeting, Held at the Palais Des Nations, Geneva, on Friday, 17 November 2006: Group of Governmental Experts of the States Parties to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects](#)”, United Nations Digital Library, 17 July 2008.

<sup>23</sup> Andrew Feickert and Paul K. Kerr, “[Cluster Munitions: Background and Issues for Congress](#)”, Congressional Research Service, 9 March 2022.

deposit of the thirty-first ratification, the convention was supposed to go into effect. On 16 February 2010, the UN received the 30<sup>th</sup> ratification, and the agreement became effective on 1 August 2010.<sup>24</sup>

The CCM, inter alia, bans the use of cluster munitions, as well as their development, production, acquisition, transfer, and stockpiling.<sup>25</sup> The convention exempts ‘Smart Cluster Munitions’ that can detect and engage a single target or explosive submunitions equipped with an electronic self-destruction or self-deactivating feature.<sup>26</sup>

## Conclusion

DPICM availability will not only improve Ukrainian military performance against Russian forces that are entrenched, but it will also aid in reducing Ukrainian and wider NATO ammunition shortages and barrel shortages. Even before the extant controversy about DPICM, cluster munitions have been employed during the ongoing Ukraine war by both belligerents. Since the invasion of Ukraine on 24 February 2022, the Russian military has been reported to have extensively employed at least six types of cluster munitions: missiles for multiple rocket launchers ‘Hurricane’, ‘Smerch’, ‘Tornado-S’, missile systems ‘Tochka’ and ‘Iskander-M’, as well as RBC bombs (500 with PTAB-1M submunitions). Ukrainian forces were also noted to have used Soviet-origin cluster munition at least three times in the war.<sup>27</sup>

Notwithstanding provisions of CCM and rather widespread humanitarian concern, cluster munitions remain a legitimate weapon of war. Legal prohibition of production, stockpiling, transfer and use remains applicable only to signatories of the conventions even though members of CCM such as the Cluster Munition Coalition (CMC) continue to campaign for the widespread accession to and ratification of the CCM.

In any case, CCM provisions are not relevant in the extant case of DPICM supply to Ukraine. The Convention has never been ratified by the US, Ukraine, or Russia. Additionally, the treaty was never ratified by Poland and Romania, two NATO members through whom weapons would presumably pass to reach Ukraine. Therefore, in the context of the Ukraine war, parties involved in the supply, transit or future use of these weapons are not constrained by any specific legal prohibition against their use, including restrictions imposed under provisions of CCM.

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<sup>24</sup> [“Cluster Munitions at a Glance: Fact Sheets & Briefs”](#), Arms Control Association, July 2023.

<sup>25</sup> [“Convention Text”](#), no. 2.

<sup>26</sup> GICHD and ISU CCM, [“A Guide to Cluster-Munitions Third Edition”](#), Geneva International Centre for Humanitarian Demining, 2016, pp. 32–33.

<sup>27</sup> [“Cluster Munition Monitor 2022:13<sup>th</sup> Annual Edition”](#), Cluster Munition Coalition, August 2022.



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