



CONVENTIONAL ARMS PROGRAMME

**OPPORTUNITIES TO IMPROVE MILITARY
POLICIES AND PRACTICES TO REDUCE
CIVILIAN HARM FROM EXPLOSIVE
WEAPONS IN URBAN CONFLICT**

AN OPTIONS PAPER

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About UNIDIR

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OUTLINE

UNIDIR seeks to enhance knowledge on ways to reduce risks and mitigate harm to civilians from the effects of explosive weapons in urbanized environments. This research frames the issue of explosive weapons in the broader context of protection of civilians in urban conflict and focuses on multilateral operations.

The research takes a comprehensive approach to civilian protection from a ‘risk reduction’ perspective—that is, seeking to understand where the risks and uncertainties lie in the entire ‘civilian protection life cycle’, recognizing that civilian harm is the cumulative effect of numerous risks and decisions made from formulating mandates, planning, execution, assessment and response to lessons learned and institutional learning. Particular focus is placed on the targeting and weaponizing processes.

This paper seeks to contribute to further thinking and dialogue among States and their militaries that conduct operations in urbanized environments on what more can be done to reduce civilian harm by proposing practical measures in the form of options for consideration.

Since the research has covered different types of multilateral operations, such as those by the United Nations, NATO and AMISOM, it recognizes the distinct contexts in which they are conducted. The result is that there is a broad suite of options, which may be applicable in one context, but not appropriate in another, hence some options are expressed in more general terms than might otherwise be the case.

The paper is organized as follows. Section 1 briefly introduces the objectives and the methodology for this research. Section 2 provides a summary of initial shared understandings developed among military and subject matter experts engaged in this research on ways to further reduce risks to civilians and civilian objects from explosive weapons in urban and civilian-concentrated environments. Sections 3 to 9 present a range of practical measures that States and their militaries can consider to better protect civilians before, during and after operations in urban environments, including how States could learn from past and current operations and adapt their policies and practices in the short term as well as over time. Section 10 identifies key research topics that merit further examination. Finally, Section 11 offers concluding reflections on this initial research initiative.

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LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|-------------|---|
| CDEM | collateral damage estimate methodology |
| DDR | demobilization, disarmament and reintegration |
| ICRC | International Red Cross Committee |
| IHL | international humanitarian law |
| NFA | No Fire Area |
| NSAG | non-State armed group |
| NSL | No Strike List |
| RTL | Restricted Target List |
| SME | subject matter expert |
| TCC | Troop Contributing Country |
| TTP | tactics, techniques and procedures |

1. INTRODUCTION

1.1 NATURE OF THE PROBLEM

Modern conflict is complex, dynamic, fractured and fragmented. When conducted in urbanized environments, the risk to civilians and civilian objects grow exponentially due to the density and inherent vulnerability of the civilian population and its dependence on a web of critical and interconnected services that are equally vulnerable to the damaging effects of explosive weapons. The increased prevalence of non-international armed conflict, in which the parties to conflict include violent extremist groups, proxy forces, and groups with blurred political as well as criminal agendas, exacerbates the challenge of protecting civilians from the effects of urban conflict. Contemporary adversaries are often non-State armed groups (NSAGs), which may exploit proximity to civilians and critical infrastructure for their own ends and may not respect international humanitarian law (IHL).

IHL rules regulating the conduct of hostilities apply to the use of explosive weapons in urban environments. These include, but are not limited to, the prohibition of indiscriminate attacks, the prohibition of disproportionate attacks and the obligation to take feasible precautions in attack.¹ There are multiple reasons why the risk of civilian harm from explosive weapons may be increased when operating in urban and other civilian-concentrated areas. These include:

- systemic² and random³ errors in weapon systems;
- wide-area effects other than those caused by inaccuracy, such as large payloads being used against small targets;
- inadequate targeting directives;
- target misidentification;
- target location errors;
- inadequate characterization of structures;
- poor understanding of area utilization;
- the challenge of knowing whether civilians are in a specific building or the extent to which a building is underground or is connected via subterranean structures;
- lack of choice in weapons to deploy;
- weapons failures, or poor selection or performance of fuzes;
- poor condition of munitions used;
- inadequate training on operating in urban environments;
- congested electromagnetic spectrum;
- adversaries using civilians as human shields;
- adversaries dressing as civilians; and

¹ For a concise overview of the normative frameworks applicable to the use of explosive weapons in urban and other civilian-concentrated areas, see section II of the Working Paper submitted by Germany in 2018 to the CCW, “Mitigating the civilian harm from the use of explosive weapons in populated areas”, [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/ADE5D3D54E462D00C125834C002F177C/\\$file/CCW_MSP_2018_WP1.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/ADE5D3D54E462D00C125834C002F177C/$file/CCW_MSP_2018_WP1.pdf).

² Examples of systemic errors include errors in wind estimation or under-weight munitions.

³ Examples of random errors include those resulting from poor quality control procedures or inconsistencies in the type and amount of propellant used.

- inadequate collateral damage estimation and battle damage assessments.

This diverse set of risks raises important questions about how parties to conflict adapt their military policies and practices to address risks, understand impacts, and mitigate civilian harm from the effects of explosive weapons in urbanized environments.

1.2 ABOUT THIS RESEARCH AND OPTIONS PAPER

UNIDIR is undertaking research to enhance knowledge and facilitate dialogue among States and their military forces on effective policies and practices to reduce risks to civilians and civilian objects resulting from military operations using explosive weapons in urbanized environments. This initial research, undertaken between July and October 2019, included informal consultations and production of a food-for-thought paper⁴ in advance of an informal expert workshop comprising military subject matter experts (SMEs) from diverse multilateral operations, together with selected international organizations, NGOs and the International Committee of the Red Cross (ICRC) that are working on this topic. The workshop, held on 24 September 2019 in Geneva, was designed to generate ideas on practical ways to further improve military policies and practices to reduce risks to civilians in urban conflict from effects of explosive weapons. Particular research focus was placed on multilateral operations.

This options paper is the result of this initial research initiative. The purpose of this options paper is to help stimulate thinking and dialogue among armed forces which conduct operations in urbanized environments as to how they might do more to reduce civilian harm by proposing practical measures in a form of options for consideration. These practical measures, drawn from good practices, seek to improve and enhance compliance with IHL. The Research Team acknowledges the diverse contexts of multilateral operations and that some options listed below may not be suitable or practical in some circumstances. Nevertheless, the options provided here offer a broad suite to consider and discuss further. Some of the practical measures may be relevant in more than one section of this paper. To avoid repetition, only a short reference is made to the point made elsewhere.

This paper does not provide detailed elaboration of concerns over developments of urbanization of warfare, nor the normative framework applicable to the use of explosive weapons in urban environments, as these issues are covered in the UNIDIR food-for-thought paper.⁵

1.3 APPROACH AND METHODOLOGY

This research frames the issue of explosive weapons in the broader context of protection of civilians and civilian harm mitigation in urban conflict. It takes a comprehensive approach to protection from a ‘risk reduction’ perspective—that is, seeking to understand where the risks and uncertainties lie in the entire ‘civilian protection life cycle’. This

⁴ See the UNIDIR food-for-thought paper at <https://unidir.org/publication/opportunities-strengthen-military-policies-and-practices-reduce-civilian-harm-explosive>.

⁵ Ibid.

comprehensive life cycle approach, as developed by CNA, reflects care in civilian protection being taken at all points in the planning and use of military force and includes learning loops so that militaries can adapt and improve to overcome risks and challenges (see fig. 1).

This approach permits a broader number of options for potential implementation to be considered, while making it more relevant to different operational contexts as well as to different types of multilateral operations, such as those conducted by the United Nations, the African Union, the European Union, NATO and G5 Sahel, for example. UNIDIR accepts that urbanized environments are varied, as are the mandates under which multilateral organizations operate—no one solution will be appropriate for all cases.

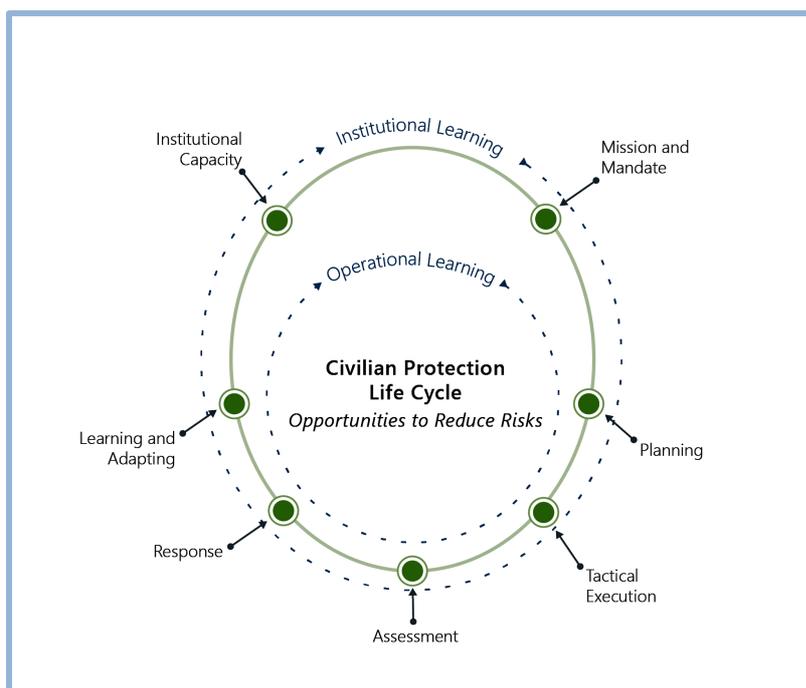


FIGURE 1: Civilian Protection Life Cycle⁶

1.4 WORKING ASSUMPTIONS

The working assumptions of this paper are unchanged from the Food-for-Thought Paper⁷.

1.5 LIMITATIONS

This research activity specifically precludes consideration of space-based warfare and effects or those from offensive cyber operations in order to retain its focus on mitigating civilian harm from the effects of explosive weapons. This is not to underplay the potential effects of such activities, which merit separate study.

⁶ Designed by CNA.

⁷ UNIDIR food-for-thought paper at <https://unidir.org/publication/opportunities-strengthen-military-policies-and-practices-reduce-civilian-harm-explosive>.

2. SHARED UNDERSTANDING

Despite the varied experiences of the delegates from multilateral operations, SMEs participating in this initial research developed the following shared understandings:

- The **risks to civilians from urban warfare are considerable**, and while good practices exist, there are opportunities to identify additional practical measures to better reduce and mitigate risk to civilians. Individual operational experiences and lessons for protecting civilians are valuable but in practice are rarely documented, applied to future operations or shared among States. While operational experiences and contexts may be different, there are principles that still apply broadly and hence it is valuable to exchange and discuss examples. **Institutionalizing the exchange of policy and practice among militaries** to reduce risks to civilians and further strengthen mitigation measures is essential, including to foster better lessons learned and adaptation of practice over time.
- A **risk reduction framework** is central to better protecting civilians in urban operations. Risk reduction entails first identifying and understanding the risks, including their aggregate and cumulative nature, and then seeking to reduce them. Reducing risks to civilians from the use of explosive weapons in urbanized environments requires **choices in military strategy and capability** to be made available to a deployed force. Even when choices in strategy and capabilities may be restricted or limited, **practical measures can be undertaken to minimize and mitigate civilian harm**.
- Applicability of risk reduction is not limited to decisions and actions relating to the choice of weapons that militaries may deploy. On the contrary, reducing risks to civilians would benefit from a **comprehensive approach that covers the ‘civilian protection life cycle’** of decisions and actions that militaries must take before, during and after military operations to protect civilians. How militaries formulate mandate, plan, collect and analyze intelligence, undertake targeting and weaponeering processes, and assess and respond to incidents of harm all form an essential part of this life cycle. **Engagement with relevant actors that are involved in this life cycle is critical** for efforts to better protect civilians from effects of urban conflict, including the use of explosive weapons.
- **Further research and dialogue on practical measures** that States and their militaries can take to reduce risks to civilians from explosive weapons throughout the civilian protection life cycle would be beneficial. This approach is likely to yield improvements in policy and practice, thereby supporting relevant multilateral processes to protect civilians in urban warfare.

3. Key Insights—Mission and Mandate

3.1 NATURE OF PROBLEM

As stated, modern conflict is complex, chaotic and dynamic, especially when conducted in urbanized environments. Planners must consider how a military campaign might evolve, who is involved, including NSAGs and partners, as well as understanding the implications of conducting three-dimensional operations in an urbanized environment, in which the civilian population is inherently vulnerable to effects of explosive weapons and dependent upon the delivery of interconnected services that are equally vulnerable.

3.2 INTENDED OUTCOMES

The intended outcome of this section is to provide planners and those responsible for formulating mandates for multilateral operations with a series of options for consideration that will put the reduction of civilian harm at the centre of their strategy, so that campaign plans better reflect complexity and help to identify tasks and resources required.

3.3 OPTIONS

Doctrine and policy-related considerations:

- Place **protection of civilians centrally within the strategy**. This could include specifying how and under what conditions support to partner forces may be provided (such as those outlined in United Nations Human Rights Due Diligence Policy on support to non-United Nations security forces⁸).
- Ensure that there is a **shared understanding of what constitutes protection of civilians in a mandate** and how it is to be implemented.⁹
- Ensure that the mandate takes a **campaign perspective** that includes not only the response strategy by humanitarians but also the recovery phase to avoid military actions undermining those efforts.

⁸ See <http://hrbaportal.org/wp-content/files/Inter-Agency-HRDDP-Guidance-Note-2015.pdf>.

⁹ Interpretations and understandings may vary from one operation to another. Within the United Nations, the policy on protection of civilians is guided by the 2015 Department of Peacekeeping Operations / Department of Field Support Policy on Protection of Civilians in United Nations Peacekeeping, and places the protection of civilians at the heart of the mission senior leadership's political engagement and advocacy. Guidelines that supplement the implementation of this policy include the 2015 Guidelines on Implementing Protection of Civilians Mandates by Military Components of United Nations Peacekeeping Operations, and the 2017 Guidelines on the Deterrence and Use of Military Force in United Nations Peacekeeping Operations. The 2015 United Nations policy on protection of civilians is currently under review.

- **Utilize arms control tools to strengthen the relationships between military components and international organizations as well as NGOs around the protection of civilians** as a common core interest to reduce civilian harm, for instance through the use of **mine action, disposal of surplus and unsafe ammunition, explosive ordnance risk education, and other explosive hazard threat mitigation** activities. Institutional relationships should be fostered ahead of any mandate being crafted: during mandate formulation, engagement among the policymakers, military, and specialized international organizations and NGOs will facilitate understanding of how the military might reduce civilian harm if deployed and create conditions for improved protection of civilians.
- **Consider the development and use of an aide-mémoire which is a compilation of past and existing actions used by the Security Council on the use of explosive weapons** (in particular on limitations and restrictions) to inform the drafting of new mandates or revision of existing mandates. Similar aide-mémoire documents exist for protection of civilians¹⁰ as well as weapon and ammunition management¹¹ in supporting mandate formulation.
- Assess how States might find ways to **influence those actors that consistently violate IHL, especially through the use of wide-area effects explosive weapons**. This might include supporting the **investigation** of war crimes or grave violations, as well as the application of **sanctions**, such as targeted arms embargoes, freezing of assets, limiting travel and other mechanisms.
- Ensure that **legal obligations for protected entities are considered** in the mandate. This includes **protection of medical care** (consistent with Security Council resolution 2286) as well as **protected cultural objects**, as detailed in the 1954 Hague Convention and additional Protocols on Cultural Property Protection.
- Ensure that the **legal obligations of an Occupying Power**¹² are considered if this is a credible scenario.

¹⁰ See https://www.unocha.org/sites/unocha/files/Aide%20Memoire%202016%20II_0.pdf.

¹¹ See <https://www.un.org/disarmament/wp-content/uploads/2018/10/aide-memoire-pub.pdf>.

¹² "Respecting and Protecting Healthcare in Armed Conflicts and in Situations Not Covered by International Humanitarian Law", Advisory Service on International Humanitarian Law, ICRC.

Matériel management-related considerations:

- Ensure vigorous dialogue between political decision makers and military planners to **close the gap between aspirations and resourcing of capabilities, including particular attention paid to matériel capabilities** (e.g. types of delivery systems and ammunition that may be available to deployed forces), **as well as their management capacities** (e.g. conditions and capacity of arms and ammunition storages).
- **Consider, as part of mandate formulation, restrictions on the type of explosive weapons and ammunition that may be imported and deployed** in order to strengthen compliance with IHL and more effective protection of civilians, including from the result of misuse by NSAGs.¹³
- **Consider defining obligations applicable to the safe and secure management of matériel by the host State as well as deployed multilateral forces as part of mandate formulation**, including measures to prevent and mitigate the risk or diversion of explosive weapons to unauthorized end users, in line with relevant international guidelines and standards (such as the International Ammunition Technical Guidelines).
- **Consider imposing technical standards** on the provision or gifting of ammunitions to host States to reduce ammunition-related performance variations.

Partnering-related considerations:

- If considering working **through-by-with Partners**, ensure that IHL obligations are understood and implemented by both partnering and partnered forces, including through the development and implementation practical measures to allow partnered forces to understand and mitigate risks to civilians.
- **Conduct thorough risk assessments of partners prior to engagement.** Such assessments might include, but are not limited to:
 - previous history of IHL compliance;
 - level of IHL awareness and education;
 - effectiveness of chain of command to exercise control;
 - effectiveness of targeting and weaponizing practices and control measures;
 - understanding what is in their inventory to provide choices in response;
 - matériel security management capabilities, such as inventory and stockpile management, to avoid diversion of weaponry and ammunitions;
 - safeguarding ammunition stockpiles;
 - time and potential resources available to prepare a partner force; and
 - evaluation of different partnering models.

¹³ This is an increasing common practice in the Security Council in the context of implementing United Nations arms embargoes. For more information see <https://www.unidir.org/files/publications/pdfs/applying-conventional-arms-control-in-the-context-of-united-nations-arms-embargoes-en-718.pdf>.

- **Develop political strategies when engaging NSAGs.** Strategies may provide opportunities for demobilization, disarmament and reintegration (DDR) or community-based violence reduction programmes, for example. The mandate should give **guidance on the management of NSAGs**. In this process, appreciate that **NSAGs are not homogeneous** and some may have credible motivations for being armed. **Some NSAGs may be partners** to Government forces as part of a broader political objective, while others may be adversaries.
- While a host State may be reluctant to engage with an NSAG to avoid the impression of conferring legitimacy, outreach mechanisms with NSAGs may **persuade them that compliance with their IHL obligations provide greater legitimacy** in the eyes of the population and the international community, and thereby exercise restraint on the use of wide-area effects explosive weapons. Conversely, failure to comply with IHL obligations may lead to **sanctions**.

4. PLANNING

4.1 OVERVIEW OF KEY ISSUES

Planning a campaign requires an understanding of the problem and the operational environment, together with an appreciation of the role of a myriad of actors with which a military force might interact. Militaries must understand the three-dimensional interconnectedness of urbanized environments and service delivery infrastructure in supporting the civilian population. They must also develop an appreciation as to how a conflict might repeatedly change as each party adapts to the tactics and techniques of others to minimize any disadvantages.

4.2 INTENDED OUTCOMES

The intended outcome of this section is to provide options for consideration to reduce risk to civilians from explosive weapons when planning a mission involving an urbanized environment.

4.3 OPTIONS

Doctrine and policy-related considerations:

- Ensure that **risks and implications of choices** such as no Boots-on-the-Ground or declaring some urban areas as ‘non-defended localities’¹⁴ are fully understood by decision makers and active steps are taken to mitigate those risks, not only in planning but also in execution.
- Ensure that policies such as ‘Minimum Military Requirements’ **do not prevent choices of weapons and munitions being offered to military commanders to reduce reliance on explosive weapons.**
- Provide **policy direction in planning regarding the conduct of assessments of civilian casualties**, to address such issues as credibility of third-party open-source reports.
- Consider securing a **policy agreement among Troop Contributing Countries (TCCs)** to take collective responsibility for any civilian casualties, as appropriate.¹⁵
- When comparing different courses of action in planning, consider using **civil harm mitigation potential** as one of the factors in evaluation.

¹⁴ As defined in Rule rule 37 of Customary IHL, ICRC IHL Database, https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule37

¹⁵ A number of States have considered this policy, arguing that targeting decisions and strikes are the result of a number of TCCs providing inputs or various kinds. For further considerations, see Section 7, Response.

- Enable military planners to have **access to civilian SMEs** who can provide information to enhance understanding of the civil urban environment and who are **embedded into planning activities**, which should include healthcare provision and other essential services.
- Develop **model information-sharing agreements** with key actors, such as the United Nations Office for the Coordination of Humanitarian Affairs, to facilitate exchange of data to avoid unintentional strikes on humanitarian and other actors.
- Consider **outreach programmes to engage with NSAGs** as appropriate, such as those by Geneva Call, to **promote compliance with the core principles of IHL**, through **Deeds of Commitment**,¹⁶ for example.
- Consider as part of planning **drivers to positively influence NSAGs** to commit to compliance; these may include a spectrum of instruments, from **training, education, security sector reform, DDR or community-based violence reduction** programmes, for example.
- Develop policies and procedures to confirm whether a person is a combatant or civilian in order to meet **distinction** requirements.

Organizational and process-related considerations:

- Identify **requirements for structures** not available in peacetime organizations, such as Civilian Casualty Mitigation Teams; Civilian Casualty Tracking, Analysis and Reporting Cells; enhanced Civil-Military Coordination teams and timely methods of assessing civilian harm.
 - Where possible, create a Command Group-led **Management Board** to oversee policy for all civilian harm-related topics, which may be supported by functional working groups.
 - **Encourage senior leaders promote the use of such tools** in planning and guidance to reduce civilian harm.
- Provide direction in planning as to how **data for assessing civilian casualty incidents is to be collected**. Understand how other institutions (such as the United Nations or other international organizations and NGOs) characterize incidents, in order to establish potential causes for disparities.¹⁷
- Develop and **maintain communications channels with the ICRC and other international organizations and NGOs** that operate in conflict zones and encourage them to **support efforts to distinguish between military objectives and civilians**, by marking protected objects, such as buildings, vehicles and personnel, and develop means to maintain accuracy in recording such details.

¹⁶ See <https://www.genevacall.org.what-we-do/>.

¹⁷ "Civilian casualties: making sense of the numbers", NATO Op RESOLUTE SUPPORT, <https://rs.nato.int/media-center/backgrounders/civilian-casualties-making-sense-of-the-numbers.aspx>.

- Planning should **facilitate the safe and voluntary evacuation of civilians**, which should include **security screening** to identify fleeing combatants.
- **Allocate sufficient resources for battle damage assessment (BDA)**, to reflect the types of weaponry available, such as air, aviation, artillery or close combat direct fire weaponry. Consider how to improve the accuracy and timeliness of assessments during planning, which should include the possibility of third-party support.
- Systematically **gain access to lessons learned databases and incorporate such information into planning processes**, identifying good practices to:
 - develop better insights into secondary and tertiary effects of the use of explosive weapons;
 - civilian harm mitigation measures and structures;
 - force structures and composition;
 - pre-deployment training in urban warfare;
 - partnering challenges;
 - assessment techniques in determining civilian harm in BDA; and
 - fire control support measures.
- **Identify resource requirements for a Lessons Identified process**, including data collection and management requirements, as part of planning processes.

Targeting and weaponeering-related considerations:

- Define requirements for **certifying standards for targeteers** and the designated Collateral Damage Estimate Methodology (CDEM), as well as ensuring **certified targeteers retain their currency** through realistic, planned training and re-certification.
- Where feasible, ensure **targeting or engagement directives** give guidance on approved target sets; Rules of Engagement, complete with amplifying guidance; Target Engagement Authority for differing levels of collateral damage; nomination of a CDEM and procedures; and Positive Identification and Pattern of Life standards as a minimum.
- Issue **guidance that characterizes risks to civilians from explosive weapons** and introduces tactical options and appropriate oversight for the use of force to help manage these risks. Such guidance or frameworks should include **direction on the use or restricted use of specific weapons and munitions** in urbanized environments, to include the **level of Target Engagement Authority** required to approve the use of such weapons, an example being the International Security Assistance Force's "**presence of civilians is presumed**"¹⁸ policy or AMISOM's restriction on the authority to fire 107 mm recoilless weapons.

¹⁸ "Afghanistan Civilian Casualty Prevention", US Center for Army Lessons Learnt, no. 12-16, June 2012.

- Consider measures and standards to strengthen **security of stockpiles of host Government as well as deployed multilateral forces**, to prevent their diversion to unauthorized recipients, through use of **physical security, recordkeeping, stockpile management and post-distribution controls**, such as the establishment of an **internal pos-distribution verification team**. Ensure that **resourcing requirements** for implementing these arms control measures are considered as part of planning.
- Consider as part of planning access in the inventory to **low-yield weapons and munitions** that can reduce civilian harm.
- **Ensure protected civilian objects, such as hospitals, are incorporated into No Strike Lists (NSL), Restricted Target Lists (RTL), designation of No Fire Areas (NFA) or other fire support coordination measures.**
 - Include **cultural heritage sites** in these relevant lists, since civilians may be subject to identity conflict and congregate around cultural property that symbolizes their identity.
 - Developing and maintaining accurate lists requires significant effort in advance of an operation, so **institutional links between relevant ministries** are a prerequisite for success.

Training-related considerations:

- Assess requirements for **pre-deployment training** during planning, to include policies for **pre-deployment visits and in-theatre assessments**.
- Consider **training facilities requirements**, such as specialized urban environment facilities, live firing ranges, modelling and simulation capabilities, experimental and testing facilities, and research and development needs.
- Ensure that **training incorporates likely adversary tactics, techniques and procedures (TTPs)** that place civilians at risk, such as co-location in civilian areas, using civilians as human shields, and cutting off potential evacuation routes.
- Ensure that pre-deployment **training integrates better understanding of the characteristics of explosive weapons** that will be used by deployed forces, including the types and sizes of munitions, as well as blast and fragmentation range or effects, to include reverberating effects of explosive force and the nature and interconnectivity of critical infrastructure and essential services.
- Ensure that **standard operating procedures** for managing civilian casualty incidents are **updated regularly**, incorporating lessons learned, and made available at planning stage when possible.

5. EXECUTION

5.1 OVERVIEW OF KEY ISSUES

Finding, fixing and tracking targets before striking them in urbanized environments is very challenging because of the potential for obscuration by the physical environment, the inherent vulnerability of the civilian population to the effects of explosive weapons, and the fluid movement of populations and the web of interconnected services on which they depend—damage to which could cause civilian harm that is **not proportional** to the desired effects of an attack. Reliable and accurate intelligence and availability of multiple sensors can reduce target misidentification, which is a frequent cause of civilian harm. A key challenge is the ability to model the potential collateral damage effects in urbanized environments—especially the secondary and tertiary effects, that is, the ‘reverberating effects’ of explosive weapons—including for the purposes of minimizing or avoiding civilian harm, as well as for determining whether the tests of **proportionality, distinction and military necessity** are met.

5.2 INTENDED OUTCOMES

The intended outcome of this section is to provide options to reduce civilian harm from the effects of explosive weapons.

5.3 OPTIONS

Doctrine and policy-related considerations:

- Consider where appropriate development of **minimum information-exchange standards** between militaries, host States, and international organizations and NGOs to avoid unintentional targeting of civilians and civilian objects.
- Use a **tiered approach to evaluating risk for civilian harm** and incorporate different practices to minimize harm. These may include:
 - selection of the **lowest-yield weapon** to deliver the desired effect;
 - **time of day** for an engagement;
 - likely effectiveness of any **precautionary warnings** and associated risk of being manipulated by an armed adversary;
 - **fuzing options**; and
 - **direction of heading** of attack.
- Ensure **access to multiple sources of intelligence** to improve reliability and accuracy in providing Positive Identification to facilitate **distinction** requirements.
- Develop means of **assessing the secondary and tertiary effects of explosive weapons** in urbanized areas. In the absence of an agreed model, incorporate assessments of the civilian population from a sectoral perspective, as well as through cross-cutting perspectives.

- **Develop or enhance dedicated doctrine for conducting military operations in urbanized environments**, leveraging lessons learned to develop means of reducing reliance on explosive weapons.
- Consider **abandoning mission if no BDA sensors are available**, given the necessity of understanding the impact of the attack on the civilian population and civilian objects.
- Develop **multiple means and methods for providing precautionary warnings** in advance of attack, accounting for the potential of an adversary to turn these against a civilian population, thereby generating more harm.
- Develop means of effectively **identifying healthcare and other civilian objects** using modern sensors, such as infrared markers, beacons or reflective panels, or process changes, for example requiring the exchange of NSL information by datalink to those platforms engaging targets.

Organizational and process-related considerations:

- Ensure **database management practices** are put in place to maintain currency and verification of locations of civilian objects on NSLs, RTLs or NFA lists, through agreed information-exchange mechanisms.
- Ensure that targeting processes are **documented and audited** and that targeteers undertake **formal certification** against defined standards. **Re-certification** should be undertaken regularly, as appropriate.
- Where appropriate, establish working groups that **scrutinize proposed targets**. Such working groups should be **multi-disciplinary**¹⁹ so that effects on people and infrastructure are factored into decision-making. These groups should include advisers on legal, political, gender, cultural, strategic communication, engineering and civil-military cooperation issues from within the military staff, but also civilian expertise on infrastructure and health.
- Develop the means of creating a near-real-time **Common Operating Picture** that incorporates civilian and protected objects. Militaries could provide a 24/7 hotline that allows international organizations and NGOs to report movements or new locations as a deconfliction measure. Those manning the hotline must be able to validate information rapidly and be empowered to intervene in targeting decisions.
- Provide senior decision makers with **analytical insights** to challenge and **refresh directives** using an evidence base to compare planning assumptions with outcomes in the field.
- Direct periodic **'deep-dives'** to increase understanding of civilian casualty incidents and associated impact at the socioeconomic level.

¹⁹ For example health, transport, communications, water, sanitation, power and education.

Matériel management-related considerations:

- Identify **tools and capabilities** that can assist **de-escalation** and minimize collateral damage, such as Very Low Collateral Damage munitions, non-lethal weapons or methods of deactivating fuzes in flight following guidance failure.
- **Consider manipulation of technical features of explosive weapons** (including warhead, calibre or fuze), as appropriate, to minimize incidental harm to civilians, in particular for those ammunition that may not have been designed to be used in civilian-concentrated areas.
- Ensure that **ammunition storage and handling follow international guidelines to prevent random errors in performance**. Insert **quality assurance** measures into procurement processes, especially for those States that receive items **as gifts or grants**, but that may **lack the capacity to assess** received items from a technical perspective to understand the risks.
- Ensure **proper record-keeping** of firing logs and barrel wear to reduce systematic errors.
- Promote use of **computer-aided ballistic computations** with meteorology support to reduce risk.

Training-related considerations:

- Ensure that not only targeteers but **other SMEs are trained to understand the CDEM and its limitations** to enhance the quality of advice and decision-making.
- Develop training modules that are theatre-specific. Realistic facilities for testing concepts, tactics and techniques relating to **tactical alternatives to the use of explosive weapons** are required prior to deployment. Tactical training should also **offer opportunities to better understand weapons effects** in an urbanized environment.
- Develop a better understanding of the **longer-term consequences of explosive weapons use in urban environments on recovery or reconstruction operations** for the purposes of decision-making.

6. ASSESSMENT

6.1 OVERVIEW OF KEY ISSUES

Battle Damage Assessment of the effects of a target engagement in an urbanized environment and on the civilian population and civilian objects presents specific challenges. Targets may become obscured, airborne video surveillance platforms cannot see inside collapsed buildings or under rubble, and identifying secondary and tertiary effects can be complex. The lack of Boots-on-the-Ground to conduct on-site assessments and interview witnesses, as well as problems of deception, misinformation and disinformation can all conspire against developing an accurate assessment.

6.2 INTENDED OUTCOMES

The intended outcome of this section is to provide options that strengthen the capacity to undertake assessments of civilian harm in urbanized environments so that the root causes of civilian harm is identified and addressed.

6.3 OPTIONS

Doctrine and policy-related considerations:

- **Develop methodologies for determining civilian harm from reverberating effects**, to include impacts on healthcare, education, transportation, communications, water, food security and sewage networks.
 - **Assign appropriate resources to conduct BDA**, with a **blend of sensors** to generate a higher level of confidence in the assessment.
 - **Develop a hierarchy of BDA levels**, such as Level 1 for physical damage, Level 2 for functional damage to a structure, Level 3 for system impact, etc., so that assessment of civilian harm, both direct—and to the extent possible—indirect impacts are included.
 - Conduct **comparative analyses between CDEM-derived estimates and actual observed outcomes** to understand reasons for variations. Use **reach-back** if no organic capacity exists.
 - Consider **the use of different surveillance methods and technologies that facilitate better understanding of civilian harm in collapsed structures**.
- **Develop policy, standards and processes for reporting allegations and real incidents in a timely manner.**
 - **Assign resources, including human resources, to monitor media channels** to identify potential incidents quickly.
 - **Test processes with the local population** for ease of use. Where possible, standardize across TCCs.
 - Develop processes that triage allegations and create **indicators to test for credibility**.

- **Develop protocols to evaluate data from other organizations that collect data on civilian harm** to cross-check and evaluate variations. Compare with other sources of information on civilian deaths.
- **Consider multiple sources of information²⁰ to aid assessment**, including from civil society organizations or other civilian actors with access to the sites to identify potential anomalies as a **means of improving verification** processes.
- Conduct **regular assessments across TCCs** within a multilateral operation to **identify variations in weapon employment usage** to generate opportunities for further improvement, sharing of good practices, and lessons learned.
- **Develop strategies and protocols for recording and assessing allegations of civilian harm by partner forces.**

Organizational and process-related considerations:

- Assess the capacity to operationalize and maintain **specialist structures to conduct assessments**, such as Civilian Casualty Mitigation Teams and Civilian Casualty Tracking Analysis and Response Cells. **Consider as part of planning the risks associated to outsource** some assessment functions if the force has no Boots-on-the-Ground, acknowledging the requirement to assess the risk of accepting third-party inputs as trusted implementing partners.
- Consider **acquiring specialist assessment capacity** through third parties that use techniques similar to those of Forensic Architecture for very serious incidents.²¹
- Ensure there is a **feedback loop to targeteers on outcomes of assessments** to strengthen the protection of civilians and civilian objects in future target development and decision-making.

Training-related considerations:

- **Practice procedures for BDA**, including ways to verify information and to address reporting bias.
- Consider **cultural practices** that may make access to and implementation of assessments more difficult.

²⁰ This may include eye-witness statements, video footage, stills or updated social norms (number of people living in different types of structures, etc.) as well as socioeconomic impacts.

²¹ See <https://forensic-architecture.org/investigation/airstrikes-on-m2-hospital>.

7. RESPONSE

7.1 OVERVIEW OF KEY ISSUES

The way in which an armed actor responds to allegations of civilian harm is of strategic importance. It affects the perceptions of the host State's population and government, of the international community, of the TCCs in a coalition. Failures or errors in response may fuel further opposition through exploitation by an adversary in the information domain.

7.2 INTENDED OUTCOMES

The intended outcomes of this section are to provide options to consider in responding to allegations of civilian harm that will provide support to victims and minimize exploitation by others to undermine the effectiveness of the mission.

7.3 OPTIONS

Doctrine and policy-related considerations:

- Consider how **appropriate medical care** will be provided during operations and assign the necessary resources and access.
- Ensure **public education programmes** are in place on the risks of handling explosive remnants of war or unexploded ordnance following strikes.
- Negotiate a **common policy among TCCs on multilateral operations on amends and victim assistance** to avoid creating friction within the civilian population.
- Negotiate a policy with States participating in multilateral operations to **accept individual State attribution** for an incident, in order to promote individual State responsibility and accountability.
- **Avoid compensation measures that undermine the local economy** and the legitimacy of the Government from a civilian population perspective. Consider **whether it is more appropriate for a host State** requesting support from multilateral organizations to offer condolences, including ex gratia payments, as one element in a campaign to rebuild local society.
- Create a **menu of options for making amends to victims**, which may range from acknowledgement and apologies, to material or financial assistance.
- Using the assessment concepts above, **acknowledge allegations** of civilian harm quickly but without speculation about attribution. Ensure that **communications channels are optimized** for fast response. State the expected time of future updates.
- **Develop a culture** where admission of a mistake is seen as a strength, not weakness, in order to promote honest reporting.

Organizational and process-related considerations:

- **Utilize specialized SMEs to support planning of amends and victim assistance.** Such advice might include **insights into local market rates and sources of material and labour, healthcare needs and priorities, and public education messages** to avoid explosive remnants of war, for example.
- Ensure that the **process for assessing allegations and subsequent investigations**, when justified, is conducted with **transparency in order to build trust**.
- Conduct **engagements with key local leaders to apologize for harm** caused by operations.
- **Publicize the results of assessments and investigations in a timely fashion.** Demonstrate what measures are being taken to prevent similar incidents from occurring in future.

8. LEARNING AND ADAPTING

8.1 KEY ISSUES.

Modern conflicts are dynamic and constantly evolve as the action–reaction–counter-reaction cycle results in the adoption of different TTPs by each party to secure an advantage over others. Some States rotate their forces every three months; others extend rotations to 12 months in high-tempo conflicts. These shifting dynamics require agile leadership and responsive policies and processes that exploit data to provide evidence for change.

8.2 INTENDED OUTCOMES

The intended outcomes of these options are to present ways in which operational learning is accelerated, leading to faster adaptation and reduced civilian harm.

8.3 OPTIONS.

Doctrine and policy-related considerations:

- **Recognize the strategic, and not just legal, imperative to protect civilians**, with clear messaging to this effect from senior leadership and decision makers, as well as consistent monitoring of trends driving change in practices and policies.
- **Encourage the institutionalization of the collection and sharing of lessons learned and good practice among States** on reducing risks to civilians from explosive weapons, and include support through relevant political processes.
 - **Develop policies for lessons learned processes**, including annexes in operational plans detailing responsibilities and procedures.
 - **Organized periodic meeting among States** to facilitate the sharing of lessons and practices on reducing the risk to civilians from explosive weapons in urban operations.
- Consider **how big data could support rapid learning** on the primary, secondary, tertiary, cumulative and long-term effects of explosive weapons use in urban environments.
- **Create accepted metrics for measuring performance regarding protecting civilians from explosive weapons** and measure over these time.
- Instill a **culture of After-Action Reviews** following urban operations to determine any lessons identified.

Organizational and process-related considerations:

- **Compile lessons from multilateral operations on reducing risks to civilians from explosive weapons**, especially at the **subregional level**, where specific contexts and dynamics are studied and better understood.

- **Define processes for validation of lessons identified** and methods of ensuring they are used to update training materials and TTPs. Assess whether lessons identified in one theatre are suitable and appropriate for transplantation in another. Specific theatre validation may be required.
- **Use the data from civilian casualty monitoring teams or civilian casualty tracking analysis and response cells to gain insights into emerging trends** so that initiatives are put in place to prevent them from escalating or to respond to increases in civilian casualty risks or numbers.
- Consider the **development of a common database to which States contribute their lessons learned** on reducing risks to civilians from explosive weapons in order to share practices and encourage the transfer of knowledge.
- Consider **embedding trained lessons-identified specialists into operational units** who can accelerate the dissemination of new practices to reduce risk to civilians from explosive weapons.

Training-related considerations:

- **Integrate, as part of Train-the-Trainers programmes** (such as on the protection of civilians or ammunition management in multilateral operations), a dedicated training component on reducing risks to civilians from explosive weapons in urban environments.
- Consider the use of **Mobile Training Teams dedicated to good targeting and weaponeering practices** in theatre to spread new TTPs and prepare units prior to deployment.

9. INSTITUTIONAL CAPACITY

9.1 KEY ISSUES

Despite wishes for short-duration military campaigns, conflicts are frequently protracted and dynamic, requiring military forces to adapt quickly to new circumstances in order to reduce civilian harm. This is especially the case in urbanized environments where there are so many different variables that challenge military decision makers. The speed with which operational learning feedback loops must operate is necessarily fast if they are to keep forces agile, but this is not typically complemented by the speed with which institutional feedback loops operate, because of process, funding and other resource implications.

9.2 INTENDED OUTCOMES

This section is designed to stimulate thought on options with which to improve institutional capacity that is more responsive to change.

9.3 OPTIONS

Doctrine and policy-related considerations:

- **Create a national policy that defines commitments for reducing the risk to civilians from the effects of explosive weapons**, including monitoring of trends and the capture and implementation of lessons learned.
- **Encourage greater Security Council engagement on explosive weapons**: The Security Council could be utilized for greater visibility and information-exchange relating to protecting civilians from explosive weapons in operations, including through its **thematic meetings or open debates, or mission-specific consultations**. Other options include the **continued utilization of reports of the Secretary-General on issues pertaining to explosive weapons**. Reports submitted by the Secretary-General to the Security Council and the General Assembly already play a critical role for increasing awareness of the threat posed by explosive weapons globally—including on issues pertaining to mine action, improvised explosive devices as well as the protection of civilians.
- **Explore additional practical measures to reduce risks to civilians from explosive weapons in urban environments**:
 - **Assign a proportion of the budget for field research and experimentation**. Priorities might include: improving understanding of reverberating effects, delivery of more effective precautionary warnings, modelling the effects of low-yield weapons, non-lethal instruments such as offensive cyber operations, etc.
 - **Partner with industry to present options** to experiment and develop ways to better reduce risks to civilians from explosive weapons in urban and civilian-concentrated areas, avoid reverberating effects, and identify when civilian harm occurs.

- **Create case studies dedicated to the use of explosive weapons in urban and other civilian-concentrated environments**, both of successes and failures. These might include instances of the most common causes of civilian harm, such as target misidentification, challenges such as verification of civilian casualty numbers, or successes where alternative tactics has saved civilians from harm.

Organizational and process-related considerations:

- Consider the development of a **basic handbook for managing targeting and weaponeering processes for TCCs** in relevant peace operations, to include principles and obligations under IHL and the law of armed conflict.
- Establish **concrete processes for continuous improvement to support institutional learning** on reducing risks to civilians from explosive weapons in urban environments. These may include:
 - **screening and validating observations and lessons identified specifically for explosive weapons effects** from operations, including through use of after-action reviews;
 - **establishment of functional or thematic working groups dedicated to reducing risks to civilians from explosive weapons** at the national or regional level;
 - **development of national or operations-specific roadmaps** for reducing risks to civilians from explosive weapons in urban environments;
 - **establishing information-sharing agreements on lesson learned** for reducing civilian harm from explosive weapons, including with specialized organizations; and
 - **engaging with specialized research organizations** to better understand impacts of explosive weapons in urban operations, or to document practices across operations over time.

Training-related considerations:

- Establish **formal processes for reviewing course content applicable to pre-deployment training** that embraces lessons learned from operations in order to reduce civilian harm and ensure that content includes specific material on reducing risks to civilians from the use of explosive weapons.
- Organize **dedicated sensitization seminars and workshops at strategic as well as operation level** on reducing risks to civilians from explosive weapons, inviting academia, think tanks and other specialist groups to discuss with militaries the challenges and opportunities for improvement. Such workshops may be most appropriate for national or subregional operations.
- **Consider the establishment of a Centre of Excellence for protecting civilians in urbanized warfare**, and include content on reducing risks to civilians from explosive weapons in civilian-concentrated areas.

10. RECOMMENDED RESEARCH PRIORITIES

During this initial research, UNIDIR, together with relevant military and protection of civilians SMEs, identified specific areas where more research would be valuable. These include:

- **contextualization of principles for urban conflict in specific subregional settings:** identifying specific risks and applying the civilian protection life cycle principles to the specific environment, mission, force, and available capabilities;
- continued research and development of **low collateral damage weapons** to provide greater choice, while minimizing risk;
- develop **better understanding of the direct and indirect effects** of explosive weapons in urbanized environments, including on the delivery of essential services and the implications for CDEM;
- develop **better understanding of secondary and tertiary effects** of explosive weapons on service delivery in urbanized areas, such as utilities and healthcare, in order to inform decisions balancing **military necessity and proportionality**;
- **identify means of providing ‘feasible’ precautionary warnings** effectively, without jeopardizing the safety of the civilian population;
- **identify good practice for reducing civilian harm in different types of urban operations** (e.g. air campaigns with no ground presence, ground campaigns employing small arms and artillery fire, partnered operations);
- **improve the characterization of urbanized environments** to facilitate development of tailored policy, doctrine and training, to address issues such as rapid displacement and provision of basic services;
- **build good practice regarding identification and tracking of civilian harm** in an urban context, with attention to particular challenges introduced by the characteristics of explosive weapons;
- improve civilian harm assessments and lessons learned processes, including **identification of metrics for measuring progress and maintaining data** for those assessments;
- develop modalities for **data exchange requirements and governance protocols** among military forces, host States and international organizations and NGOs to prevent unintentional targeting of civilian objects and protected sites, including healthcare and medical sites, as well as cultural property;
- **identify ways to better influence the behaviour of NSAGs**, both partner groups and adversaries, regarding potential harm to civilians from explosive weapons. This may include examining measures that States can take (for example to mitigate the risk of acquisition by NSAGs of explosive weapons and related components), as well as those measures that

NSAGs can commit to undertaking (for example to restrict use of certain weapons types as part of partnering, peace agreements or code of conduct);

- further identification of **non-lethal solutions** that avoid physical and structural damage; and
- develop better understanding of **space-based and cyber warfare** on civilian populations in urbanized environments (though these topics lay outside the scope of this research stream).

11. CONCLUSIONS

Reducing risks to civilians from explosive weapons in urban conflict is first and foremost a legal obligation, but it is also of strategic importance and the failure to do so can undermine support for a mission domestically, abroad and in the territory enduring conflict. Firmly placing risk reduction and civilian harm mitigation at the centre of a military strategy will help to shift the mindset and reframe concepts such as military necessity, unnecessary suffering and proportionality when deciding whether and how to engage targets in urbanized environments.

There is growing concern among States, international organizations (including the ICRC) and NGOs about the use of explosive weapons in urbanized environments, and recent empirical evidence illustrates their widespread use and impact in various operational contexts.

Many military forces that seek to comply with IHL have made progress towards reducing civilian harm from explosive weapons but clearly more needs to be done. This paper provides a suite of practical options for consideration by militaries that embraces the life cycle of civilian protection. Each conflict is different, so the options provide a stimulus for introspective analysis about what more could be done.

Key options for consideration highlighted in this paper included:

- ensuring that protection of civilians is put at the center of strategy;
- matching mandates to capabilities and resourcing constraints;
- understanding partnering obligations and implications;
- issuing guidance on the employment of specific weapons and ammunitions, including restrictions and controls on transfers, stockpiling, use as well as disposal;
- developing information-exchange protocols between militaries and international organizations and NGOs;
- ensuring that organizational requirements to mitigate civilian harm are identified and resourced;
- ensuring access to civilian expertise to enhance understanding of reverberating effects of explosive weapons in urban environments;
- properly planned pre-deployment training that takes into account better understandings of effects of the explosive weapons to be deployed;
- creating operational and institutional feedback loop mechanisms, including through institutionalizing exchange of policy and practice among States;
- continuing development of alternative low collateral damage solutions and procedures;

- developing and implementing assessment and response mechanisms, including tailored approaches to respond to the characteristics of explosive weapons in urban environments; and
- extracting lessons identified from other theatres, including at subregional levels, to analyze and implement where valid and appropriate.

OPPORTUNITIES TO IMPROVE MILITARY POLICIES AND PRACTICES TO REDUCE CIVILIAN HARM FROM EXPLOSIVE WEAPONS IN URBAN CONFLICT

AN OPTIONS PAPER

UNIDIR is enhancing knowledge and facilitating dialogue among States and their militaries on ways to reduce risks and mitigate harm to civilians from the effects of explosive weapons in urbanized environments. This paper focuses on multilateral operations and offers a broad suite of practical measures, in the form of options, that could improve policies and practices to better protect civilians in urban conflict.



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