



EXPLOSIVE WEAPONS WITH WIDE AREA EFFECTS: A DEADLY CHOICE IN POPULATED AREAS

EXTRACT: CHAPTER 5

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FOREWORD

While working to protect and assist people affected by armed conflict around the globe, the International Committee of the Red Cross (ICRC) has, for many decades now, borne witness to the human suffering resulting from the use of explosive weapons with a wide impact area in urban and other populated areas. These are large bombs and missiles, rockets, indirect and often inaccurate fire weapon systems such as artillery and mortars, and multi-barrel rocket launchers. Evidence from our frontline work and the accounts of countless individuals affected confirm that the use of such weapons in populated areas is a major cause of civilian harm in today's armed conflicts.

Heavy explosive weapons put at risk everyone and everything within their wide impact areas, often significantly beyond their target. In environments where military objectives, civilians and civilian objects are commingled, the results are devastating. Scores of civilians are killed or injured, often left with permanent disabilities or grave mental trauma. Cities are left in rubble, with houses, infrastructure, schools, means of livelihood and cultural sites destroyed. Services essential for human survival collapse, leaving entire populations without access to water, sanitation, electricity or health care – causing more death and disease, and triggering displacement. Streets and backyards are littered with unexploded ordnance, which keep on killing long after hostilities have ended. Development gains are undermined.

These direct and reverberating effects are increasingly foreseeable and warring parties have a responsibility to prevent and mitigate them. This is not only a humanitarian imperative, but often also a legal one. The principles and rules of international humanitarian law (IHL) apply to the use of heavy explosive weapons in populated areas, and, depending on the circumstances, may well prohibit such use.

The civilian toll of bombing and shelling is unacceptable. There is an urgent need for states and all parties to armed conflict to review and adapt their military policy and practice, and to avoid the use of explosive weapons with a wide impact area in populated areas. These weapons should not be used in populated areas unless sufficient mitigation measures can be taken to limit their wide area effects and the consequent risk of civilian harm. First and foremost, this requires a change in mindset: acknowledging the high risk posed

by heavy explosive weapons to civilians, and the difficulty of using them in populated areas in compliance with IHL; elevating the protection of civilians into a strategic priority that should permeate all stages of military decision-making; taking a number of preventive and mitigation measures at all levels – strategic, operational and tactical – to avoid, where possible, conducting hostilities in populated areas, to ensure alternatives to the use of explosive weapons with a wide impact area, and to identify and implement good practices on the use of such weapons to limit their effects; training and equipping armed forces accordingly, so that they can fight in populated areas in a manner that respects IHL and minimizes risks to civilians.

This report provides a range of good practice recommendations to political authorities and armed forces on a number of such preventive and mitigation measures. While some militaries have in place restrictions and limitations on the use of heavy explosive weapons in populated areas, additional measures in this respect are urgently needed. Efforts are currently under way to develop internationally agreed standards in this respect; and it is my hope that this report will contribute to fostering the necessary change of behaviour among parties to armed conflicts. Faithful implementation of the report's recommendations would significantly strengthen protection for civilians and facilitate respect for IHL in environments where achieving such protection and respect is a particularly challenging task.



Peter Maurer

ICRC President

A bird's-eye view of the damage in the worst affected area of Marawi in the Philippines.



CHAPTER 5

STRENGTHENING THE PROTECTION OF CIVILIANS BY AVOIDING THE USE OF EXPLOSIVE WEAPONS WITH A WIDE IMPACT AREA IN POPULATED AREAS

The findings of this report indicate that **the most deleterious consequences of urban warfare result from the use of explosive weapons with wide area effects**. The report shows that when such weapons are used in urban and other populated areas, they are very likely to have indiscriminate effects: in other words, there is a high risk of their striking military objectives and civilians or civilian objects without distinction.

This underpins the ICRC's position that **the use of explosive weapons with a wide impact area should be avoided in populated areas, owing to the significant likelihood of indiscriminate effects** and despite the absence of an express legal prohibition against specific types of explosive weapons. Such an avoidance policy means that **explosive weapons with a wide impact area should not be used in populated areas unless sufficient mitigation measures can be taken to reduce such risk**, namely by limiting the weapons' wide area effects and the consequent risk of civilian harm.

The 'avoidance policy' that the ICRC calls on states and parties to armed conflict to adopt is based on the following findings:

- the highly concerning **pattern of significant direct and indirect civilian harm observed when explosive weapons with a wide impact area are used in populated areas**, leading to the devastating humanitarian consequences witnessed in recent urban conflicts, as described in Chapter 1
- **the wide area effects of the types of explosive weapons of concern are design-dependent and foreseeable**, as explained in Chapter 2
- the **legal concerns** raised by the use of explosive weapons with a wide impact area in populated areas, **notably under the IHL prohibitions against indiscriminate and disproportionate attacks**, as analysed in Chapter 3

- **examples of existing military policies and practices restricting the use of certain explosive weapons with wide area effects, or the adoption of measures to reduce such area effects, in populated areas, in order to mitigate risks to civilians**, as presented in Chapter 4; such examples demonstrate that an ‘avoidance policy’ that incorporates appropriate mitigation measures to reduce civilian harm is not only desirable, but also possible.

The first part of this final chapter unpacks the avoidance policy that the ICRC is calling on states and non-state armed groups to adopt: it summarizes why such an avoidance policy is necessary (sub-section 5.1.1) and explains what it entails in practice (sub-section 5.1.2).

The second part of this final chapter offers a range of good-practice recommendations to political authorities, state armed forces and non-state armed groups, for facilitating the operationalization of the avoidance policy.

As demonstrated by the Oslo Global Conference on Reclaiming the Protection of Civilians under International Humanitarian Law,¹ the Maputo and Santiago declarations,² and the current diplomatic endeavour towards the adoption of a political declaration,³ the international community is, increasingly, coming to

- 1 Oslo Global Conference on Reclaiming the Protection of Civilians under International Humanitarian Law, May 2013, co-chairs’ summary: https://www.regjeringen.no/globalassets/upload/ud/vedlegg/hum/recommendations_final.pdf.
- 2 Maputo Regional Meeting on Protecting Civilians from the Use of Explosive Weapons in Populated Areas, Communique, 28 November 2017: <https://www.inew.org/maputo-regional-conference-on-the-protection-of-civilians-from-the-use-of-explosive-weapons-in-populated-areas/>; Santiago Regional Meeting on Protecting Civilians from the Use of Explosive Weapons in Populated Areas, Communique, December 2018: <https://www.inew.org/wp-content/uploads/2018/12/Santiago-Communique-EWIPA.pdf>.
- 3 Ireland, Department of Foreign Affairs, “Protecting civilians in urban warfare”, 2021: <https://www.dfa.ie/our-role-policies/international-priorities/peace-and-security/ewipa-consultations/>; Meeting of the States Parties to the CCW, “Mitigating the civilian harm from the use of explosive weapons in populated areas”, working paper submitted by Germany, UN Doc. CCW/MSP/2018/WP.1, 14 November 2018; see also United Nations and ICRC, “Joint appeal by the UN secretary-general and the president of the International Committee of the Red Cross on the use of explosive weapons in Cities”, 18 December 2019: <https://www.un.org/sg/en/content/sg/note-correspondents/2019-09-18/note-correspondents-joint-appeal-the-un-secretary-general-and-the-president-of-the-international-committee-of-the-red-cross-the-use-of-explosive-weapons>.

see that efforts are urgently needed to reduce the risk of civilian harm from the use of heavy explosive weapons when hostilities are conducted in populated areas. **In the ICRC's view, the recommendations presented at the end of this report can contribute significantly to such efforts, and can facilitate respect for IHL in environments as challenging as urban and other populated areas.**

5.1 AN AVOIDANCE POLICY

5.1.1 Why is an avoidance policy necessary?

The need for an avoidance policy is dictated by the devastating consequences for civilians when explosive weapons with a wide impact area are used in populated areas, which the ICRC has observed in recent and ongoing armed conflicts. As demonstrated in this report, these consequences are not limited to direct civilian death and injury and direct destruction of civilian objects. Equally devastating are the indirect or reverberating effects on the lives and health of civilians, resulting notably from the disruption of services essential to their survival (such as health care and water- and electricity-supply systems) when critical civilian infrastructure enabling such services is damaged or destroyed – effects that are exacerbated in protracted armed conflicts, leading to further displacement, illnesses, and deaths among civilians.

The avoidance policy is further dictated by strong legal concerns. The use in populated areas of explosive weapons with a wide impact area entails a significant likelihood of indiscriminate effects, namely a high risk of striking military objectives and civilians or civilian objects without distinction. These risks increase with population density and with the area effects of the explosive weapons used, and are heightened when heavy explosive weapons are used in cities and other urban areas.

The factors accounting for high risks of civilian harm include:

- **the wide area effects of the weapon**, which – due to its large explosive payload and subsequent destructive radius or its inaccuracy, or the firing of multiple munitions simultaneously over a large area – go significantly beyond the target
- the concentration (density) of civilians and civilian objects, including critical civilian infrastructure; **the higher the density of the civilian population, the higher the risk to civilians as well as the risk of IHL violations** from the use of wide impact area explosive weapons
- the level of **complexity and interconnectedness of critical civilian infrastructure and of services essential to the survival of the civilian**

population, such that damage to or destruction of one component of this urban system can render that system inoperable and can trigger domino effects on other services that depend on the affected components

- the **unique effects of heavy explosive weapons when used in built-up areas (in contrast to non-built-up areas)**, including the channelling of blast waves, the increased amount of secondary fragmentation, and the increased risk of damaging critical civilian infrastructure
- the particular **challenges the urban environment poses to armed forces** (such as proximity of military objectives to civilians or civilian objects, limited visibility, difficulty of manoeuvring, risk of interference with precision-guidance systems) that will influence the effects of the chosen means and methods of warfare.

This observed pattern of harm suggests an objective difficulty in using heavy explosive weapons in populated areas in conformity with the IHL prohibitions against indiscriminate and disproportionate attacks. This is not to say that every such use will necessarily fall foul of these IHL rules, only that there is a high risk of it.⁴

It is often argued that the devastating humanitarian consequences witnessed when heavy explosive weapons are used in populated areas are due to a lack of compliance with IHL rules. However, as the ICRC has previously stated:

“Although there is no dispute that any use of explosive weapons in populated areas must comply with ... IHL rules, there are divergent views on whether these rules sufficiently regulate the use of such weapons, or whether there is a need to clarify their interpretation or to develop new standards or rules. Based on the effects of explosive weapons in populated areas being witnessed today, there are serious questions regarding how the parties using such weapons are interpreting and applying IHL. Divergent practice of militaries, and contrasting views among experts and in the case law of international criminal tribunals regarding what is or is not legally acceptable, may point to ambiguities in IHL and the need for states to clarify their interpretation of the relevant IHL rules or to develop clearer standards to effectively protect civilians.”⁵

⁴ See Chapter 3 for a more detailed analysis.

⁵ ICRC Challenges Report 2015, cited in footnote 1 of the full report, p. 51; and ICRC Challenges Report 2019, cited in footnote 8 of the full report, p. 14.

Due to the pattern of civilian harm observed when explosive weapons with a wide impact area are used in populated areas, and the objective difficulty of using such weapons in conformity with key IHL rules regulating the conduct of hostilities, **the ICRC is calling for such use to be avoided as a matter of policy.**

The adoption and implementation of an avoidance policy is necessary to close the gap between the goal of IHL to protect civilians from the danger of hostilities and the devastating consequences observed when heavy explosive weapons are used in populated areas. It would contribute to significantly reducing the risk of civilian harm and the risk of IHL violations when hostilities are conducted in urban and other populated environments.

5.1.2 What does an avoidance policy entail?

It is the ICRC's position that to better protect civilians and facilitate respect for IHL, **explosive weapons with a wide impact area should not be used in populated areas unless sufficient mitigation measures can be taken to reduce such risk**, namely by limiting their wide area effects and the consequent risk of civilian harm.

The scope of the avoidance policy is defined – and thus limited – by two key elements: *the type of weapons of concern, namely explosive weapons with a wide impact area, and the location of their use, namely populated areas.*

To be effective, an avoidance policy entails implementation of preventive and mitigation measures.

First, the avoidance policy should rely on a wide range of **preventive and other measures and guidance, policies and practices, at every level, to minimize situations where the use of heavy explosive weapons would have to be considered in populated areas** – including, for instance, avoiding the conduct of hostilities in such areas and providing for alternatives (weapons, means and methods) to such use.

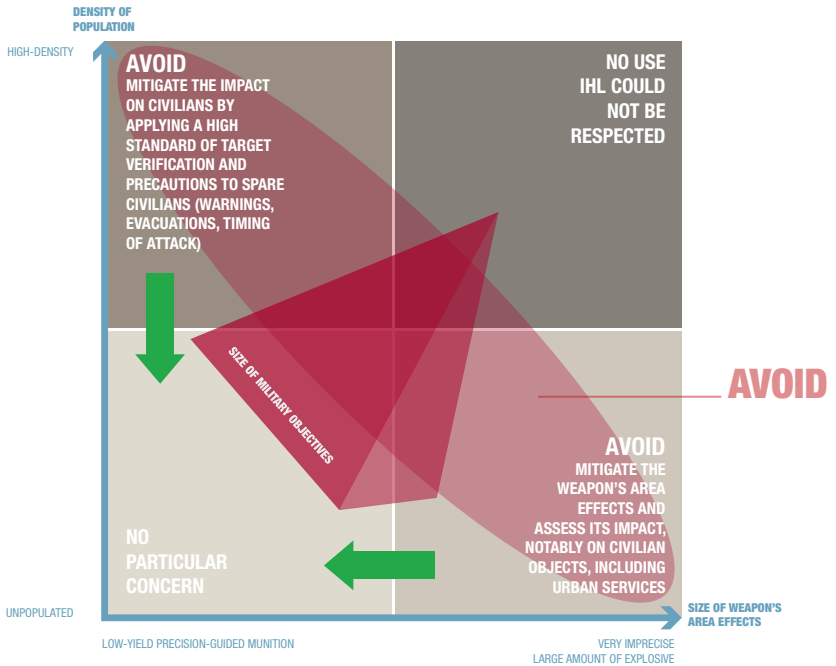
Second, if the use of heavy explosive weapons in populated areas has to be considered, **sufficient mitigation measures have to be taken to reduce the risk of civilian harm. This depends on three parameters**, which can vary considerably with the circumstances:

- **the density of civilians in the area**
- **the size of the weapon's impact area (area effects)**
- **the size of the military objective.**

A man stands in front of his house in Ukraine, which was destroyed by shelling. He and his wife are receiving support from the ICRC to rebuild it.



Variations in these three parameters can change the humanitarian and legal assessment of a particular situation.



At one end of the spectrum, **in an area containing a high density of civilians and civilian objects, the use of explosive weapons with a large impact area, especially against relatively small military objectives, seems irreconcilable with IHL rules and the obligation to spare the civilian population from the effects of hostilities.** For instance, an attack using a salvo of 40 unguided artillery rockets from a distance of 20 kilometres with a foreseeable total 'lethal area' of 600 metres x 600 metres, against a small enemy position in a densely populated neighbourhood of a town, would fall foul of the IHL prohibition against indiscriminate attacks.

At the other end of the spectrum, **the use of explosive weapons with a small impact area, against a large military objective situated in a sparsely populated area, would not cause the same degree of concern.** For instance, this would be the case for the use of an air-delivered low-yield precision-guided munition against a large military barracks in a neighbourhood that has been largely emptied of its population.



The Laser Homing Attack Missile or LAHAT produced by Israel Aerospace Industries on display at the 2018 Asian Defence and Security trade show.

In the figure above, the box in the top right represents the clear-cut situation in the first example, where circumstances would not allow respect for IHL; and the box in the bottom left represents the situation in the second example, where the use of explosive weapons would not be likely to cause indiscriminate effects. This assessment is also influenced by the size of the military objective, represented by the triangle: the smaller the specific military objective, the greater the likelihood of indiscriminate effects from the use of heavy explosive weapons.

In the vast majority of cases, though, the operational reality will fall somewhere between these two extreme scenarios: the taking of mitigation measures is most relevant to these other cases. Mitigation measures aim to shift attackers from a situation where they should not use explosive weapons with a wide impact area to a situation where civilian harm will be sufficiently mitigated. Mitigation measures have to be taken at all levels (strategic, operational and tactical)⁶ and must pervade all aspects of the military decision-

⁶ See UNIDIR Food-for-Thought Paper, cited in footnote 204 of the full report, p. 5 (footnote omitted): “Avoidance of the use of explosive weapons in urbanized environments requires choices in military strategy and capability to be made available to a deploying force.” See also UNIDIR Options Paper, cited in footnote 204 of the full report, p. 5.

making process (doctrine, education, training, equipment, and military practice, including the choice and use of means and methods of warfare). Such measures include, notably, targeting and ‘weaponeering’⁷ measures to significantly reduce the size of the explosive weapons’ impact area and to limit their effects as far as possible to the target, and/or measures to significantly change the circumstances of the attack such that the area is no longer populated (see green arrows in the figure above).⁸ **Such mitigation measures would also facilitate respect for the IHL prohibitions against indiscriminate and disproportionate attacks**, and for the general obligation to take constant care to spare the civilian population, civilians and civilian objects, notably by taking all feasible precautions in attacks, including in the choice of means and methods of warfare.

When mitigation measures are not feasible, sufficient and/or effective for reducing the weapon’s area of impact and the consequent risk of civilian harm to an acceptable level, heavy explosive weapons should not be used.

5.2 RECOMMENDATIONS

The ICRC recommends to states, armed forces and all parties to armed conflicts the following good practices aimed at protecting civilians and civilian objects from dangers associated with the use of heavy explosive weapons in populated areas. **While these recommendations are grounded in IHL and its aim of protecting civilians from the danger of hostilities, they do not purport to express legally binding requirements *per se*, but to operationalize an avoidance policy.** Based on the existing practices mentioned in Chapter 4, **they are practical guidelines to prevent or reduce the harm caused to civilians from the increasingly well-known and foreseeable direct and indirect effects of the use of explosive weapons with a wide impact area in populated areas, and to facilitate compliance with IHL when conducting hostilities in such challenging environments.**

The list is by no means exhaustive, and notably does not include all the IHL rules and principles that parties to conflict have to comply with in all situations, including when using explosive weapons in populated areas.

7 ‘Weaponeering’ refers to the process of selecting the appropriate weapon to achieve the desired effects on the target, while minimizing to the extent possible incidental civilian harm; see Chapter 4, section 4.3.

8 ICRC Challenges Report 2019, cited in footnote 8 of the full report, p. 14.

When the conflict in Nagorno-Karabakh escalated in 2020, civilians bore the brunt of the shelling.



A) TO POLITICAL AUTHORITIES

In view of the significant harm caused to civilians by the use in populated areas⁹ of explosive weapons with a wide impact area, it is recommended that political authorities take the following measures.

Preventive measures

1. Ensure that **protection of civilians is explicitly identified as a strategic objective** at the highest level prior to military operations and that the armed forces integrate it into all military orders.
2. Ensure that the military authorities develop **specific military doctrine or adapt existing doctrine** to address the humanitarian concerns and the operational challenges posed by the conduct of **hostilities in populated areas, including urban warfare**.
 - 2.1 Mandate **doing everything possible to keep hostilities in populated areas to a minimum, including by moving them outside populated areas or moving the population outside areas of hostilities**, and other measures to prevent or mitigate civilian harm.
 - 2.2 Review, amend, adapt or update existing policies or develop new **policies to mitigate the risk to civilians posed by the use of explosive weapons with a wide impact area in populated areas**.
3. Support the **development of essential services that would be more resilient** during warfare in populated areas, with the aim of mitigating the humanitarian consequences of urban warfare by ensuring that civilians have access at minimum to essential services of a quality necessary to preserve their lives, security, physical and moral integrity, and dignity.

Avoidance policy

4. **Adopt an avoidance policy** to the effect that explosive weapons with a wide impact area should not be used in populated areas unless sufficient mitigation measures are taken to limit their wide area effects and the consequent risk of civilian harm.
5. Ensure that such an avoidance policy, the good practices operationalizing it, and complementary policies on the protection of civilians during armed conflict are **integrated into military doctrine, training, planning and practice**.

9 As explained above, for the purposes of this report and these recommendations, the term ‘populated areas’ refers to any concentration of civilians or of civilians and civilian objects.

6. Ensure that **the urban fabric, the specific vulnerabilities** of the civilian population living in urban areas, **the interconnectedness of critical civilian infrastructure and services** essential to civilian survival, **and the cumulative impact of protracted conflict** on them are understood and **inform military doctrine and decision-making processes.**
7. Ensure that **armed forces personnel are equipped with and trained in the proper use of weapons and means and methods of warfare that are appropriate for use in urban and other populated areas**, including weapons that do not have wide area effects, with a view to minimizing the risk of civilian harm.
8. Ensure that **the wide impact area** of certain explosive weapons **and their foreseeable humanitarian consequences**, and the way in which such consequences are amplified in built-up urban environments, **are given due consideration in the development, acquisition and legal review of these weapons.**
9. **Make the export of explosive weapons with a wide impact area conditional on recipients putting in place limits on the use of such weapons in populated areas**, in accordance with the good practices recommended in this report.
10. **When providing support to partner forces and/or parties to an armed conflict, make the supply of explosive weapons with a wide impact area conditional on recipients limiting the use of such weapons in populated areas** in accordance with the good practices recommended in this report, and take all appropriate measures to ensure that this is the case in practice, including the following:¹⁰
 - 10.1 **When providing support in the form of explosive weapons with a wide impact area, ensure that training is provided** to recipients so that they:
 - a. know and understand the effects of such weapons in populated areas, including their indirect (reverberating) effects
 - b. implement the good practices recommended in this report.
 - 10.2 Ensure that **good practices and lessons learnt** in relation to the use of explosive weapons with a wide impact area in populated areas are shared with partner forces and/or supported parties.

10 See also ICRC, *Allies, Partners and Proxies: Managing Support Relationships in Armed Conflict to Reduce the Human Cost of War*, ICRC, Geneva, March 2021, especially pp. 97, 104, 130, 131 and 142. This publication provides additional recommendations to governments, armed forces, and multinational and non-state actors on strengthening the protection of civilians within the context of support relationships in armed conflict.

Data collection

11. Put in place national mechanisms – including civilian-casualty tracking systems – to collect data on incidents involving the use of explosive weapons with a wide impact area in populated areas, **and support other entities collecting such data**, for the purpose of:

- 11.1** documenting direct civilian casualties (deaths and injuries), as far as possible disaggregated by age and gender, and damage to civilian objects, including critical civilian infrastructure
- 11.2** documenting the indirect (reverberating), systemic short- and long-term effects on essential urban services
- 11.3** increasing understanding, and foreseeability, of the effects of these weapons in populated areas
- 11.4** ensuring that armed forces incorporate such understanding in military decision-making processes at all levels.

Transparency and exchange of good practices

12. Share publicly, in relevant forums, or within the context of a structured dialogue with the ICRC:

- 12.1 good practices, experience and lessons learnt regarding the choice and use of means and methods of warfare in populated areas**, including specific restrictions on the use of explosive weapons in populated areas and alternative weapons and tactics
- 12.2 good practices, experience and lessons learnt regarding other measures adopted with a view to strengthening the protection of civilians and civilian objects against the effects of attacks** using explosive weapons with a wide impact area in populated areas, including:
 - a.** decisions by relevant authorities and urban planners to avoid situating military objectives (e.g. military bases) within or near populated areas
 - b.** where appropriate, making publicly available information on the situation of critical civilian infrastructure, particularly infrastructure necessary for the provision of water, electricity and health care and for wastewater management.
- 12.3 how IHL rules are implemented** by the armed forces **when using explosive weapons in populated areas**, in particular the prohibitions against indiscriminate and disproportionate attacks and the obligation to take all feasible precautions in attacks.

B) TO ARMED FORCES¹¹

With a view to avoiding or at least minimizing civilian harm from the use of explosive weapons with a wide impact area in populated areas, it is recommended that armed forces review their military policies, training curricula and practices in order to incorporate the following good practices. The ICRC has provided additional recommendations on urban warfare more generally in this document: *Reducing Civilian Harm in Urban Warfare: A Commander's Handbook*.¹²

Preventive measures

1. Doctrine

- 1.1 **Identify protection of civilians as a strategic objective** at the highest level prior to military operations and incorporate it in all military orders.
- 1.2 **Develop specific military doctrine or adapt existing doctrine** to address the humanitarian concerns and the operational challenges posed by the conduct of **hostilities in urban and other populated areas, including by explicitly limiting the types of weapons and munitions that may be used in such areas.**

2. Training

- 2.1 **Provide training** for all those involved in the planning, decision-making and execution of attacks, including the targeting process, **to ensure that the effects of explosive weapons in populated areas, including their area effects, and the limitations applicable to their use, are fully known and understood.**
- 2.2 **Ensure that all those involved in the targeting process, including forward observers and forward air controllers, are trained to identify critical civilian infrastructure.**
- 2.3 Provide **specific training on the conduct of hostilities in populated areas, including urban warfare,** as well as predeployment and refresher training to forces that are likely to be engaged in such operations.

3. Planning

- 3.1 During the planning process at the strategic, operational and tactical levels, **do everything possible to keep hostilities in populated areas to a minimum, including by moving them outside populated areas,**

¹¹ The following applies *mutatis mutandis* to non-state armed groups.

¹² ICRC, *Reducing Civilian Harm in Urban Warfare: A Commander's Handbook*, ICRC, Geneva, 2021.

for example, by pushing or drawing the adversary outside populated areas where feasible, leaving escape routes for the adversary to flee populated areas, and favouring any other tactic that would take the fight outside populated areas – and if that is not possible, **by moving the population outside the area where hostilities may be expected to take place**, for example, by letting civilians leave a besieged area or organizing temporary evacuation from sites of hostilities.

- 3.2 **Study and develop, and then plan** at the strategic, operational and tactical levels, **alternatives – weapons, munitions and tactics** – to the use of explosive weapons with a wide impact area in populated areas.
4. **Ensure effective maintenance and adequate storage of explosive weapons and munitions**, and do not deploy poorly maintained or stored weapons or munitions in operations in populated areas.

Avoidance policy

5. **Do not use explosive weapons with a wide impact area in populated areas unless sufficient mitigation measures have been taken** to limit their area effects and the consequent risk of civilian harm. In particular, **avoid the use in a populated area of:**
 - 5.1 **when unguided**,¹³ the following weapon systems, because of their intrinsic inaccuracy and consequent wide area effects, and irrespective of the size of the target:
 - a. **MBRLs**
 - b. **air-to-ground rockets and air-delivered bombs.**
 - 5.2 **any explosive weapons whose impact area may be expected to be significantly larger than the target**, in particular:
 - a. **large-yield munitions, whether guided or unguided**, including large-yield bombs and missiles, and large calibre mortars and other projectiles, when their blast-and- fragmentation radius is significantly larger than the target
 - b. **any explosive weapons designed or employed to have area effects**, when their foreseeable impact area is significantly larger than the target because of their intrinsic inaccuracy or for other

13 ‘Precision guidance’ is not a uniform concept, and guidance is not a guarantee of high accuracy. ‘Guided weapons’ may also have an important degree of inaccuracy, depending on the type of guidance systems used; see Chapter 2 for further explanation.

reasons, such as **unguided indirect-fire weapon systems**, especially medium- and large-calibre artillery guns and mortars, and other 'area weapons' against 'point targets'.

6. Ensure that the restrictions outlined in recommendations 5 and 7 are reflected in **doctrine**¹⁴ – including tactical directives, standard operating procedures, and standing and/or mission-specific rules of engagement – **for operations in populated areas (including urban warfare)**.

Mitigation measures

7. **Employ means and methods of warfare, the effects of which can be limited to the military objective**, including by using the most appropriate munition, warhead, fuze and delivery system.
8. **Modernize fire-control systems and the fire-direction centre** of artillery and mortar units, **and use robust calibration techniques and procedures that are safe for civilians**, in order to enhance the accuracy and precision of indirect fire.
9. In the operational planning process, **ensure that critical civilian infrastructure and, to the extent possible, the essential service systems they enable or serve, are identified and mapped and that such findings are communicated to the operational military decision-makers**.
To this end, actively seek information on the nature, location, condition and interconnectedness of critical civilian infrastructure, notably by including the relevant expertise (as per recommendation 10) in the targeting process.
10. In addition to the participation of experts on weapons' effects and legal advisers, **ensure where feasible the participation of engineers with relevant expertise** (i.e. structural and field engineers, including those with expertise in water, wastewater and electrical systems), **as well as urban planners, in the decision-making process for targeting**, to advise on the structural make-up of buildings, the location of critical civilian infrastructure, the interconnectedness of essential services, and the danger posed by secondary explosions.

14. ICRC, *Handbook on International Rules Governing Military Operations*, Geneva, December 2013, pp. 30–31: "Doctrine... is understood as being all standard principles that guide the action of arms carriers at strategic, operational and tactical levels, independently of the forms these principles take. It therefore encompasses all directives, policies, procedures, codes of conduct, reference manuals and rules of engagement – or their equivalents – that serve to educate, train and guide arms carriers ... and shap[e] the decision-making process, tactics and behaviour in operations."

11. Take appropriate **measures to reduce the density of civilian presence** in populated areas where attacks may be carried out – including by means of warnings and evacuations – and more generally, take measures **to minimize the exposure of civilian population to the dangers arising from military operations**.
12. Presume civilian presence in buildings and other locations where there is evidence of human habitation, **unless otherwise apparent**. In particular, **do not presume that an area is devoid of civilians**, based solely on the fact that warnings have been issued or evacuations have been ordered or have taken place.

Additional measures to reduce the risk of civilian harm

13. **Establish concepts similar to ‘safety distances’** for operations in populated areas, in order to spare civilians and civilian objects (in particular critical infrastructure) from the effects of explosive weapons, and ensure that any such distances are adapted to the size of the impact area of each explosive weapon used and to the specificities of the urban terrain.
14. **Ensure that qualitative data and intelligence are gathered** from all sources reasonably available, in order to verify that the target is lawful and to determine the presence of civilians and civilian objects and their movements in the area containing the target.
 - 14.1 **Include the nature, location and condition of critical civilian infrastructure** and its interconnectedness with essential service systems.
 - 14.2 **Ensure that such information is continuously updated and available to field commanders** before and during the conduct of military operations in populated areas.
15. **Carry out collateral-damage estimates (CDE) or similar assessments:**
 - 15.1 **Ensure that such assessments consider the extent of civilian harm** that may be expected from an attack, **including its reverberating effects**, notably the impact of destroying or damaging critical civilian infrastructure on the services enabled by such infrastructure.
 - 15.2 **Ensure that such assessments incorporate the information and assumptions referred to in recommendations 9, 10, 17 and 18.**
 - 15.3 **Ensure that such assessments are carried out in both deliberate (pre-planned) and, even if in a less sophisticated manner, in dynamic engagements.**

16. Incorporate in military doctrine **best practices for recording, retaining and transmission of information on the use of explosive ordnance**, as recommended by the ICRC in its 2013 report.¹⁵

Post-attack measures

17. **Create a mechanism to track, assess and investigate all instances of civilian casualties and damage to civilian objects**, to the extent possible, including the correlation between such civilian harm and the means and methods of warfare used, **with a view to drawing lessons learnt** for incorporation in doctrine, training, planning and practice in the future.
18. When undertaking after-action reports, battle-damage assessments or relevant investigations:
 - 18.1 ensure that these processes record **both the direct and the indirect (reverberating) effects** of explosive weapons with a wide impact area on civilians and civilian infrastructure
 - 18.2 ensure that the **lessons learnt**, including with regard to the effects of specific types of weapons in populated areas, **are incorporated as soon as possible in the targeting process, and in doctrine, training, planning and practice in the future.**
19. **Share publicly, in relevant forums or within the context of a structured dialogue with the ICRC**, information on efforts undertaken and measures implemented to reduce the risk to civilians from the use of explosive weapons in populated areas.

¹⁵ ICRC, *Identifying and Addressing Challenges to Implementation of Article 4 of Protocol V to the CCW*, Expert Meeting, ICRC, Geneva, October 2013, p. 37, para. 3. Recording, retaining and transmitting information on the use or abandonment of explosive ordnance constitutes a legal obligation under Article 4 for states party to Protocol V to the CCW.

The scale of the destruction in Syria has created a complex humanitarian emergency that requires long-term planning and responses.



5.3 CONCLUSION

The humanitarian consequences of the use of heavy explosive weapons in urban and other populated areas, outlined in Chapter 1 of this report, are well documented in recent and ongoing armed conflicts in many parts of the world.

Their devastating direct and indirect effects are largely the result of a deadly combination: the weapons' technical characteristics described in Chapter 2 and consequent wide impact area, which is very likely to extend beyond the targeted military objective, and the density of civilian presence in urban and other populated areas. Consequently, **heavy explosive weapons are inappropriate for use in populated areas**, as such use entails a high risk of affecting civilians and civilian objects indiscriminately or disproportionately. As the legal analysis in Chapter 3 demonstrated, **in many circumstances, attacks using such weapons will be prohibited by IHL.**

Restrictions and limitations on the use of heavy explosive weapons in urban and other populated areas (some of which were outlined in Chapter 4) have been proven to contribute to a reduction in civilian casualties. However, the reality on the ground dictates that much more needs to be done in this direction to **put the protection of civilians back at the centre of considerations** when planning and carrying out operations in populated areas. Far from accepting the death and destruction caused by heavy explosive weapons' use as a tragic but unavoidable by-product of warfare, policymakers and armed forces have a responsibility to **adapt their military policies and practices to the requirements of the law, humanitarian imperatives and the realities of the modern battlefield. A fuller understanding and consideration of the foreseeable direct and indirect effects** of attacks using heavy explosive weapons will ensure that the balance between military necessity and humanitarian considerations – central to the rules governing the conduct of hostilities which are aimed at protecting civilians – is adequately met.

In sum, this report demonstrates that **a political commitment to take action and change the unacceptable status quo is both urgently needed and possible: the use of heavy explosive weapons in populated areas should be avoided**, and such an avoidance policy needs to be incorporated in military doctrine, education and training, and reflected in equipment and military decision-making processes. **As the examples in the previous chapters have shown, mitigation measures can and should be taken** to reduce explosive weapons' area effects and the consequent risk of civilian harm. Ultimately, **alternative**

weapons and tactics should be made available to armed forces, enabling them to fight in populated areas in a manner that respects IHL and strengthens the protection of civilians.




It is hoped that this report will contribute to tangible progress in preventing and mitigating civilian harm. **The ICRC calls on all states and parties to armed conflict to adopt and implement the recommendations presented earlier in this chapter.** In the ICRC's view, these and similar measures would facilitate respect for IHL and significantly strengthen the protection of civilians from the effects of hostilities in high-risk environments such as urban and other populated areas. We stand ready to support these efforts and will continue working on ways to effectively address this pressing humanitarian concern, in order to alleviate the suffering of men, women, girls and boys affected by armed conflict.

Children play in the al-Sahel Syrian refugee camp in Akkar, Lebanon.
This area of Lebanon took in more than 60,000 Syrian refugees.



The ICRC helps people around the world affected by armed conflict and other violence, doing everything it can to protect their lives and dignity and to relieve their suffering, often with its Red Cross and Red Crescent partners. The organization also seeks to prevent hardship by promoting and strengthening humanitarian law and championing universal humanitarian principles. As the reference on international humanitarian law, it helps develop this body of law and works for its implementation.

People know they can rely on the ICRC to carry out a range of life-saving activities in conflict zones, including: supplying food, safe drinking water, sanitation and shelter; providing health care; and helping to reduce the danger of landmines and unexploded ordnance. It also reunites family members separated by conflict, and visits people who are detained to ensure they are treated properly. The organization works closely with communities to understand and meet their needs, using its experience and expertise to respond quickly and effectively, without taking sides.

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