



A PRIMER ON CIVILIAN HARM MITIGATION IN URBAN OPERATIONS

Written by Sahr Muhammedally

RECOGNIZE. PREVENT. PROTECT. AMEND.

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Cover: *Rescuers searching for bodies and removing rubble after air strikes hit at an apartment building in Borodyanka, Ukraine on April 7, 2022. Credit: CIVIC/Daniel Brown.*

ABOUT CIVIC

Center for Civilians in Conflict (CIVIC) is an international organization dedicated to promoting the protection of civilians in conflict. CIVIC envisions a world in which no civilian is harmed in conflict. Our mission is to support communities affected by conflict in their quest for protection and strengthen the resolve and capacity of armed actors to prevent and respond to civilian harm.

CIVIC was established in 2003 by Marla Ruzicka, a young humanitarian who advocated on behalf of civilians affected by the war in Iraq and Afghanistan. Honoring Marla's legacy, CIVIC has kept an unflinching focus on the protection of civilians in conflict. Today, CIVIC has a presence in conflict zones and key capitals throughout the world where it collaborates with civilians to bring their protection concerns directly to those in power, engages with armed actors to reduce the harm they cause to civilian populations, and advises governments and multinational bodies on how to make life-saving and lasting policy changes.

CIVIC's strength is its proven approach and record of improving protection outcomes for civilians by working directly with conflict-affected communities and armed actors. At CIVIC, we believe civilians are not "collateral damage" and civilian harm is not an unavoidable consequence of conflict — civilian harm can and must be prevented.

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GLOSSARY

AAR	After Action Review	IED	Improvised Explosive Device
AI	Artificial Intelligence	IHL	International Humanitarian Law
AOR	Area of Operations	IOT	Internet of Things
CIVIC	Center for Civilians in Conflict	IO	Information Operations
CDEM	Collateral Damage Estimate Methodology	ISR	Intelligence Surveillance and Reconnaissance
CBRN	Chemical, Biological, Radiological, and Nuclear	LOAC	Law of Armed Conflict
CHM	Civilian Harm Mitigation	SME	Subject Matter Experts
COA	Course of Action	PID	Positive Identification
DDR	Disarmament, Demobilization and Reintegration	POC	Protection of Civilians
EOD	Explosive Ordnance Disposal	SDG	Sustainable Development Goals
ERW	Explosive Remnants of War	SSR	Security Sector Reform
EWIPA	Explosive Weapons in Populated Areas	TEA	Target Engagement Authority
ICRC	International Committee of the Red Cross	TTP	Tactics, Techniques, and Procedures
		UN	United Nations
		UXO	Unexploded Ordnance

INTRODUCTION

Today, armed conflicts are increasingly fought in urban areas affecting some 50 million people.¹ Urban areas are vulnerable to the effects of conflict because they are the centers of gravity for civilian life.² Within the complex and dynamic context of modern conflict, the risk to civilians and civilian objects grows exponentially in urbanized environments, as the comingling of military, civilians, and civilian objects creates challenges for belligerents to comply with international humanitarian law (IHL). Protecting civilians in urban environments, therefore, requires a comprehensive approach to foresee and mitigate risks to civilians and ensure respect for IHL.

Separating military targets from civilian populations is difficult for militaries in any environment, but combat in urban areas is particularly manpower and resource intensive. The density of the population, civilian objects such as homes, schools, and infrastructure like hospitals, electrical power grids, and water sources magnify the challenges to conduct operations and minimize harm. Urban environments can favor the defender, even if the attacking force is technologically and materially superior, as the terrain makes the detection and identification of military objectives difficult. In addition, surface and subterranean areas can cover and conceal military objectives and be used to launch attacks. Such complexities are compounded by available munitions, such as explosive weapons with wide-area effects, which have devastating consequences for civilians and infrastructure when used in urban areas.³ Thus, building capabilities across the spectrum of urban operations necessitates foreseeing risks to civilians and civilian objects, as well as planning, training, and resourcing to mitigate those risks.

Protecting civilians in urban environments requires a comprehensive approach to foresee and mitigate risks to civilians and ensure respect for IHL.

Under IHL, parties to a conflict have an obligation to take constant care to spare civilian populations and objects from the effects of military operations, to take all feasible precautions to minimize and avoid incidental harm to civilians, to distinguish between civilians and combatants, and to allow humanitarian assistance to civilians. They are also prohibited from undertaking indiscriminate and disproportionate attacks.⁴ Given the proximity of civilians and civilian objects to military objectives in urban environments, implementing these IHL rules requires an examination of how they are interpreted and integrated in training, doctrine, rules, and capabilities like equipment and munitions. The use of emerging technologies, such as artificial intelligence (AI), robotics, and cyber and their potential devastating risk to civilians or possible positive use⁵ in urban operations also requires examination from ethical, legal, and strategic considerations.

Notably, not all urban operations involve conflict. Operations can include, for example, efforts to respond to pandemic outbreaks, natural disasters, and humanitarian evacuations. In terms of conflict, specifically, there are also numerous types of operations that can take place in urban areas, including counterinsurgency and asymmetric warfare, large-scale combat operations, and cyberattacks. This paper primarily addresses armed conflict occurring in urban areas.



August 2017: Hospital in West Mosul rigged with IEDs and destroyed.

Given the complexities, a comprehensive approach to civilian harm mitigation (CHM) is needed in the decisions and actions taken by armed actors and security forces before, during, and after urban operations. This includes CHM in mission/mandate development, use of force guidance, scenario-based training, tactical execution, intelligence/information gathering, choice of munitions, pre- and post-strike assessment, learning and adaptation, safe evacuation of civilians, facilitation of humanitarian assistance, restoration of essential services, and follow-on stabilization services.⁶

This paper seeks to contribute to discussions on a comprehensive approach to protecting civilians in urban operations. It is based on examining conflicts in Afghanistan, Gaza, Iraq, Nigeria, Philippines, Syria, Somalia, Ukraine, and Yemen, as well as interviews with civilians, armed actors, humanitarian organizations, protection of civilians practitioners, and military experts on urban warfare.

In today's conflicts, we have seen that tactical choices have a strategic impact on long-term stability, both within the conflict-affected country and regionally. How a party fights one day can lay the conditions for the day after, creating protracted displacement, fueling conflict, and bolstering recruitment to non-state armed groups instead of paving the way for stability. Applying a comprehensive civilian harm mitigation approach can reduce human suffering in urban operations, strengthen protection norms, and contribute to stabilization efforts rooted in respect for human rights. This paper offers options for governments and militaries to adapt their policies, practices and training for urban operations in order to understand the challenges of urban war, foresee risks to civilians and civilian objects, and undertake measures to mitigate civilian harm.

KEY TERMINOLOGY

Civilian harm

Civilian harm includes conflict-related death, physical and psychological injury, loss of property and livelihood, and interruption of access to essential services.

Civilian harm mitigation

Civilian harm mitigation includes all measures taken by armed actors to prevent, minimize, and address civilian harm resulting from their operations.

Protection of civilians

Protection of civilians (POC) during armed conflict is a cornerstone of international humanitarian law. It extends to civilians and civilian objects who may not be deliberately targeted, but who must be protected from violence and treated humanely. POC also includes ensuring adequate humanitarian relief to displaced persons, including food, clothing, shelter, and medical treatment.

Populated areas

The terms “densely populated areas” and “populated areas” should be understood as synonymous with “concentration of civilians,” which is defined in international humanitarian law as “a city, town, village or other area containing a similar concentration of civilians or civilian objects.”⁷

Urban areas

Urban areas are “defined according to size, from villages of fewer than 3,000 inhabitants to large cities with populations of over 100,000. Large cities vary enormously in size, ranging in population from 100,000 to over 20,000,000 and in area from several to hundreds of square miles.”⁸ Existing definitions of “urban” are normally based on population density and/or a geographic area defined by municipal authorities.⁹

URBANIZATION AND MODERN CONFLICTS

The world's population is becoming more urbanized. By 2050, the United Nations (UN) estimates that 68 percent of the world's population will live in urban environments.¹⁰ Growth in smaller cities and towns is expected to account for most of the urban population increase, especially in Africa and Asia.¹¹

The move toward cities has provided millions of people access to electricity, running water, sanitation, education, employment, and communications. The pressures of this increasing trend toward urbanization are particularly tangible in developing countries, where population increases can overwhelm existing infrastructure and government services. Due to rapid unplanned urbanization, including the growth of informal settlements in peri-urban areas,¹² can have limited government presence, which can allow for the emergence of criminal networks or non-state armed groups, and an ill-prepared public safety and policing infrastructure.¹³

Moreover, over one-third of the world's population lives within 60 miles of a coast.¹⁴ This proximity of urban populations to coastal areas brings other risks, such as natural disasters, that can additionally strain limited resources.¹⁵ Population growth, resource competition, sectarian and religious tensions, poor governance, and weaknesses in rule of law can all contribute to instability in urban areas. The risk of instability also rises as socio-economic inequalities grow.¹⁶

Violence in urban areas can include scenarios such as: non-international armed conflict (conflict within a state's territory that involves the host nation alone or involves coalition forces against non-state armed actors); state-on-state conflict; instability and violence exacerbated by climate change; or other situations of violence fueled by organized crime; violence as a result of the outbreak of a pandemic. Urban operations can be offensive or defensive and can continue through the spectrum of conflict. Thus, militaries and internal security forces will increasingly be forced to conduct operations in urban areas that range from armed conflict to humanitarian assistance, disaster relief, and stability operations.

Current global dynamics and trends suggest that militaries and security forces must be prepared for unique challenges in urban operations. The world has witnessed urban warfare in Iraq, Syria, Gaza, Somalia, Ukraine, and Yemen, where aerial bombing and artillery shelling, siege warfare, and heavy street fighting have resulted in destroyed lives and infrastructure. But rural insurgent groups such as the Kurdistan Workers Party¹⁷ and the Taliban, prior to their takeover in Kabul in 2021, have also turned to urban areas and conducted attacks. ISIS-affiliated groups have undertaken attacks in Paris, Mumbai, Brussels, Marawi, and Nairobi. In Latin America, urban violence can be fueled by transnational drug trafficking and organized crime such as in Mexico and Brazil.¹⁸ The COVID-19 pandemic intensified existing drivers of conflict in places like Nigeria and Colombia.¹⁹ Climate change is contributing to an increase in violence in Mali and Iraq, countries that are already dealing with the strain of conflict on their resilience responses.²⁰ In addition, there are fluid transitions between armed conflict and the stabilization phase that can include actions between criminal groups and ill-prepared local security forces. Thus, to be effective against hybrid threats, governments do not just need conventional armies, they must have constabulary (gendarmes, carabinieri) capabilities that combine policing, administration, and emergency services.²¹



Medical workers inside a field hospital set up inside a mountain in Hama, Syria, to protect from attacks on hospitals.

In urban warfare, humanitarian organizations also have had to adapt their approach from immediate, life-saving interventions like providing food, water, health, and shelter services to supporting the repair of critical urban infrastructure such as water treatment facilities, electricity, and hospitals when host nation governments have failed to undertake such repairs. Indeed, the scale of conflict displacement has forced aid organizations to expand services from camps to include the needs of those living within host communities in urban areas.

Finally, it is important to mention that rebuilding cities in the aftermath of urban warfare is an enormous task. For example, the estimated reconstruction needs in Iraq in the wake of major operations against ISIS was estimated as over \$88 billion.²² Destroying cities for tactical victories has consequences for stabilization, reconstruction, safe returns for displaced persons, rule of law, and governance. If left unaddressed or not adequately supported, these consequences risk a country relapsing into violence and armed conflict.

HUMANITARIAN CONSEQUENCES

Foreseeing direct and indirect consequences of urban operations on civilians and civilian objects is critical to inform planning, preparedness, and mitigation efforts. Below are some potential humanitarian consequences of urban warfare.

DIRECT

- Death and injury to civilians
- Explosive ordnance contamination
- Destruction of civilian objects (homes, schools, religious buildings) and infrastructure (hospitals, water treatment plants, electric power grids)
- Displacement
- Family separation
- Sexual and gender-based violence
- Psychological trauma

INDIRECT

- Disruption of essential services such as electricity, health care, water, sanitation
- Impact on natural environment from hazardous substances released from weapon
- Disruption to education
- Disruption to financial services and access to banking and cash, reduced economic activity
- Protracted displacement
- Weakened government, absence of judicial services and rule of law
- Post-traumatic stress disorder
- Multiple armed actors acting with impunity and no oversight
- Destruction of income generating assets such as shops, livestock or death or injury of breadwinners



Beyond direct effects such as death and injuries, a consequence of urban war is its indirect/ reverberating effects on the civilian population.²³ For example, when critical infrastructure such as water, electricity, or medical clinics are damaged from explosive weapons, or when such services are disrupted or even collapse during the conflict, it triggers a cascading effect and heightens serious risks for public health, outbreak of disease, and further deaths.²⁴ When engineers, electricians, and other operators of critical infrastructure leave due to conflict, or when repair supplies and equipment degrade or are no longer available due to conflict, it can result in critical infrastructure decays that prevent civilians from returning.²⁵ Sustained fighting results in displacement, as the population is forced to seek safety from attacks or flee the destruction of their homes, loss of livelihood, and degradation of vital services. Explosive ordnance contamination further threatens livelihoods, limbs, and lives of civilians and hinders the return of people who have been displaced. Cultural heritage sites suffer the effects of bombing and shelling, destroying history and identity of communities for generations to come.²⁶ Such humanitarian consequences impact social cohesion, disrupt education, health, and livelihoods, and have deep impact on a country's human capital, economic growth, development, and peacebuilding ability, all of which can take decades to rebuild.

INTERNATIONAL HUMANITARIAN LAW

IHL or the law of armed conflict (LOAC)²⁷ prescribes important rules for the protection of civilians. IHL is based on a balance between the consideration of humanity and military necessity. IHL prescribes that (1) the only legitimate objective that “states accomplish during war is to weaken the military forces of the enemy”;²⁸ that (2) in pursuing this aim, the choice of “means and methods of warfare is not unlimited”;²⁹ and that (3) the “civilian population and individual civilians shall enjoy protection against the dangers arising from military operations.”³⁰

IHL regulates what and who may be legally targeted, as well as the balance between military necessity and humanity. The fundamental IHL principles governing the conduct of armed actors are: 1) distinction; 2) proportionality; and 3) precautions. A commander must assess, based on information available to him/her before launching an attack, whether the means and methods used are indiscriminate or disproportionate, as well as whether all feasible precautions have been taken to minimize civilian harm.

Rules on the Conduct of Hostilities

IHL requires that parties to conflict comply with the rules of distinction, proportionality, and undertake precautionary measures in attacks (and against the effects of attack), to protect civilians and civilian objects, and to exercise constant care during military operations to spare civilians and civilian objects while engaging military objectives.³¹

The principle of distinction prescribes that parties to an armed conflict must “at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives.”³² In other words, civilians and civilian objects are protected and must not be the object of attack.³³

The prohibition on indiscriminate attacks includes three types of attacks: attacks not directed at a specific military objective; attacks that employ a method or means of warfare that cannot be directed against a specific military objective; and attacks that employ a method or means of warfare with effects that cannot be limited as required by IHL.³⁴ In addition, IHL prohibits two specific types of such indiscriminate attacks: area bombardment and disproportionate attacks. Area bombardment is an attack that treats a number of clearly separated and distinct military objectives located in a populated area as a single military objective.

The principle of proportionality, meanwhile, prohibits attacks that may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof such as would be excessive in relation to the concrete and direct military advantage anticipated.³⁵ An important point to emphasize is that this rule is not limited to death and injuries. Rather, damage to civilian objects should also not be excessive in relation to the military advantage anticipated. The rule requires that, in the context of each attack, a prior assessment be made as to exposure and anticipated level of injury or damage that civilians or infrastructure may suffer as a result of the attack, including consideration of the target itself, its vicinity, and the type of weaponry used. The assessment must then weigh the anticipated impact against the anticipated military gain.³⁶ It also requires a commander to take into account all foreseeable incidental harm to civilians and civilian objects based on information reasonably available from all sources in the circumstances.³⁷

Given the interconnectedness of infrastructure in urban areas, proportionality analysis can include the “foreseeable” medium- and long-term effects of an attack, such as the ongoing threat of unexploded ordinance (UXO).³⁸ While there is no consensus on the temporal and geographic scope of effects for which the proportionality assessment must account,³⁹ militaries can critically examine past operations to inform future assessments and learn from mistakes that had not been adequately anticipated or mitigated. What is reasonably foreseeable will vary depending on the circumstances of an attack and target, but patterns of incidental civilian harm can be foreseen based on past effects, case studies of urban conflicts, modeling of weapons effects, and understanding the infrastructure and interdependency of essential services.

Inherent in the practical application of proportionality and distinction is the requirement that both the attacking and defending parties take precautionary measures to avoid or minimize the effects of their actions on civilians.⁴⁰

Precautionary measures must be undertaken by those defending from the effects of attack and those undertaking attacks. When planning an attack, parties have an obligation to do everything feasible to verify that targets are military objects, as well as to select means and methods of warfare to avoid and, in any event, minimize incidental civilian casualties and damage to civilian objects.⁴¹ The obligation to take precautions that are “feasible” is understood to mean precautions that are “practicable or practicably possible, taking into account all circumstances ruling at that time, including humanitarian and military considerations.”⁴² Commanders are required to gather all available information that enables them to verify a target and to assess the potential incidental effects of an attack.⁴³ They are further required to suspend or cancel an attack if it becomes clear that the attack will cause excessive “collateral damage.”⁴⁴ Taken together, these requirements suggest that commanders should, at the time of attack, select the method and means available to them with a view to minimizing harm to civilians and civilian objects.⁴⁵

For its part, the attacking party must—as circumstances permit—give effective advance warning of an impending military operation.⁴⁶ The principle of precaution may require that the attacking party refrain from launching operations on a populated area if the attack is likely to result in civilian casualties.⁴⁷ It may also prohibit attacks at certain times or from certain angles if such attacks would lead to civilian casualties.⁴⁸ Moreover, when it is possible to choose between several military objectives that would all result in the same military advantage, “the objective to be selected must be that [which] may be expected to cause the least danger to civilian lives and to civilian objects.”⁴⁹

The defending party must, to the maximum extent feasible, “endeavor to remove the civilian population, individual civilians and civilian objects under their control from the vicinity of military objectives” and “take the other necessary precautions to protect the civilian population,

Inherent in the practical application of proportionality and distinction is the requirement that both the attacking and defending parties take precautionary measures to avoid or minimize the effects of their actions on civilians.

individual civilians and civilian objects under their control against the dangers arising from military operations.”⁵⁰ In addition, both parties to a conflict must refrain from placing military installations in or among civilian populations/objects.⁵¹ If this is not feasible, parties must take other measures to spare civilians from the dangers of military operations.⁵²

Whether an operation comports with these precautions requires a fact-specific inquiry sensitive to the incidental effects of an operation on civilians and/or civilian objects. In general, facets of an operation that may cause incidental loss and are therefore subject to consideration under the principle of precaution include: the location of civilians within or in the vicinity of the military objective; the terrain (e.g., if the area is prone to landslides or floods); the type of weapons and munitions, as well as the accuracy of the weapons used; weather conditions; the specific nature of the military objectives concerned (e.g., if the objectives are ammunition depots, fuel reservoirs, or main roads of military importance within the vicinity of populated areas); and the technical skill of the combatants.⁵³

Although IHL prohibits the use civilians to shield military operations and objects,⁵⁴ under no circumstances does an unlawful choice by a party to conflict relieve the attacking party of its obligation to take all feasible measures to protect civilians and civilian objects during an attack.⁵⁵

While less commonly emphasized, IHL also has an overarching general obligation to take constant care to spare the civilian population, individual civilians, and civilian objects,⁵⁶ and applies to the entire range of military operations, and not solely attacks. The term military operations encompass “any movements, maneuvers and other activities whatsoever carried out by the armed forces with a view to combat” or “related to hostilities” and not just during attacks.⁵⁷ The constant care obligation should be interpreted to serve “as a vital balancing function” reminding ethical commanders and soldiers that the “warrior instinct of aggression and decisive action must always be tempered by genuine commitment to mitigate risk to civilians.”⁵⁸

In urban operations, including large-scale combat operations, the constant care requirement is heightened given the proximity of civilians to military objects and the intermingling of critical infrastructure.⁵⁹ The constant care obligation therefore must shape operational planning and mission execution not only during war, but in preparation for war,⁶⁰ including air and ground operations, the establishment of military installations, defensive preparations, use of AI and cyber tools, and quartering of troops or search operations.

Finally, there is a growing body of analysis on the application of these rules in the context of future wars that could include cyber and space operations against civilian infrastructure.⁶¹ In future wars, for example the U.S. Army also expects that “the accelerated pace of operations will require delegated decision-making authority both with respect to subordinates and non-human decision-making capabilities.”⁶² Thus training on IHL, ethical judgment, theater-specific Rules of Engagement (ROE), which set forth circumstances in which force may be used, adaptability and innovation of new civilian harm mitigation tools to future operational environments are essential.



Khalil Ashawi, 2015

Syrian Civil Defense volunteer removing civilians killed from fuel-air-explosive laden rockets (vacuum bombs) hitting residential areas in opposition held area in southern Idlib.

Encirclement Tactics/Siege

If a military commander undertakes to isolate enemy forces, separating them from reinforcements and logistical supplies and controlling entry and egress from a specific area, the operation must be compliant with IHL. Under IHL, the besieging party is entitled to attack forces and limit supplies that reach them, but starvation is prohibited. In addition, the besieging party cannot deliberately deprive civilians of essential supplies necessary for survival. If it cannot provide for the population, it must consent to humanitarian assistance and other support such as removal and burial of dead bodies by humanitarian organizations. The following rules are also relevant to encirclement/sieges where fighters and civilians are in close proximity to one another:⁶³

- First, all attacks of the encircled area, including bombardment of the area, must comply with relevant rules of IHL. Attacks must be directly against military objectives only, must not be indiscriminate, and must comply with the rule of proportionality. Belligerents must take constant care to spare civilian populations and civilian objects, and besieging and besieged forces must take precautionary measures to protect civilians from the effects of an attack.
- Second, sieges cannot be used to compel civilians to permanently leave an area. Temporary evacuations may be necessary, but, while civilians are temporarily displaced, all possible measures must be taken to provide adequate shelter, food, hygiene, healthcare, and safety, including from sexual and gender-based violence. In addition, all possible measures must be taken to keep families together rather than separated.
- Third, when screening individuals leaving an area where there is fighting, screening must be compliant with IHL, human rights law, and rules on humane treatment. Screening must not be done in a manner that would constitute collective punishment.

MILITARY OPERATIONAL CHALLENGES IN THE URBAN ENVIRONMENT

Understanding the urban environment, including the terrain, population, supporting infrastructure, and technology, is essential for military planners to better understand how to protect civilians and civilian objects from the effects of an attack, as well as for humanitarian assistance planning and clarifying the role of civilian authorities. In our increasingly technological world, understanding cyberspace and information technology infrastructure—including telecommunications, internet, computer systems, cellular phone systems, and social media—is also critical, as many life-sustaining functions in urban areas are data-dependent.

Military operations are challenging in urban areas for several reasons that must be examined in order to enable planning and preparedness, including from the lens of civilian harm mitigation.⁶⁴

Terrain

Urban areas can include horizontal, vertical, interior, exterior, and subterranean forms imposed on the natural environment. An urban area may appear dwarfed on a map by the surrounding countryside, but the actual size and scope of the urban area of operations is many times that of a similarly sized portion of undeveloped natural terrain. A multistoried building takes up the same land area as a small field, but each story or floor contains an approximately equal area as the ground floor. In effect, a 10-story building has 11 times more defensible area than “bare” ground—10 floors and the roof. In addition, urban areas can include informal settlements, which can include anything from shanty towns to high-rise buildings. It is the sheer volume and density created by this urban geometry that makes urban operations resource-intensive in time, manpower, and materials.⁶⁵

Understanding the employment of munitions effects in urban terrain is vital. Over 60 percent of the world’s buildings are composed of penetrant-resistant brick or concrete, thereby impacting weapons effects and blast, fragment, ballistic or manual breaching.⁶⁶ Due to urban terrain interference, how buildings are constructed, whether flat, hard, or smooth, is important for determining munitions effects. Buildings weakened from weapons result in debris falling increasing the risk of injuries to civilians and soldiers in the area.

Subsurface areas magnify the complexity of the urban terrain. Below-ground facilities are inherent physical features of today’s cities, with their number and dispersion increasing along with population growth and its accompanying structural spread. Subterranean tunnels have been used by armed actors to prevent observation, as well as to target and smuggle supplies. Detecting entrances and exits to subterranean facilities can be extremely difficult, with different types of resources necessary to detect, trace, and target military objectives. Identifying underground routes is nearly impossible given the depth of some infrastructure and the clever concealment of airshafts. Even when detected, military targets may not be engaged due to their location under civilian infrastructure. ISIS and Hamas, for example, have both successfully employed a strategy of digging tunnels under civilian infrastructure.⁶⁷

The complex physical terrain, street patterns, underground tunnels and transportation, interconnected infrastructure, and presence of civilian populations make it difficult for forces and heavy equipment to move and maneuver, which in turn can cause significant damage.

Buildings, walls, tunnels, and other structures can interfere with the use of communications signals and GPS navigation systems. This can limit situational awareness and ability to verify the locations of both the adversary and civilian.

Ground operations can also become decentralized as forces need to move through city streets, stairwells, and corridors, thereby dispersing command and control and increasing the risk to civilians. Soldiers at the tactical level must be fully knowledgeable on the rules of engagement and have high ethical judgment in order to comply with IHL principles of distinction, proportionality, and precautions.

Cities located near coastlines, including littoral zones such as inlets, rivers, and canals, add an important facet to urban terrain. Controlling or having access to urban littoral allows forces maneuver and logistical capabilities and require planning considerations given presence of population, infrastructure, government, economic, and industry activity in the littoral area. Such locations bring the risk of flooding, waterborne disease, and erosion. Moreover, coastal cities include ports and trade hubs, which energy and supply chains rely upon and are key entry points for the movement of people and the delivery of humanitarian assistance.⁶⁸

The sheer volume of terrain in urban areas not only challenges command, control, and information-collection activities, it increases the resources required to conduct urban operations.

Population

Understanding the urban population—its composition, size, and location—assists in planning to mitigate the effects of an attack and to defend against attacks. Knowing the race, religion, national origin, tribe, clan, economic or social class, education level, age, gender, occupation, and other significant social demographics, as well as urban societies' sources of power and influence (both formal and informal) enhances the understanding of the population. Knowing the populations' perception with regard to their safety and security including what they perceive as threats enables commanders to better understand the human environment. Commanders need to understand how adversaries may use civilians and how civilians will live and move during a battle, especially given dynamic urban environments. Such understanding will also inform how security forces can effectively communicate with civilians in order to protect them during an attack and from the effects of an attack, and enable efforts to shield or safely evacuate civilians from areas of combat.

Infrastructure

Urban infrastructure is designed to support inhabitants and includes interconnected systems such as commerce, culture, communications and information, administration, sanitation, water, electricity, hospitals, airfields, roads, bridges, subways, ports, trains, and transit corridors for goods and services. Disruption or degrading of such systems can be militarily advantageous but destruction to these interlinked components has detrimental effects on the civilian population. In particular, damage to services—sanitation, water, electricity, and medical—that are essential for the survival of the population. Thus, knowing locations of these structures and the weapons' effects on them would require consulting with urban engineers and experts to enable any commander to determine appropriate courses of action that are IHL compliant.



Two men walking through an informal displacement camp in Aden, Yemen.

Requirements to protect, restore, and maintain critical infrastructure also require significant resources and personnel. These must be factored into planning to meet the urgent needs of the population and to allow the return of the displaced population to enable the conditions of transition toward civilian authorities, improved civil-military relations, and overall operational effectiveness.

Communications, Cyber, and Information Warfare

In urban areas, the interconnectedness of networks and supporting infrastructure creates challenges when both state and non-state actors pursue military aims using technology. For example, sophisticated cyberattacks can disrupt the provision of services essential to the civilian population, including healthcare, electrical, energy, and water supply systems. As such, the weaponization of and targeting within the cyber domain poses a risk to civilian populations that are reliant on such dual-use infrastructure.⁶⁹

Advances in AI could also be integrated into military cyber capabilities, which would lead to a degree of operational autonomy—although it could also introduce new risks of civilian harm. Moreover, the growth of the Internet of Things (IoT) can expand the attack surface and the range of vulnerabilities available to be exploited by armed actors, but also has positive uses such as rendering precautionary measures more effective and aid in the distinction of civilians and combatants.⁷⁰ Leveraging these capabilities needs to be balanced with the effects on civilians and civilian objects.

Technology also increases the risk of armed actors accessing data to identify, target, or influence the civilian population through the manipulation of information.⁷¹ Information warfare, including disinformation (the spreading of false information with intent to deceive) or misinformation (the spreading of false information without specific intent to deceive), can be used by armed actors and have notable consequences for civilians. While information warfare is as old as warfare itself, advancements in technology can influence opinions and behavior on a larger scale than ever before. For example, fake information produced by AI-enabled systems through text, audio, photos, and video is becoming increasingly difficult to distinguish from real information.⁷² False content can be circulated widely on social media, inflaming ethnic tensions and violence between communities.⁷³ As a result, civilians may be subject to ill-treatment, arrest, discrimination, denial of access to essential services, or attacks on their person or property. Disinformation has also resulted in endangering aid workers and can disrupt access to critical services during armed conflict.⁷⁴ The effects of disinformation are amplified in conflict settings and can heighten confirmation bias and accelerate sharing of specious reports that can impact the quality of verifiable intelligence collection for commanders planning attacks.

Munitions, Resources, and Training

Urban operations are resource-intensive, requiring sufficient logistical support, personnel, medical evacuation locations and resources for both civilians and military, and sufficient coordination for facilitating humanitarian access to the civilian population. Specialized skills, experience, and training are needed for urban operations, and training is hindered when it is not possible to model dense urban areas with appropriate human behavior, infrastructure, and technology. Training in urban warfare typically includes room clearing and breaching, and is generally conducted in inadequately populated training centers with very few civilians or aggressors. Moreover, training typically happens at company level or below and is infrequent. Staff training, which is limited to case studies or tabletop exercises, occurs without external civilian and humanitarian agencies.⁷⁵

Urban operations involve combined arms fighting, which includes infantry, armored forces, direct-fire weapons systems, artillery and indirect fires, snipers, cyber, and airstrikes to support ground forces. It also combines special forces, intelligence, civil affairs, and engineers. In this context, civilian harm mitigation considerations must be integrated into all warfighting functions, in addition to their critical enablers.

Finally, the lack of appropriate munitions for urban areas means that many armed actors rely on wide-area effects munitions such as large radius bombs, missiles, improvised explosive devices (IEDs), unguided artillery and mortars, or multi-launch rocket systems. When used in urban areas, these munitions can cause damage to buildings, destroy critical infrastructure, and cause injuries or death.⁷⁶

Weather and Disease

Urban areas can be heavily influenced by microscale weather conditions that can differ significantly from block to block, especially in areas near large bodies of water. Military operations therefore require meteorological support, including accurate information about such microclimates, to better understand how the weather may impact friendly forces, civilians, and adversaries.⁷⁷ The outbreak of disease in cities is another critical challenge when preparing for humanitarian and medical assistance, decontamination, and force protection.

Adversary Tactics

Adversaries can engage in unlawful tactics such as using civilians as human shields,⁷⁸ preventing civilians from leaving areas of conflict, attacking humanitarian corridors, misusing emblems of the Geneva Conventions like the Red Cross and Red Crescent,⁷⁹ and causing mass casualties. Studying adversary tactics that put civilians at risk would enable better preparedness on how to best operate to reduce such harm.

Mass Casualties

During urban war, mass casualties can occur, which can overwhelm the medical infrastructure. According to the World Health Organization (WHO), “Mass casualties following disasters and major incidents are often characterized by a quantity, severity, and diversity of injuries that can rapidly overwhelm the ability of local medical resources to deliver comprehensive and definitive medical care.”⁸⁰

Type of injuries where explosive weapons are used can include thermal injury from the fireball; direct effects of the blast overpressure (i.e., primary blast injury); blunt trauma from bodily displacement; and penetrating wounds from ballistic objects. Building collapse can also cause crush trauma to many civilians at once. Explosions and fires may be caused by arson or improvised explosive devices (IEDs) or vehicular crashes, industrial accidents, or faulty electrical wiring. Building collapse can result in inhalation injuries, crush injuries, and fractures.⁸¹

Military planners must consider resourcing of their own—and facilitating work of humanitarian agencies while respecting their neutrality—to provide trauma care near active zones of conflict.

Chemical, Biological, Radiological, and Nuclear (CBRN)

CBRN incidents can result in catastrophic loss of life and property and require medical support, life support, decontamination resources, and evacuation and screening of large numbers of civilians. There is a critical shortage of expertise within most militaries to handle CBRN disasters. An urban area intensifies the effects of CBRN attacks, as dispersion patterns of CBRN weapons are impacted by the urban terrain.⁸²

STABILIZATION AND URBAN RESILIENCE

As combat operations transition to stabilization, matters of governance, rule of law, Disarmament, Demobilization and Reintegration (DDR) of armed groups, Security Sector Reform (SSR), reconstruction, and socio-economic recovery are key issues to address. The integration of these issues poses considerable challenges for governments as well as international governments and militaries who are supporting the government. Other challenges include combining military and civilian efforts and setting the conditions for reviving economic growth while tackling immediate priorities such as: restoring security, governance, and functioning courts; rebuilding weakened essential services and infrastructure; reopening schools; and facilitating the return of displaced persons to safe areas cleared of UXO and explosive remnants of war (ERW).

Protracted armed conflicts have, as indicated by the ICRC, a “cumulative impact on three key components of the urban system”: people (with their unique skills), hardware (buildings and infrastructure), and consumables (water, fuel, and medicine).⁸³ Working on even one of these items requires dialogue across sectors, including militaries and in some cases non-state groups that exert de facto territorial control over some urban peripheries or slums.

Cities are also the economic engine of their countries and both rural and urban areas are dependent on the existence and integrity of infrastructure. Without infrastructure reconstruction—that includes clearing of explosive ordinance, rebuilding of roads, and removal of rubble to enable transport of agricultural goods from countryside to city markets—re-starting the economy would be challenging.

The ability of a city to adapt as it transitions from armed conflict to stabilization also requires effective urban management and development to complement security efforts geared toward building resilience against future challenges. Community relationships with police and other security forces are crucial, with communities playing a key role in what is needed for police to improve safety, investigate crime, and hold personnel accountable for violations of the law. Notably, however, police forces can only be as effective as the functioning institutions behind them, such as courts, prisons, and the judicial system as a whole.

Conflict recidivism is common, and some researchers estimate that 40 percent of countries emerging from civil war are likely to relapse into conflict within a decade of the end of hostilities.⁸⁴ Importantly, while non-state armed groups and criminals are identified as the main drivers of insecurity, state authorities such as the military and the police have also adopted repressive and heavy-handed responses to security challenges and have had direct involvement in criminal activities. Thus, security sector reform is needed to restore authorities’ legitimacy in the eyes of the civilian population, both to resolve long-standing grievances that might have contributed to the conflict and to help ensure that history does not repeat itself. The importance of reforming police forces is also necessary in conflict-affected cities where transnational organized crime, illegal trafficking, and illicit economies can impact the nature and duration of conflict.⁸⁵ Activities such as drug and arms trafficking, money laundering, and extortion are endemic activities in cities due to the existence of international connections and the widespread availability of vulnerable areas and populations for armed groups to exploit.⁸⁶



Displaced children sitting on top of rubble in a displacement camp in Aden, Yemen.

Stabilization efforts are also affected by the systemic character of urban areas, meaning that public services and other infrastructure are interconnected with the functioning of other services and structures. This is a characteristic that is distinct from rural areas. As the ICRC report on urban services outlines, the suspension of service provision related to basic needs—such as clean water or electricity—causes the gradual deterioration of other services and businesses. It can even prompt emigration from the city, which can lead to labor shortages.⁸⁷ Delays in re-establishing electricity and other basic services impacts people's ability to access their jobs, income, and food. They can also impact the population's views regarding the new political leadership.

When rebuilding towns and cities, it is critical to bring in humanitarian and development actors, urban planning and reconstruction components, municipal actors, private sector partnerships, and community input.⁸⁸ Damaged and destroyed housing, the lack of jobs, and the disruption of basic services such as water, sanitation, and schools—as well as safe public spaces for children—are challenges displaced families face when returning home. Applying a resilient systems response during the stabilization process will mitigate against civilian unrest, new conflict drivers, chronic poverty, food and water shortages, and inefficient transportation, thus offering more durable solutions for displaced persons.⁸⁹

The UN Habitat's eight systems approach to urban areas⁹⁰ is useful framing for practitioners to support recovery and build urban resilience as an area transitions from high-tempo conflict to stabilization. It identifies and classifies the following key systems sets:

1. Built environment (urban form; land tenure; housing; built assets).
2. Supply chain and logistics (water resources; energy resources; food supply; logistics/freight movement).
3. Basic infrastructure (energy; water; solid waste; telecommunications).
4. Mobility (urban mobility; inter-regional mobility).
5. Municipal public services (cemeteries and crematoriums; civil registration; criminal justice and law enforcement; cultural heritage and activities; emergency and rescue services; food inspection and monitoring institutions; communicable diseases surveillance and response system; municipal taxes and fines; public lighting).
6. Social inclusion and protection (social accountability; access to social protection; access to basic social services).
7. Economy (local economic structure; fiscal stability and municipal finance; market connectivity).
8. Ecology (ecosystem services; ecological footprint; biodiversity and green areas; environmental quality).

Notably, the 2030 Agenda for Sustainable Development Goals (SDG) and its dedicated goals to make cities inclusive, safe, resilient, and sustainable (SDG 11) and promote peace justice, and strong institutions (SDG 16)—are key priorities of the global agenda for development. How these factors are integrated to support societal resilience are important aspects of conflict prevention and the protection of civilians.⁹¹

CHM APPROACH TO URBAN OPERATIONS

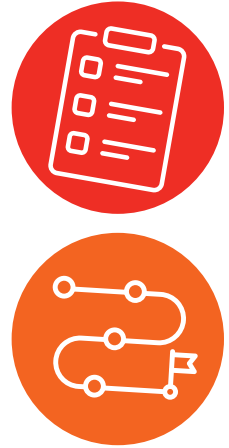
Applying civilian harm mitigation to urban operations will better enable forces to be prepared to minimize civilian harm, adhere to IHL, and be operationally effective. The proposed civilian harm mitigation approach for governments and militaries recognizes that civilian harm is a cumulative effect of decision-making. It assesses risks to civilians and allows for planning, execution, response, and learned lessons in order to reduce identified risks before, during, and after operations. CHM measures can be enabled to protect civilians during attack and from the effects of an attack⁹² and can be adapted and scaled up for large-scale combat operations (LSCO).

Notably, LSCO involve many divisions, corps, or field arms or joint force land command and will be multi-domain involving (air, land, sea, space, and cyberspace).⁹³ Examples of LSCO can include invasions, declaration of war, activation of NATO Article 5 operations, or escalation of limited contingency operations, such as the operations in Mosul and Raqqa, but involving multiple divisions and brigades.⁹⁴ Such operations are likely to occur in or around urban areas as even access to aerial, littoral, or sea port is near cities and requires occupation of seizure to support deployment and maneuver.



Prepare and Plan

Positioning POC and reduction of civilian harm as strategic goals and operational tasks better enables resourcing with the same level of effort as engaging military objectives.⁹⁵ The preparation phase should include gathering available information on population, demography, infrastructure and interconnectedness, and what course of action civilians are likely to take before, during, and after military operations. Continuous analysis of civilian behaviors feeds into pattern-of-life analysis, which enables better information-gathering to distinguish between civilian and military objectives and for humanitarian assistance planning. While military intelligence sources and agencies and Intelligence Surveillance and Reconnaissance (ISR) assets can contribute significantly, use of non-military and non-traditional intelligence sources must be used to develop a comprehensive understanding of the operational environment. Given the heightened risk to civilians and infrastructure in urban areas, population-centric intelligence preparation of the environment can better assist in the detailed planning, preparation, and courses of actions that mitigate civilian harm.



Comprehensive preparation for the urban environment

Preparing for the urban environment is challenging and can strain resources. To generate accurate and reliable intelligence operational planning, ensure sufficient time for data and information collection and sharing about the operational environment. Identify the myriad of actors that the military may interact and allocate resources to understand the population, terrain, infrastructure, communications, and technology in the urban environment.

Understanding civilian behavior

To better analyze how civilians live and behave in a dynamic operational environment, requires comprehensive intelligence collection and analysis to mitigate civilian harm. Broad segment of experts should be consulted such as, anthropologists, sociologists, local city/municipality advisors, informal leaders (religious, community, tribal), and local partner forces. Questions to consider can include:

- What risks do civilians face from all armed actors (including state, non-state, and criminal elements)?
- How do civilians perceive the parties to the conflict?
- Do civilians avoid areas of fighting?
- Are civilians likely to leave, or will they stay in the urban area during military operations?
- Will they stay in the general area where operations are taking place, stay in their homes, move to abandoned buildings to seek safety, hide in subterranean spaces, use mouse holes between buildings to seek safety, move to a different part of the country where there is less fighting (i.e., become internally displaced), or cross borders and become refugees?
- What religious, cultural, and ethnic norms or practices impact how civilians will behave during military operations?
- What local practices could be mistaken as hostile or suspicious (e.g., repairing roads or digging ditches at night)?
- Are there particular times of day or night when civilians are more exposed to risks from an attack?
- What local practices or norms could be identified in order to counter confirmation bias during targeting to ensure positive identification determination (PID)?
- What local cultural practices may make post-strike assessment more difficult (e.g., quick burial practices, concealing losses of women and children, and reporting biases)?

Critical infrastructure

Analysis of critical infrastructure⁹⁶ and interdependencies, including input from engineers and urban planners, must be undertaken to avoid prolonged disruption of essential services (water, sanitation, electricity, healthcare, solid waste disposal). This analysis should include understanding the location of infrastructure (e.g., hospitals, water supply, waste management, and hazardous material storage). A question to consider is what is the baseline condition of critical infrastructure that supports delivery of essential services?

Critical transport nodes

It is critical to identify and locate dual-use transport infrastructure—including civilian infrastructure and infrastructure that would be used by adversaries—and plan to use it to facilitate resource movement and supply logistics. This infrastructure can include: networked trains, highways, roads, bridges, subway, tunnels, underpasses and overpasses, ports, harbors, inland waterways, mass transit, airfields, heliports, and cableways and trams.

Communication and information

Urban communications and information systems can be used by friendly forces, adversary forces, and civilians.⁹⁷ These systems could be used to communicate effective warnings about an attack or natural disaster, provide information about humanitarian assistance, identify restricted areas during operations, or share the location of mines, ERW, and UXO. Collecting such information and identifying communication systems in the planning phase—particularly as part of intelligence preparation—can more effectively enable an appropriate course of action (COA) that includes information operations (IO) and civilian harm mitigation measures.

Potential consequences of cyber attacks on critical civilian infrastructure

Information collection should include the potential consequences of cyber attacks on critical civilian infrastructure, including civilian harm and destruction and the ability to deliver essential services to the civilian population. Such an assessment can include:

- What are the potential consequences of cyber attacks that impact energy, water, transportation, logistics, dams, nuclear power plants or the chemical and biological industries?
 - Can the providers of essential civilian services continue delivering their services to the population if they have been affected by cyber attacks?
 - How resilient are industrial systems?
 - What factors may affect their recovery time?
 - What is the risk that cyber attacks will lead to physical destruction or human injury/death (e.g. through an industrial plant explosion) or the release of dangerous forces (e.g. water from dams, or hazardous substances, such as chemical or radioactive material, from industrial plants)?
-

Understand impact on the natural environment

Under IHL, the natural environment enjoys specific protection.⁹⁸ The effect of armed conflict on the natural environment, such as loss of crops or livestock, lack of access to clean water or agricultural land, ecosystem damage, and biodiversity loss, should be considered during the planning and conduct

of operations with plans for appropriate mitigation measures to allow persons to return. Degradation or destruction of land and water sources can also increase risk to civilians living in the area of operations. Environmental damage can include the release of toxic chemicals or other dangerous forces, as well as ERW/UXO contamination. Weather and climate effect during urban operations will also affect living conditions for civilians and military forces from the effects of extreme heat when there is limited water during operations or in cold weather without access to electricity or fuel.

Expanded information collection to ensure trust and data security

Developing a comprehensive understanding of an operational environment requires access to both classified and open-source intelligence, as well as engagement with external actors.

- For a comprehensive understanding of the operational environment and to reduce risk, engage with academia, industry, commercial utility providers, urban planners, and subject matter experts (SME), as well as international organizations, civil society organizations, and local communities, who are on the ground and have both historical and current knowledge.
 - It is important to build trust with external actors, especially with humanitarian organizations who have long-term presence in the area. It is critical to understand their mandate of neutrality in the delivery of humanitarian assistance and to ensure that their information is not misused.⁹⁹
 - Any actor willing to share data—for example, the location of protected sites (cultural, religious, or medical)—must be assured that the information will be secure and not misused for targeting purposes.
 - Clarify what data is needed by whom, for what purposes, and in what format.
-

Effective warnings

Under IHL, parties to a conflict are required to protect civilians and civilian objects under their control from the effects of attacks.¹⁰⁰ Unless circumstances do not permit, providing effective advance warning of an attack that could affect the civilian population is necessary to ensure all feasible precautions are taken to protect civilians and adhere to the principle of distinction. Questions a commander and/or their military staff can ask:

- What would work as an “effective” warning for civilians in an area of operations given local culture, custom, and practice, as well as their ability to move, seek shelter, and protect themselves in a timely manner?
- How will women, men, boys, and girls, persons with disabilities, understand the warning and are able to take appropriate action to seek shelter and protect themselves?
- What means of communication would work to warn civilians about impending military operations or to provide them with routine information?
- How long might a population take to react to messages like attack warnings?
- How long might adversary commanders take to respond to such warnings and act?
- What coordination with partner forces and humanitarian organizations would be necessary to facilitate civilians’ ability to move to a place of safety?

Humanitarian assistance

Knowing the status of health, food, and water that is available to a population enables better decision-making among military planners navigating urban areas. IHL also sets out key ground rules for parties to a conflict in order to enable impartial humanitarian organizations to access and help people affected by the fighting.¹⁰¹ To enable information-gathering on humanitarian assistance needs, consider:

- What is the health of the population?
- How long can access to current food, water, or medical supplies last if interrupted by military operations?
- What intermediate measures can be taken to deliver essential food, water, medicine if essential services are damaged?
- How long before humanitarian organizations can start delivering assistance or support other protection needs (e.g., searching for families, missing persons, or collecting the dead)?
- How are movements of humanitarian organizations in the area of operations (AOR), location of medical facilities and the vehicles and clothing of medical personnel identified for deconfliction purposes to avoid mistaken attacks?
- Should siege-like conditions develop, how will humanitarian actors be supported in providing food, water, and medicine to civilians and in their negotiations to allow civilians to leave voluntarily and safely.¹⁰²

Security screening

It is important to develop common guidelines and procedures on security screening should large numbers of civilians move between cities and towns. To ensure consistency, transparency, and adherence among all relevant security actors, commanders and their military staff can:

- Clearly identify which security forces are authorized to conduct security screening and identify formal locations where security screening is to be conducted.
- Instruct forces conducting security screening to provide basic procedural information to civilians being screened and to their families, as well as to notify the family members of anyone arrested through the process.
- Identify minimum conditions to be put in place for people being screened and for their relatives waiting for them—including basic shelter, food, water, and medical care.
- Outline special processes for the screening of women (e.g., the presence of female screeners), children, and vulnerable individuals.

Planning for evacuations

Evacuating civilian populations during urban operations is critical for reducing civilian harm. It may take place in the early phase of the conflict, in preparation for planned defensive or offensive operations, through block-by-block clearance operations, or after months or years of stalemate. Evacuation might involve negotiations by parties to the conflict in order to allow civilians to leave, or it may involve armed forces working alone or in conjunction with humanitarian organizations. It may involve civilians, sick or wounded, and/or detainees whose detention is not related to the conflict. Civilians must be allowed to flee from hostilities at all times. However, evacuation is different than civilians deciding on their own to flee hostilities without the involvement of parties to the conflict.



Sahr Muhammedally, CIVIC

ISIS vehicles destroyed in a residential area, West Mosul, August 2017.

Civilians who are being evacuated could face a number of risks. They could be injured or killed during evacuation, including by mines, improvised explosive devices, or ERW/UXO. They could face additional risks such as arbitrary detention, disappearance, or abuse. These risks also include gender-based violence and extrajudicial executions. Furthermore, families may be separated and unable to access services or support. Notably, forcible evacuations may amount to forced displacement, which is prohibited under IHL.

Safe evacuations are best organized when all sides agree on the evacuation as well as the necessary logistics and coordination procedures. Commanders must ask the following questions:

- What is best way to communicate and coordinate with all parties involved, including civilians, humanitarian organizations, and (where appropriate) adversary commanders?
- How can civilians be given advance notice regarding the personal belongings they can take, the evacuation process, and the destination site in a manner and local language that is understood?
- What measures can be taken to prevent family separation and ensure family unity?
- Where should safe routes be created?
- What areas are dangerous (e.g., due to explosives or attacks by an adversary that does not agree to evacuation)? How can these areas be avoided and how will they be marked?

- How will people be moved, and what transport will be provided to get them to a safe destination?
- What are the threats to civilians/evacuees, and how can they be protected against such threats during evacuation?
- How will medical care, food, hygiene, and shelter be provided to evacuees at their destination?
- What lawful screening procedures will be developed to screen civilians from combatants?
- What detention facilities and regulations will be in place for the lawful processing of combatants/fighters?
- What orders will be issued, resources allocated, and coordination organized for evacuation?
- How will persons with special needs and vulnerabilities, including the elderly, sick and wounded, be cared for?

Defending civilians from the effects of attack in urban areas

Defending forces have substantial control over where military forces and equipment will be placed in relation to the civilian population. The defending force often has better information than the attacker about where civilian persons and property actually are, and is therefore better positioned to avoid knowingly putting them in harm's way. However, the defender's tactical actions and overall strategy may also contribute to the dangers civilians face, both from the defender's own actions and from those of the attacker.

To respect the principle of distinction and take constant care to not put civilians at risk during an attack, defenders should avoid locating military objectives in civilian areas and/or co-locating with civilians. If civilians are in a location that is deemed important to the overall defense, then the defending force must encourage civilians to leave and facilitate transport out of the city to locations where they will receive shelter, food, water, and medical care.

To improve situational awareness around incoming attacks, defenders can place sensors in heavily trafficked areas to anticipate enemy force movements into the area and provide early warning so civilians can leave or take appropriate shelter. Alerts through cell phone messages can warn civilians of incoming attacks from an adversary and warn them to leave the area. Audio sirens or signals could be activated in areas of danger and programmed to send multiple messages, including to take shelter in preparation for an incoming attack or in anticipation of a counterattack to an ongoing operation.

Defenders could also use visual signals and markers, such as flashing lights or brightly colored spray paint in a pre-designated color. Such signals or markers could be used to warn civilians when an attack is expected in order to help disperse them from the area. They could also be used to identify protected areas, particularly in a fluid operational environment. If displaced civilians were being gathered in an ad hoc location such as a building, for example, markings could be used to notify an attacker of the building's temporarily protected nature. The use of AI image recognition technology can also be used to identify protected emblems such as the red cross, the red crescent, civil defense, and cultural property.¹⁰³

Adversary tactics

Understanding adversary tactics, techniques, and procedures (TTP) that put civilians at risk and can cause civilian harm is important to evaluate to determine the appropriate course of action to minimize risks to civilians and to prevent mass casualties. Some questions planners could consider include:

- Will the adversary use tactics that might cause civilian harm?
- Will the adversary direct attacks against the civilians and civilian objects?
- Will the adversary likely use civilians as hostages and/or use civilians to shield their own operations and, if so, how?
- Will adversary forces be accompanied by their family members who are civilians and entitled to protection, unless they are individually determined to directly participate in hostilities?
- Is the adversary located near where civilians are present in high concentrations and, if so, how would own-force actions risk causing incidental civilian harm?
- Will adversary forces allow civilians to leave safely?
- Will the adversary commander be willing to discuss a pause to allow for civilians to leave?

During armed conflict, situations can also arise where armed actors engage in deliberate mass atrocities against the population to serve their military and political objectives. Four major mass atrocity crimes include genocide,¹⁰⁴ crimes against humanity, war crimes,¹⁰⁵ and ethnic cleansing.¹⁰⁶ Commanders defending an area and population under threat, supporting a host-nation force, or in an international coalition need to develop different courses of action on mass atrocity response to prevent, deter, respond, and protect civilians taking into account the challenges of those operations in urban areas.¹⁰⁷

Preparation for mass casualties

In preparation for mass casualties, planners need to fully prepare and resource a response plan and should consider the following:

- Understand the responsibilities under the Geneva Conventions and Additional Protocols to protect and provide care to wounded civilians on the battlefield in interstate and intrastate conflicts.
- Plan for development of clinical standards for civilian trauma care in conflict settings with input from trauma experts.¹⁰⁸
- Plan for resources and coordination that will be needed with all actors, including humanitarian agencies in the area, to facilitate and support the creation of trauma stabilization points and field hospitals to provide urgent trauma care to patients and referral pathways for further treatment?¹⁰⁹
- How will equipment and antidotes to respond to CBRN be effectively deployed?
- How will soldiers be told to respect the impartiality of humanitarian actors and independent civilian medical providers in conflict zones and to not militarize healthcare facilities.¹¹⁰

Employ

Finding targets in an urbanized environment is challenging because of the terrain, the presence and movement of civilians, interconnected infrastructure, and inherent vulnerability of civilians and civilian objects to weapons effects. In urban operations, including large-scale combat operations, militaries must do more to adapt targeting tools and weapons for contested operational environments. Militaries can examine past operations to inform future assessments and learn from situations that had not been adequately anticipated or mitigated. What is reasonably foreseeable will vary depending on the circumstances of the attack, the target, and the operational environment.



Training

Urban warfare is one of the most complex forms of warfare, and necessitates specific and focused training, where commanders and forces must understand the urban landscape and its civilian dimension. Forces should be conditioned to an environment where every action impacts civilians. Training considerations can include:

- Scenario-based training must not only simulate realistic civilian presence and activity, but it must also reflect the operational setting, appropriate munitions and equipment, the likely conduct of the enemy, and how these factors create risk for civilians.
- An understanding of the challenges related to urban operations through immersive or virtual reality training that replicates urban areas, as well as through tactical decision games and vignettes, where civilians and terrain are key factors
- Training of intelligence personnel contextualized for urban operations to improve intelligence preparation that sufficiently integrates using different sources of information how population will behave and move in a dynamic environment.
- Through realistic training, identify requirements for certifying standards for targeteers and collateral damage estimate methodology (CDEM).
- Adequate understanding of adversary TTP that place civilians at risk, such as co-location in civilian areas, the use of human shields, and cutting off potential evacuation routes.
- Scenarios that emphasize decision making in applying the principles of distinction, proportionality, and precautions in urban environments.
- Scenarios or vignettes that challenge ethical decision making and rules of engagement (ROE) in situations where civilians and combatants are intermixed and on how best to reduce civilian harm.
- Embedding trainers posted into units to accelerate the dissemination of good practices in urban areas.
- Civilian agencies/international organizations in role-playing to familiarize the military with mandates and their role in theater and prepare troops pre-deployment.
- Examine past operations of own forces or other forces regarding ways to fight in urban areas and integrate challenges and good practices to minimize civilian harm.

Target development

IHL requires that militaries take steps to avoid and minimize civilian harm and damage to civilian objects across all operations and conflicts, including through robust operationalization of the principles of distinction, proportionality, and precautionary measures. Militaries therefore must adapt

targeting procedures for deliberate and dynamic strikes with a deep assessment of how urban terrain (surface and subterranean), infrastructure, and population density make targeting more complex.

Prior to attacking an urban area, militaries typically undertake shaping efforts to reduce challenges for ground forces by engaging adversary fighters, their command and control, lines of communications and logistics, and the ability to build defense positions. Such deliberate targeting operations help shape the environment by striking enemy targets ahead of the ground maneuver.¹¹¹ Dynamic strikes in an urban fight are undertaken in self-defense of ground forces and carry greater risk of civilian harm because of the compressed timeline in which they occur, limiting situational awareness, and may not go through same sequences of approvals, including full collateral damage estimates.¹¹²

Policies, ROEs, and PID

- Issue commander's guidance on adherence to IHL, ROE, and best practices to mitigate civilian harm.
- Develop ROE that sufficiently reflect challenges related to the presence of population, the built terrain, and the interconnectedness of infrastructure.
- Ensure ROE include what happens when civilians directly participate in hostilities,¹¹³ and ensure they reflect sufficient awareness regarding the risk of civilian actors being mistaken for hostile forces.
- Identify the combination of optical, human, electromagnetic, or other sources of information that are used to constitute positive identification (PID) and specify how many sources are needed for PID to facilitate distinction requirements.
- Assign trained forward observers and forward air controllers within units to call for ground-to-ground and air-to-ground fire, and task them to support with PID and assessments of civilian harm.
- Ensure other means of intelligence are available to identify military objectives and PID if ISR or GPS capabilities are unavailable in urban operations.
- Clarify the responsibilities of target engagement authority (TEA) on how to comply with IHL rules and prohibitions against indiscriminate and disproportionate attacks as well as in self-defense circumstances.
- Create a No Strike lists (NSL) policy that includes, for example, critical infrastructure for the delivery of essential civilian services, cultural sites, hospitals and morgues, residential areas, schools, markets and places of worship and authorities needed for engagement that are IHL compliant.

Appropriate munitions for urban operations

Explosive weapons with wide area effects can present significant challenges in terms of civilian harm due to the proximity of military objectives to civilians and critical infrastructure in an urban area.¹¹⁴

- Use direct-fire weapons (e.g., snipers, rifles, anti-tank guided weapons, tank guns in direct-fire mode, and helicopter air-to-ground guided rockets) where the target is positively identified and the platform can be brought into range.
- Use precision munitions (which reduce circular error probability) with payload matched to target.
- When unclear whether civilians are present in a building or not, use low-collateral munitions to the extent feasible to engage a military objective, thus reducing the munition's explosive yield and wide blast effect, avoiding wider destruction of structures, and lowering the scale of falling debris. Excess debris limits maneuverability in urban areas, can contain UXO, and can be used by the adversary to hide IEDs.

- Restrict/avoid the use of explosive weapons with wide-area effects in dense urban terrain as a matter of policy unless sufficient mitigation measures to limit the wide-area effects can be undertaken. Such measures can include:
 - Adjust the fuse—including by selecting the appropriate fuse, such as airburst, detonation on impact, or delayed detonation—as well as the direction and angle of attack to reduce civilian harm. This could ensure that the effect is focused on the military target to the extent feasible.
 - Consider manipulating technical features of explosive weapons (including warhead, caliber, or fuse) to minimize incidental harm to civilians and infrastructure.
- Walk indirect fires onto target away from civilian structures.
- Assess safe distances for civilians and civilian objects using similar safe distance methods used for own forces, recognizing that civilians are not wearing body armor or helmets and can be hit directly or crushed under falling debris caused by the munition.

Pre-assessment measures

- Until it can be proven otherwise, troops should assume the presence of civilians in buildings when operating in urban areas. Civilian presence and patterns-of-life should be observed using different intelligence methods—including surveillance technology, human intelligence,¹¹⁵ open-source intelligence, and the most up-to-date information—and they should be incorporated in targeting processes.
- Assess what tactics can be effective to degrade the adversary in subterranean structures without contributing to building collapse on the surface, where civilians could be present.
- Intelligence for targeting must be vetted from multiple sources to improve confidence in its accuracy and guard against biased information from sources.
- Ensure legal advisors are included in targeting processes to provide legal advice on all aspects, particularly in relation to distinction, proportionality, precautions, and military necessity.
- Ensure adequate access to expertise and tools to assess potential effects in urban areas, including both the effects on individual targets and the operation-level consequences.
- Explore use of machine learning to identify objects—such as people, buildings, vehicles—in full-motion video to alert operators to potential targets.¹¹⁶
- Given technological limitations regarding the ability to determine who is inside a building, targeting teams should red-team actionable intelligence to verify military objectives and civilian presence inside a building prior to attack.
- Develop CDEM and procedures to help commanders evaluate the risk of civilian harm versus military necessity during the planning and execution of combat operations. The CDEM must:
 - Include foreseeable harm to civilians and civilian infrastructure;
 - Require the involvement of engineers/urban planners to advise on the likelihood of primary and secondary effects from blast fragmentation on structures; and
 - Include lessons identified from munitions effects from prior operations when assessing impact on structures.
- A CDEM provides an estimate of the effects from an aim point in the form of radius, but it does not reflect the complex nature of urbanized areas such as “urban canyons.” These canyons often cause higher wind speeds and turbulence, which can cause some munitions to miss their targets and thereby increase the risk of civilian harm and friendly fire. Thus, other sources of information must be cultivated to help in targeting and in the weaponizing process.

- A CDEM does not consider the following errors in making risk assessments, and thus other sources of information must be developed to assist in the targeting process:
 - Weapons malfunction or unknown delivery errors;
 - Unexpected transient movement or presence of civilians in target areas;
 - A change in tactics based on commander or operator judgment in the moment, including target misidentification;
 - Human and machine interface errors; and
 - Indirect effects (see Humanitarian Consequences section above).
- A CDEM also does not apply to munitions that are not designed to cause lethal effects, such as illumination, smoke, white phosphorous, flares, or other countermeasures. Munitions such as white phosphorous that are used as a smoke screen, however, can become incendiary, with catastrophic harm to civilians when used in urban areas.
- Complex modeling for targets in urban areas thus requires different sources of intelligence—including subject matter experts on terrain, infrastructure, and population—and access to current data sets, including possible use of AI to mine military and open-source data to better identify location of civilian infrastructure.
- Given challenges in self-defense or dynamic strikes, military planners and operators should explore ways to develop compressed-timeline options for CDE or tools to improve operator awareness of civilian movement and civilian objects.
- Leverage AI systems to fuse video data feeds from a multitude of sources, including aerial- and ground-based surveillance platforms, or detecting a change from CDEM by finding differences between imagery used to determine the CDEM and more recent imagery taken in support of an engagement. This could inform military commanders to better enable distinction and proportionality decisions and reduce the risk of civilian harm.

Information-sharing

- Ensure that a real-time common operating picture that includes civilian and no-strike locations is available to all commanders, command authorities, observers, and controllers involved in the targeting process, including coalition and partnered forces, if applicable.
- Information collection and sharing in dynamic situations is challenging and requires accurate and detailed databases that are updated continuously to support targeting. Appropriate levels of classification on sharing should be determined in the planning phase in order to share reliable, actionable intelligence with coalition and partner forces. Once an operation starts, the adversary will adapt to thwart the opponent's advantages, requiring intelligence staff to quickly meet the needs of operational commanders.

Deconfliction and no-strike lists

- Planning processes must account for potential challenges in updating and utilizing no-strike lists, and must provide safeguards against attacks on civilian objects listed on NSLs. Multi-source information and intelligence regarding civilian objects—including critical infrastructure—must continually feed into and inform objects' protected status and inclusion in the NSL. In a chaotic, high-tempo urban environment, the NSL must be dynamic—updated in real-time and pushed out to operational frontlines to ensure that risk is identified and adequate measures are enabled to mitigate harm to civilians and civilian objects.

- NSLs should include identification and location of medical facilities and other protected or sensitive sites, such as religious and cultural heritage sites.
- Use of NSL must not lessen importance to distinguish other civilian objects (not on NSL list) from military ones.
- Data required to deconflict military targets from humanitarian activity in the area requires investments in data quality and maintenance and protocols for timely dissemination about humanitarian convoy movements for targeting purposes.
- Develop proper CIVMIL channels where international and national organizations can effectively share information about humanitarian facilities and movements in the AOR.

Effective warnings

During operations, the prior planning should better inform effective warning of an attack to civilians, this includes:

- Warning civilians in a language they can understand and through means they can access (e.g., radio, TV, social media, leaflets, WhatsApp, and SMS), as well as within a reasonable timeframe, allows them to take measures to protect themselves from the effects of military operations.
- It cannot be assumed that all civilians have departed or that those who remain behind are associated with the enemy, as they may have been prevented from leaving, are unable to leave, or did not have time to leave. Those who remain, cannot be attacked unless it's been legally determined that they are directly participating in hostilities.¹¹⁷

Delay or pause operations

During operations, delaying or pausing operations may be necessary to allow time for several actions to take place, including the dissemination of warnings, and to facilitate humanitarian pause or a humanitarian corridor. A humanitarian pause encompasses “a temporary cessation of hostilities purely for humanitarian purposes,” but the pause is only for a specific period of time and is limited to a specific geographic area.¹¹⁸ A humanitarian corridor encompasses the establishment of specific routes and logistical methods “to allow the safe passage of humanitarian goods and/or people from one point to another in an area of active fighting.”¹¹⁹ Both of these mechanisms require an agreement by all relevant parties.

Create defensive terrain

Defending forces can reduce risks to civilians, infrastructure, and locations from attacks by creating defensive terrain. Examples observed during recent operations in Iraq, Syria, and Ukraine include:¹²⁰

- Building enhanced defense such as concrete walls to cordon off an area from direct attacks.
- Creating ditches and berms and maneuvering the area with field engineering to slow the advance of attacking forces.
- Creating or adapting deep underground shelters for civilians to seek safety during attacks, and equipping with food, water, and medical clinics.

Protecting from cyber attacks

Cyber attacks can occur by exploiting operating system vulnerabilities. But given growth of cyber space through IoT, there is an increase of attack surfaces, and thus any connected device can become a target or part of an offensive cyber operation (e.g. a bot in a botnet). Cyber attacks can affect the delivery of essential services to the population, or affect the reliability of internet services, and can cause death, injury or physical damage.¹²¹ Governments can take measures during peacetime to improve cyber resiliency and reduce the human cost of cyber attacks.

- Develop strategies to protect critical cyber infrastructure, such as:
 - Timely repair of important computer systems.
 - Back up important data.
 - Develop strong multifactor password authentication and back up data.
 - Work with technology companies to keep software patches up to date.¹²²
 - Disclosing vulnerabilities to the appropriate software developer so that the vulnerabilities can be fixed.
- Use digital watermark to identify certain civilian actors or infrastructure in cyber space that must be protected as they enjoy specific protection under IHL.¹²³ They can include emblems, signs or flag, including red cross, red crescent, red crystal emblems, signs for cultural property, and works and installations containing dangerous forces and civil defense.
- Work with civil defense organizations to develop their capabilities on resilience in cyberspace and demilitarize such capabilities.
- Segregate military and civilian networks and segregate computer systems on which essential civilian infrastructure depends on the internet.

Countering Disinformation and Misinformation

Allocate resources to counter disinformation and misinformation with fact-based, timely, and credible communications, and sensitize the civilian population to identify disinformation and its impact. Engaging the public and being truthful with facts, including mistakes that have resulted in civilian harm, is the most effective way to inoculate against disinformation.

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- Seek to engage with social media platforms to draw their attention to disinformation and misinformation, especially when it can lead to civilian harm.

Non-kinetic operations

In urban operations, there may be situations where an objective can be achieved through non-kinetic means while reducing the potential civilian harm. For example, information operations to drive an enemy out of an urban area or persuade it to cease fighting (e.g., through negotiation, leaflet drops, radio, or other digital means).

Less lethal weapons

Where operations are taking place in close proximity to civilians, less lethal weapons and equipment should be considered for use under applicable operational legal frameworks, including IHL. Examples include blunt impact projectiles (plastic, rubber or foam bullets), electric shock weapons (tasers) and stun or flash-bang grenades. The use of less lethal weapons does not affect the protected status of civilians under IHL in armed conflict situations, who must not be targeted.

Partnered operations¹²⁴

Partnered operations can include training, equipping, advising, assisting, and accompanying missions, as well as assisting with detention operations. In urban operations, gaps in doctrine, policies, ROEs, training, capabilities, and leadership with partner forces poses a risk to the mission overall and to civilians.

- Train partner forces on urban warfare, IHL, and best practices on civilian harm mitigation in urban environments. This will improve joint conduct, enable all forces to effectively operate in adherence with IHL and without using weapons indiscriminately—which would threaten civilians and undermine the overall mission.
- Enact protocols for sharing intelligence, deconfliction mechanisms, and no-strike lists to ensure clear understanding when carrying out logistical, targeting, and intelligence support activities.
- To identify lessons and areas of improvement for mitigating civilian harm, conduct joint after-action reviews (AARs) and post-strike assessments that include an assessment of civilian harm.
- Encourage partners to adhere to IHL and provide oversight of their forces.
- Encourage partners to engage with international and national organizations to facilitate humanitarian assistance.
- Encourage partners to create modalities to receive information from international and national organizations and media about civilian harm attributed to their actions. Such modalities will support investigations into violations of IHL and improve their TTP to mitigate civilian harm.



Assessment and learning on civilian harm incidents¹²⁵

- Issue guidance to track (collect, store, analyze and integrate learnings from) civilian harm (including death, injuries, and property/ infrastructure damage) in any engagement.
- Allocate sufficient resources, including personnel, for post-strike assessment to reflect on types of weaponry used—such as air, artillery, or close combat direct fires—to improve accuracy and ensure timely assessment of their impact in dense urban terrain with population and infrastructure.
- Create and fully staff a Civilian Casualty Mitigation Team (CCMT) tasked to track civilian harm and recommend changes to TTP and training. Ensure adequate personnel and resources are available to enable effective CCMT functioning in high-tempo large-scale urban operations.
- Ensure that standard operating procedures (SOPs) for managing civilian casualties are updated regularly and incorporate lessons learned.
- Conduct where feasible on the ground assessments of civilian harm to support information gathered through ISR. Given challenges in relying solely on ISR where evidence of harm has been missed, when not possible to undertake own site visit, work with trusted partners and train them on conducting assessments.
- Ensure strike data is stored and easily accessible in a high-tempo dynamic environment for the CCMT staff.
- Develop protocols to engage with external organizations (such as the United Nations, the ICRC, international organizations, civil society organizations, and local communities) that are on the ground and collect information on civilian casualties,. Use other external sources and open-source information to cross-check information gathered through internal reporting to ensure the credibility and veracity of incidents.
- Conduct annual reviews of civilian harm assessments and disseminate them as tools to educate and train forces on desirable tactics that have resulted in a reduction of civilian harm, as well as on areas for improvement and further training.
- Encourage forces to report examples showing good results from tactical alternatives that prevented civilian casualties. Integrate these examples into lessons-learned processes, TTP, and training.
- Develop means of assessing secondary and tertiary effects of weapons in urban areas.

Respond



Acknowledging civilian harm, restoring essential services, removing UXO, restoring security and governance, and reconstruction are critical tasks requiring military, police, government, international organizations, and non-governmental organizations to coordinate and synchronize efforts.

Investigate, acknowledge, and respond

Acknowledging mistakes and responding to allegations of civilian harm are critical steps in recognizing the human dignity of victims, respecting their losses, deterring violators, and enabling trust with communities.

- Publicly communicate the results of assessments of civilian harm, as well as the steps being taken to improve operations to minimize civilian harm. Efforts at transparency and taking remedial action in response to civilian harm will signal to civilians a commitment to their protection, irrespective if the harm was incidental or not.
 - Investigate and hold persons accountable for violating IHL, ROEs, policies, and international human rights law (IHRL). Make the results of accountability mechanisms public.¹²⁶
 - Provide culturally appropriate amends to victims,¹²⁷ ranging from apologies, financial restitution, and medical assistance to full compensation, as well as other forms of restitution for violations.
-

Restore essential services, clear UXO, provide dead body management

- Clear rubble to facilitate the movement of emergency services and displaced persons.¹²⁸
 - Rebuild bridges or create temporary bridges to allow for the movement of people and emergency services.
 - Restore essential services (water, sanitation, electricity, healthcare, and solid waste disposal), which are critical for allowing displaced persons to return.
 - To minimize injuries, allocate resources and technical expertise to clear ERW and UXO, mark contaminated areas, and support and undertake risk awareness programs for civilians (with different messages for children) before they return and when they return.
 - Provide resources and planning for the search, removal, and burial of dead bodies, as well as a liaison point with communities looking for loved ones.¹²⁹
 - Ensure that explosive ordnance disposal (EOD) units are properly resourced to clear roads of UXO.
-

Law and public order¹³⁰

- Ensure local security forces understand the applicable rules on use of force and detention from both IHL and IHRL as the area transitions from armed conflict to stabilisation.¹³¹
- Train local security forces on the use of force and detention under IHRL, and create focal points for liaising with civilians to address concerns (ensuring adequate representation of women in security forces).

- Establish a security perimeter at courts, government buildings, critical infrastructure, and borders to prevent violence, criminality, and looting.
- Reopen courts and administrative services so civilians can register births, marriages, and residency, as well as obtain death certificates and identification cards, which may be needed to access government services.
- Ensure that criminal evidence is preserved with chain of custody to enable use in prosecution in international or national courts.
- Support and resource the work of UN agencies and other civil society organizations on security sector reform, DDR, and governance support to local authorities.

Reconstruction and rebuilding

Facilitate, fund, and support local government and local and international organizations capacities to reconstruct and rebuild urban areas, taking into account community perspectives and a systems analysis approach to building urban resilience.

Learn

Operational learning is the key to understanding the effects of attack in order to inform future planning, learn from mistakes, use evidence-based data for change, and identify good practices to minimize civilian harm. Given the challenges of urban warfare and its impact on civilians, operational and institutional learning to improve training, tactics, and procedures is critical.



- Study past conflicts and identify key mistakes and lessons to inform learning.
- Conduct AARs to identify lessons and follow up, including analysis of impact on civilians and civilian infrastructure.
- Instill a culture of learning, sharing, and transparency to identify best practices.
- Explore the use of big data analytics to support rapid learning on primary and secondary effects of weapons in urban environments.¹³²
- Use data from CCMT to gain insights into emerging trends in order to put in place measures to respond to civilian harm.¹³³
- Encourage forces to report examples that show good results from tactical alternatives that prevented civilian casualties. Integrate these examples into lessons-learned processes, TTP, and training.
- Train staff on how to undertake lessons-learned processes.
- Institutionalize the collection and sharing among states of lessons learned and good practices on reducing risk to civilians, including from explosive weapons.

APPENDIX

Checklist for Defenders¹³⁴

The defending force often has better information than the attacker about where civilian persons and property are located. It is therefore better positioned to avoid knowingly leaving them in harm's way.

1. Respect international humanitarian law and human rights law.
2. Issue commander's guidance stating that protecting civilians is a strategic, legal, and ethical priority.
3. Defenders should avoid locating military objectives in civilian areas or in buildings that are used primarily by civilians, including hospitals, residential buildings, and religious sites.
4. Combatants must wear uniforms or insignia distinguishing them from civilians.
5. Provide effective and timely warnings to civilians about incoming attacks—through sirens, social media, SMS, and loudspeaker—to allow enough time for civilians to seek shelter.
6. Pre-position food, water, and first aid in shelters for civilians.
7. Allow humanitarian actors safe passage to provide food, water, medicine, and transport of injured civilians between frontlines. Respect the neutrality of humanitarian aid organizations.
8. Mark protected areas clearly: schools, hospitals, religious sites, and shelters. Do not co-mingle with civilians.
9. Mark areas where there are UXO and ERW until the area has been cleared.
10. Identify safe routes for civilians to leave, and support their exit out of harm's way.
11. Provide first aid tips to civilians, distribute first aid, and, where feasible, provide tourniquets to civilians.
12. Instruct civilians not to stand on balconies or near windows with binoculars or cameras, as they can be mistaken for the adversary.
13. Ensure civil defense is adequately equipped with fire blankets, rubble removal equipment, water treatment tablets, body bags, markers to cordon off dangerous areas, and antidotes in the event of CBRN.
14. Train and deploy medical teams that know how to treat gunshot wounds, fragmentation injuries, blast wounds, burns for adults, and pediatric bones (as bone structures are distinct).
15. When feasible, restore the essential services that civilians rely on, such as water treatment facilities and electrical power grids.

Checklist for Attacking Forces¹³⁵

1. Integrate POC into commanders' intent, rules of engagement, and direction.
2. Adapt tactics, training, and equipment for urban areas.
3. Train for urban operations from a POC lens.
4. Learn from past urban operations on how to avoid incidental harm.
5. Know the impact weapons will have on urban areas and equip forces accordingly to minimize civilian harm.
6. Invest in resources to better see what is inside a building.
7. Assign urban experts to targeting teams.
8. Plan to reduce risk to civilians by exploring options for building defenses such as ditches, berms, walls, and bulldozers.
9. Talk to conflict-impacted communities to anticipate risk to civilians and critical infrastructure that sustains life and livelihood, as well as to anticipate how civilians will behave during conflict.
10. Allow humanitarian actors safe passage to provide food, water, medicine, and transport of injured civilians between frontlines. Respect the neutrality of humanitarian aid organizations.
11. Plan for evacuation and safe route options for civilians who wish to leave voluntarily.
12. Procure resources to track and analyze the impact of operations. Acknowledge mistakes, assist civilians, and investigate violations.
13. Study and analyze tactics of opposing forces that threaten civilians to enable mitigation measures.
14. Plan to integrate and empower civil affairs advisors to allow for critical injections to support civilians and commanders' intent around POC.
15. Plan to restore essential services, clear ERWs, and manage human remains.
16. Share good practices on civilian harm mitigation in partnered or support operations.

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- R. Peacock, "How Ukraine has defended itself against cyberattacks – lessons for the US", *The Conversation*, 5 April, 2022 <https://theconversation.com/how-ukraine-has-defended-itself-against-cyberattacks-lessons-for-the-us-180085>
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Sami Mukhammad/CIVIC

April, 2022: Al-Nuri mosque in West Mosul, destroyed during fighting between anti-ISIS coalition and ISIS.