



Seeing Through the Rubble

Airwars

The civilian impact of the use of explosive
weapons in the fight against ISIS.



Airwars and PAX have strived to achieve the highest level of accuracy in this report, which is primarily based on desk research and publicly available sources of information. Because there was a lack of information available in the public domain on the civilian impact of explosive weapons use in Hawijah, semi-structured interviews via email were held with six different sources. Some of these sources have been anonymised in the report for security and operational reasons, at their request. All anonymised information in the report has been confirmed by at least two independent sources, unless indicated otherwise.

We welcome comments, clarifications and additional information, in the spirit of dialogue and in the common search for accurate and reliable information on this important subject. If you believe you have found an inaccuracy in our report or if you can provide additional information, please contact us at info@paxforpeace.nl.

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A March 2017 airstrike during the battle for Mosul against ISIS

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Introduction

The past decade has seen a significant and disturbing shift towards large-scale urban combat across multiple conflicts where heavy use of explosive weapons such as aircraft bombs, missiles and artillery shells has been a central feature—leading in turn to very significant civilian casualties and to major destruction of critical infrastructure.

Cities including Aleppo, Raqqa, Mosul, Hawijah, Sirte, Tripoli and Marawi have become synonymous in recent years with wide-scale destruction and extensive civilian harm. In 2019, of the 19,401 civilian deaths and injuries from the use of explosive weapons in populated areas that were tracked globally by Action on Armed Violence, some 92 per cent reportedly occurred in urban areas.¹

As the International Committee of the Red Cross (ICRC) has noted, “Modern armed conflicts are increasingly fought in urban environments, with millions of people bearing the brunt of their tragic consequences. This trend has a catastrophic impact on the civilian population and poses serious legal and operational challenges that need to be addressed to ensure that people living in such environments are protected and their needs cared for.”²

The civilian harm caused by explosive weapons use in towns and cities extends well beyond the time and place of the attack. Explosive weapons are a main driver of forced displacement and have a profound impact upon critical infrastructure services such as health care, education and water and sanitation services. This pattern of harm has spurred international discussions on how to prevent this harm and has led to the start of international negotiations on a political declaration to strengthen the protection of civilians from harm arising from the use of explosive weapons in populated areas.

Most Western militaries claim that their operations have been conducted in compliance with International Humanitarian Law (IHL), and that they are already well-equipped to limit civilian harm from explosive weapons during operations fought in towns, cities and other populated areas. Rebuffing reports in 2017 of severe civilian harm during the war against the so-called Islamic State of Iraq and Syria (ISIS), then-commander Lieutenant General Stephen Townsend asserted for example:

1 ‘Explosive Violence Monitor 2019’, Action on Armed Violence, September 2020, at:

<https://aoav.org.uk/wp-content/uploads/2020/09/Explosive-Violence-Monitor-2019-corrected-02.09.pdf>.

2 ICRC Casebook: War in Cities’. Accessed 2 September 2020, at <https://casebook.icrc.org/highlight/war-cities>.

“In accordance with the law of armed conflict, the Coalition strikes only valid military targets after considering the principles of military necessity, humanity, proportionality, and distinction. I challenge anyone to find a more precise air campaign in the history of warfare. The Coalition’s goal is always for zero human casualties. We apply rigorous standards to our targeting process and take extraordinary efforts to protect non-combatants.”³

However, precision has proven not to be a key determinant of civilian harm during urban combat. Even relatively precise explosive weapons have caused extensive harm, creating effects that extend beyond the target zone in populated areas. Furthermore, civilian casualties are not the only measure of civilian harm. Instead, states should look at the full range of impacts. The long-lasting and devastating impact of International Coalition airstrikes on Mosul, Raqqa and Hawijah, in combination with other explosive weapons such as artillery, show us how high the stakes are for the people who were freed from ISIS at such great cost and now have to deal with the impact that their liberation has had on their towns and cities.

This report sheds light on why there is a need to better address the impact from explosive weapons and to protect civilians through improved military operational standards. In presenting this report, we call upon all states to offer civilians better protection against the use of explosive weapons, to negotiate a strong international political declaration to this end and to commit to avoiding the use of explosive weapons with wide area effects in populated areas.

3 Lt. Gen. Stephen J. Townsend, ‘Reports of civilian casualties in the war against ISIS are vastly inflated’, in Foreign Policy, 15 September 2017, available at: <https://foreignpolicy.com/2017/09/15/reports-of-civilian-casualties-from-coalition-strikes-on-isis-are-vastly-inflated-lt-gen-townsend-cjtf-oir/>.

Inherent Risks from the Use of Explosive Weapons in Populated Areas

1.1 Explosive Weapons

Explosive weapons are being used in conflicts around the world on a daily basis. When explosive weapons are used in towns and cities, they put civilians at grave risk of death and injury. Data monitoring by the British not-for-profit organisation Action on Armed Violence (AOAV) indicates that when explosive weapons are used in towns and cities, nine out of ten of the casualties are civilians.⁴

Explosive weapons kill and injure people as a direct result of their use. But they can also have an impact that extends far beyond the time and place of the explosion. The destruction and damage wrought upon homes cause people to flee, damage to hospitals affects the provision of healthcare services, and the destruction of vital infrastructure disrupts the provision of and access to water, gas and electricity. The use of explosive weapons in populated areas has long-lasting psychological impacts, and negative effects on the environment—for example when factories are hit and toxic substances leak into the environment, or when residues from explosive munitions end up in the environment.⁵ Long after battles have ended, unexploded ordnance and vast amounts of rubble impede the safe return of displaced persons to the town or city.⁶

‘Explosive weapons’ refers to a broad range of weapons and munitions, and includes mortars, artillery, grenades, missiles, rockets and aircraft bombs. What they all have in common is that they project blast and fragmentation around the point of detonation. The impact area can vary greatly: a hand grenade will affect an area that is substantively smaller in size than the impact area of a 500-pound aircraft bomb, for example.⁷ Civilians

4 Action on Armed Violence, ‘Explosive Violence Monitor’, available at: <https://aoav.org.uk/explosiveviolence/>. The database includes news media in English and although not exhaustive, this can be seen as an indicator of the scale and patterns of civilian harm caused by explosive weapons in populated areas. For more information, see www.aoav.org.uk.

5 PAX, Roos Boer and Wim Zwijnenburg, ‘Exploring environmental harm from explosive weapons in populated areas’, 28 May 2020, available at: <https://blogs.paxvoorvrede.nl/2020/05/28/exploring-environmental-harm-from-explosive-weapons-in-populated-areas/>.

6 Humanity and Inclusion, Mines Advisory Group and Norwegian’s People Aid, ‘A Persistent Danger: Unexploded Ordnance in Populated Areas’, January 2020, available at: <https://www.npaid.org/publications/a-persistent-danger-unexploded-ordnance-in-populated-areas>.

7 For examples of wide-area-impact explosive Weapons, see: Article 36 and PAX, ‘Explosive Weapons; Factors that Create Wide Area Impact’, June 2018, available at: <https://www.paxforpeace.nl/media/files/wae-harm-table.pdf>.

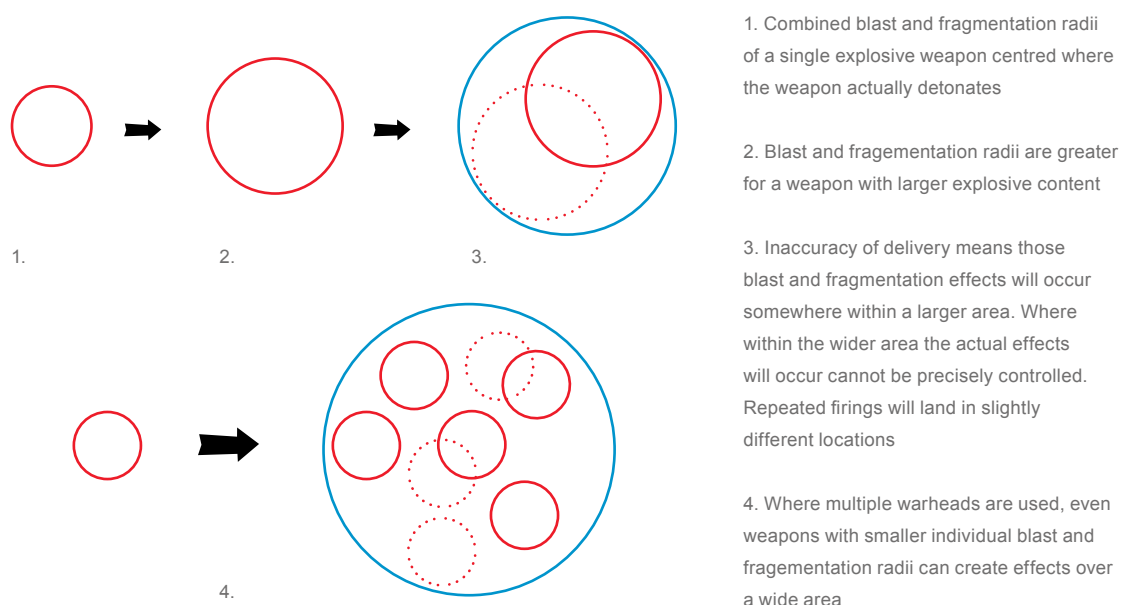
are placed at high risk of harm in particular when explosive weapons have wide area effects and when those effects extend beyond the military objective. When the weapons are used in populated areas, the likelihood that civilians are nearby is much greater, and they are therefore at particular risk of death and injury. This can include the harming of multiple people in an event and civilians being the unintended targets of an attack, not to mention the extensive damage and long-lasting effects on civilian infrastructure.

Wide area effects are the result of three different characteristics, either individually or combined:⁸

- ♦ A large blast and fragmentation radius (for example, large aircraft bombs);
- ♦ The use of multiple munitions (for example, multi-barrel rocket launchers);
- ♦ Inaccuracy of delivery (for example mortars and artillery).

Each of these characteristics will cause the weapon's effects to extend beyond the intended military target, thereby putting civilians at risk when this target is located in a populated area.

Illustration 1: Basic structure of wide area effects



Source: Article 36 and PAX, 'Areas of Harm; Understanding Explosive Weapons with Wide Area Effects'.

8 ARES and ICRC, 'Explosive Weapons in Populated Areas: Technical Considerations Relevant to their Use and Effects', June 2016, available at: <https://www.icrc.org/en/document/explosive-weapons-populated-areas-use-effects> ; Article 36 and PAX, 'Areas of Harm; Understanding Explosive Weapons with Wide Area Effects', October 2016, <https://www.paxforpeace.nl/publications/all-publications/areas-of-harm#:~:text=In%20conflicts%20all%20over%20the,humanitarian%20harm%20and%20civilian%20casualties>.

1.2 Civilian Harm

Explosive weapons cause civilian harm in different ways. The primary effects refer to the impact created directly by the weapon’s components: the blast wave and fragmentation of the warhead after detonation. They cause injuries such as the bursting of hollow organs (ears, lungs and the gastro-intestinal tract), brain damage when the brain crushes into the side of the skull, and burns and projectile wounds from weapon fragments.⁹

Secondary effects occur through the weapon’s interaction with the surroundings, for example when the blast causes buildings to collapse or projects debris into the air. This can lead to injuries from flying glass, crushing, suffocation and burns.¹⁰

Lastly, the tertiary effects refer to the long-term impact of the damage caused by explosive weapons on human living conditions. These effects are more complex. They often form an interrelated pattern of harm that extends beyond the geographical location of the area of attack, and extends over time as a result of damage or destruction to vital infrastructure.¹¹

Illustration 2

	CAUSED BY	IMPACT
Primary Effects	Explosive weapons (blast and fragmentation).	Bursting of hollow organs (ears, lungs and the gastro-intestinal tract), brain damage, burns and projectile wounds.
Secondary Effects	Interaction of explosive weapons with built-up surroundings (collapsing buildings, debris).	Cuts, crushing, suffocation and burns.
Tertiary Effects	Damage to infrastructure (e.g. hospitals, homes, schools, power stations).	Decline in essential services and infrastructure, such as shelter, health care and education.

Table based on the effects of explosive weapons as described by UNIDIR, ‘Understanding the Reverberating Effects of Explosive Weapons: a Way Forward’.

Tertiary effects, or ‘reverberating effects’, are long-term impacts, “meaning those effects that are not directly caused by the attack, but nevertheless are a product thereof”.¹² They include a wide range of consequences in the form of reduced access to services and infrastructure such as health care and education. How long they will last depends on the

9 The United Nations Institute for Disarmament Research (UNIDIR), ‘Understanding the Reverberating Effects of Explosive Weapons: A Way Forward’, 2016, <http://www.unidir.org/files/publications/pdfs/reverberating-effects-research-agenda-en-653.pdf>, p. 5. (accessed 14 July 2020).

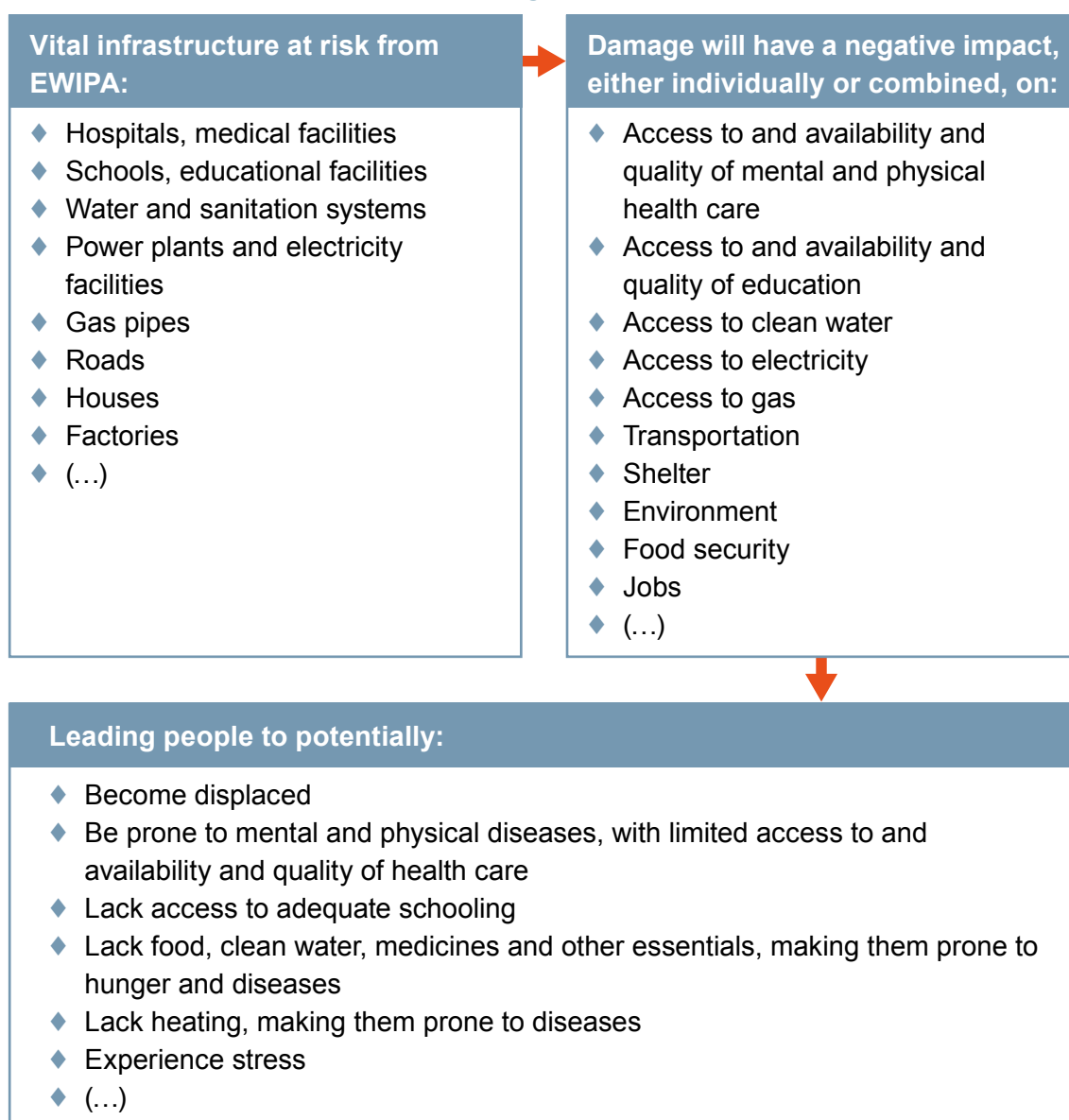
10 See for example: Save the Children UK, ‘Blast Injuries: The Impact of Explosive Weapons on Children in Conflict’, May 2019, available at: <http://www.inew.org/wp-content/uploads/2019/05/Blast-Injuries.pdf>.

11 For the full definition of primary, secondary and tertiary effects, see: The United Nations Institute for Disarmament Research, ‘Understanding the Reverberating Effects of Explosive Weapons: A Way Forward’, 2016, <http://www.unidir.org/files/publications/pdfs/reverberating-effects-research-agenda-en-653.pdf>, p5. (accessed 14 July 2020).

12 ICRC, ‘War in Cities; the Reverberating Effects of Explosive Weapons’, 2 March 2017, available at: <https://blogs.icrc.org/law-and-policy/2017/03/02/war-in-cities-the-reverberating-effects-of-explosive-weapons/>.

extent of the destruction and the time it will take to repair the damage. For example, if critical infrastructure is damaged, such as water and sanitation facilities, roads, hospitals, schools, power stations and cell towers, this will create an interrelated pattern of harm, where medical facilities can no longer provide high-quality health care, schools may not be able to continue education, and a lack of hygiene and access to clean water may cause outbreaks of disease.¹³ Because of the damage that explosive weapons cause, many people find their homes have been destroyed, forcing them to flee; this in turn can leave people vulnerable to exploitation and other unsafe living conditions.¹⁴

Illustration 3: Examples of reverberating impact patterns



This interrelated pattern of harm can have a long-lasting impact on society.

13 See for example: Harvard Law School's International Human Rights Clinic and PAX, 'Operating Under Fire, the Effects of Explosive Weapons on Healthcare in the East of Ukraine', May 2017, available at: <https://www.paxforpeace.nl/media/files/operating-under-fire-2017-pax-full-report-c.pdf>.

14 See for example: Handicap International (now Humanity and Inclusion), 'Qasef: Escaping the bombing – The use of explosive weapons in populated areas and forced displacement: perspectives from Syrian refugees', available at: <https://www.paxforpeace.nl/publications/all-publications/areas-of-harm#:~:text=In%20conflicts%20all%20over%20the,humanitarian%20harm%20and%20civilian%20casualties>.

1.3 The International Political Response

Over the last decade, civilian harm caused by the use of explosive weapons in populated areas has attracted increasing attention and concern. The failure to protect civilians from this practice has been repeatedly raised by successive United Nations Secretaries-General (UNSG), who since 2009 have repeatedly called upon parties to conflicts to avoid using explosive weapons with wide area effects in populated areas.¹⁵

Furthermore, over one hundred states¹⁶, as well as United Nations (UN) agencies and the ICRC, have publicly recognised the civilian harm caused by explosive weapons in populated areas.¹⁷

Since 2013, several meetings have taken place to discuss how an international political commitment can be developed to prevent the humanitarian harm caused by the use of explosive weapons in populated areas. Following an international conference convened by Austria in 2019, Ireland has led a series of consultations in Geneva aimed at drawing up an international political declaration to address the humanitarian harm arising from the use of explosive weapons in populated areas. According to the International Network on Explosive Weapons (INEW)¹⁸, an international network of NGOs, in order properly to address civilian harm concerns, any political declaration should contain a central commitment to end the use of explosive weapons in populated areas, contain strong commitments on data collection and sharing, and commit states to assisting victims.¹⁹ Final negotiations are scheduled to resume shortly, once restrictions resulting from the COVID-19 pandemic allow.²⁰

As we will see in the following chapters, even where states seek to minimise civilian harm by using precision-guided munitions and to comply with the requirements of IHL, too frequently we see mass civilian casualties when explosive weapons are used in urban centres. Only by putting greater restraint on the use of explosive weapons and by taking foreseeable reverberating effects into account in military planning and practice can we hope to limit this modern scourge.

15 See for example: United Nations Security Council, 'Report of the Secretary-General on the Protection of Civilians in Armed Conflict', S/2009/277, 29 May 2009, http://www.un.org/en/ga/search/view_doc.asp?symbol=S/2009/277 (accessed 12 November 2016), para. 36, and United Nations Security Council, 'Report of the Secretary-General on the Protection of Civilians in Armed Conflict', S/2019/373, May 2019, <https://undocs.org/S/2019/373>. Also see: Article 36, 'A Timeline of Political Action', September 2019, available at: http://www.inew.org/wp-content/uploads/2020/07/AR_Timeline_political_27.09.19.pdf.

16 See <http://www.inew.org/political-response/> for an up-to-date list of countries, UN organisations and ICRC statements acknowledging the harm caused by explosive weapons in populated areas.

17 See <http://www.inew.org/political-response/> for an up-to-date list of countries, UN organisations and ICRC statements acknowledging the harm caused by explosive weapons in populated areas.

18 The International Network on Explosive Weapons, founded in 2009, calls for immediate action to prevent human suffering from the use of explosive weapons in populated areas. PAX and Airwars are both members. See: www.inew.org.

19 INEW, 'Paper on the Draft Political Declaration', April 2020, available at: <http://www.inew.org/wp-content/uploads/2020/04/INEW-paper-on-the-draft-political-declaration.pdf>.

20 For the draft political declaration and other relevant documents and information on these negotiations, see: <https://www.dfa.ie/our-role-policies/international-priorities/peace-and-security/ewipa-consultations/>.

2

Fighting ISIS

Two nations particularly affected by recent urban fighting characterised by the use of heavy explosive weapons are Syria and Iraq. While significant civilian harm and destruction of property have resulted from the actions of many state and non-state actors—including the Assad regime, armed opposition groups, the so-called Islamic State in Iraq and Syria (ISIS), and a large number of foreign actors including Russia, Turkey, Iran and Israel—the primary illustrative focus in this section is on military actions by the US-led international Coalition against ISIS.

The Syrian revolution that was instigated by mass peaceful protests in 2011 was aimed at ending the dictatorship led by the Assad family. Syria soon entered a state of war and, over time, became the setting for an international armed conflict drawing in multiple foreign powers.²¹

In late 2013, ISIS, which grew from the remnants of Al Qaeda in Iraq, moved into Syria. Within months, ISIS had established control over a large territory in both northern and western Syria.²² Iraq—already destabilised by the US-UK invasion of 2003 and the subsequent internal conflict between Sunni and Shia communities—also proved highly vulnerable. On 10 June 2014, Iraq's second city Mosul was swiftly captured by ISIS, and less than three weeks later, ISIS announced its 'Islamic Caliphate'.²³ By 2015, ISIS was estimated to have up to 100,000 fighters. It was estimated that same year that around 30,000 ISIS members were foreign (meaning not Iraqi or Syrian) fighters.²⁴

ISIS's extreme violence towards civilians, including genocidal attacks on the Yazidi community—coupled with its expressed threats to neighbouring states and the international community—in turn united more than 60 nations in a UN-supported mission to defeat this “global and unprecedented threat to international peace and security”.²⁵ The ensuing war led to widespread death and destruction across much of Iraq and Syria. The use of explosive weapons by all parties to the fighting has been significant—including air-delivered bombs and missiles, artillery, rockets and heavy mortars, and the widespread use of vehicle-borne improvised explosive devices (IEDs). This has not only caused death and injury directly, but has destroyed the basic infrastructure upon which people depend, damaging schools, hospitals, houses, water and sanitation infrastructure, and roads, and causing psychological trauma and mass displacement.

21 See for example: 'Syria's Civil War: The Descent into Horror', Zachary Laub, Council on Foreign Relations, 19 February 2020, at <https://www.cfr.org/article/syrias-civil-war>.

22 See for example: 'Syria's Civil War: The Descent into Horror', Zachary Laub, Council on Foreign Relations, 19 February 2020, at <https://www.cfr.org/article/syrias-civil-war>.

23 'The Rise and Fall of ISIS: From Evitability to Inevitability', The Hague Centre for Strategic Studies, 2017, at <http://hcss.nl/report/volatility-and-friction-age-disintermediation>.

24 'Foreign (Terrorist) Fighters with IS: A European Perspective', Alex P. Schmid and Judith Tinnes, International Centre for Counter Terrorism, December 2015, at <https://icct.nl/wp-content/uploads/2015/12/ICCT-Schmid-Foreign-Terrorist-Fighters-with-IS-A-European-Perspective-December2015.pdf>.

25 'Security Council Unequivocally Condemns ISIL Terrorist Attacks, Unanimously Adopting Text That Determines Extremist Group Poses "Unprecedented" Threat', United Nations, 20 November 2015, at <http://www.un.org/press/en/2015/sc12132.doc.htm>.

2.1 The US-led Coalition: “Many Nations, One Mission”

While the United States began unilaterally bombing ISIS on 8 August 2014, a broader alliance soon emerged which kinetically involved 14 nations.²⁶ Led by the US, the Combined Joint Task Force - Operation Inherent Resolve (CJTF-OIR) was officially established on 17 October 2014. The Coalition’s campaign against ISIS consisted of four key phases. In the first phase (degrade), strikes against ISIS were designed to “blunt their expansion into Iraq and to begin to reduce their combat effectiveness”. At the same time, OIR began to provide training and equipment assistance to Iraqi Security Forces (ISF), and to partnered ground troops in Syria. At the end of 2015, the campaign transitioned into Phase II (counterattack). Here, OIR supported Iraqi Security Forces, and to a lesser extent partnered forces in Syria, in their fight against ISIS, assisting these ground troops with airstrikes where necessary, whilst continuing training, equipping and advising ISF as in all other phases.

In Phase III (defeat), CJTF-OIR conducted air and artillery strikes and limited ground troop assistance in support of offensive battles against ISIS, including in the two ‘capitals’ of ISIS-occupied territory: Raqqa in Syria and Mosul in Iraq. After both Raqqa and Mosul were captured, the Coalition continued to assist partnered ground troops with airstrikes and ground operations until the terror group was defeated as a territorial entity.

In the final phase (still ongoing)—Phase IV (support stabilisation)—the stated goal is to provide “security, planning, and required support to the Government of Iraq and appropriate authorities in Syria”.²⁷

2.2 Structure and Rules of Engagement

As of September 2020, the remaining kinetic element of the International Coalition against ISIS consisted of the United States, the UK and France, with Belgium expected to redeploy its F-16s in late 2020.²⁸ The primary munition of choice remains the 225-kilogram bomb.

As the dominant military force within the alliance, US Central Command (CENTCOM) was responsible for the strategic planning and coordination of Operation Inherent Resolve. Liaison between allies was provided by the Joint Forces Air Component Command (JFACC) in the US-led Combined Air Operations Centre (CAOC) in Qatar. This was where the targeting process, target development, Collateral Damage Estimates (CDEs), assignment, execution and assessment of actions took place.²⁹

26 The United States, the UK, France, Australia, Bahrain, Belgium, Canada, Denmark, Iraq (in Syria), Jordan, the Netherlands, Saudi Arabia, Turkey and the United Arab Emirates.

27 Operation Inherent Resolve, ‘Campaign’, (accessed on 7 September 2020), <https://www.inherentresolve.mil/campaign/>.

28 Airwars, ‘US-led Coalition in Syria and Iraq’ (accessed on 26 August 2020), <https://airwars.org/conflict/coalition-in-iraq-and-syria/>.

29 ‘The Sum of all Parts: Reducing Civilian Harm in Multinational Coalition Operations’, Centre for Civilians in Conflict, February 2019, at https://civiliansinconflict.org/wp-content/uploads/2019/02/SumofAllParts_CIVICReport-2.pdf, 12.

The US-led Coalition did not have alliance-wide Rules of Engagement (ROEs) to govern its actions. Instead, each ally operated its own ROEs. National representatives in Qatar, known as Red Card Holders, either accepted or rejected operations based on their own national rules.³⁰ Additionally, US-led Coalition airstrikes in Iraq needed the approval of the relevant Iraqi ground-force commander.

2.3 Transparency regarding Civilian Harm

As of 14 September 2020, Airwars had tracked 34,676 declared US-led Coalition air and artillery strikes in both Syria and Iraq since 2014. The US-led Coalition itself has estimated that at least 1,398 civilians were killed in 345 separate civilian-harm incidents as a result of Coalition actions since the beginning of the mission in August 2014. According to official Coalition numbers, a further 339 civilians had also been injured.³¹

These official estimates are in stark contrast to Airwars' own tally of civilian casualties as a result of Coalition strikes. Overall, more than 29,400 non-combatant deaths have been alleged locally from OIR actions across Iraq and Syria. Based on its own monitoring and assessment of local sources, Airwars presently estimates that at least 8,253 and as many as 13,132 civilians have likely been killed by the Coalition since the beginning of the mission, in 1,485 civilian-harm incidents.³² The reporting of these incidents was assessed by Airwars as 'fair', or they had been confirmed as 'credible' by the US-led Coalition.³³

In its 2016 report 'Limited Accountability', which was produced in collaboration with the US, UK, Canadian and Danish militaries, Airwars noted: "Analysis of the Coalition's civilian casualty assessment process shows it to have been opaque, ad hoc, and significantly biased towards internal military reporting. Poorly-resourced investigators often concluded their limited assessments too quickly, with little evidence that credible external claims were properly engaged with. The majority (60 per cent) of alleged civilian casualty events were not being assessed at all as of May 2016."³⁴

Responding to these and other criticisms, the Coalition improved both its civilian casualty recording and its transparency, with the formal establishment of the CJTF-OIR Civilian Casualty Cell in December 2016. Transitioning from more formal official investigations to Civilian Casualty Assessment Reports (CCARs)—which allowed for assessments at

30 'The Sum of all Parts: Reducing Civilian Harm in Multinational Coalition Operations', Centre for Civilians in Conflict, February 2019, at

https://civiliansinconflict.org/wp-content/uploads/2019/02/SumofAllParts_CIVICReport-2.pdf, 11.

31 'Combined Joint Task Force – Operation Inherent Resolve Monthly Civilian Casualty Report', September 2020, at <https://www.inherentresolve.mil/Portals/14/Documents/CIVCAS%20Releases/2020/CJTF-OIR%20Press%20Release-20200914-01-August%202020%20CIVCAS%20Report.pdf>.

32 Airwars, US-led Coalition in Iraq and Syria, aggregated data, accessed 14 September 2020, at <https://airwars.org/conflict/coalition-in-iraq-and-syria/>.

33 Airwars uses a 'fair' classification "where, in the view of its analysts, there is a reasonable level of public reporting of an alleged civilian casualty incident from two or more credible sources (often coupled with biographical, photographic or video evidence)". See 'Methodology', accessed on 26 August 2020, at <https://airwars.org/about/methodology/>.

34 'Limited Accountability: A Transparency Audit of the Coalition Air War against so-called Islamic State', Airwars, December 2016, at https://airwars.org/wp-content/uploads/2016/12/Airwars-report_Web-FINAL1.compressed.pdf.

scale—the Coalition would eventually review almost 3,000 locally claimed civilian-harm events in Iraq and Syria.³⁵

Despite such improvements, the US-led Coalition has consistently underreported civilian harm resulting from its own actions. While CJTF-OIR has to date conceded 23 civilian deaths from its actions during the year 2019, for example, Airwars has estimated that between 460 and 1,100 civilians in fact died as a result of Coalition strikes that year.³⁶ For the major battles of Mosul and Raqqa, credible public estimates of civilian deaths from US-led Coalition actions remain more than ten times higher than the alliance itself admits. Even where the US-led Coalition assessed civilian-harm cases to be credible, its key European allies mostly refused publicly to take responsibility for casualties. In March 2020, a joint investigation by Airwars, the BBC, RTL Netherlands, de Morgen and Libération revealed that key Coalition allies France, the UK and Belgium routinely denied civilian casualties from their own actions—even where these had been graded as ‘credible’ by US military personnel within the Coalition.³⁷

This systemic official underreporting of civilian harm from Coalition actions in the war against ISIS—and a downplaying by militaries of the experiences of affected local communities—in turn has profound implications when seeking to better understand the impact of the use of wide-area-effect munitions in populated areas.

2.4 Precision Strikes and Civilian Harm

The Coalition described their airstrikes as “the most precise and disciplined in the history of aerial warfare.”³⁸ However, precision has not prevented significant levels of reported civilian harm in Syrian and Iraqi cities from the use of explosive weapons. Colonel Amos Fox, a former Coalition commander who now teaches at the renowned United States Military Academy at West Point, has described what he calls the ‘Precision Paradox’ in urban warfare: “a situation in which the failed promise of [a] precision strike—one strike, one kill—generated a creeping wave of destruction across the city”.³⁹

The former commander of French artillery forces in Iraq and Syria, Colonel François-Régis Legrier, has also published a damning critique of recent Coalition military tactics, noting that in its extensive use of artillery barrages on Syrian towns during the final months of ISIS, “We have massively destroyed the infrastructure and given the population

35 ‘In Search of Answers: US Military Investigations and Civilian Harm’, CIVIC/ Columbia Law School Human Rights Institute, February 2020, at <https://civiliansinconflict.org/wp-content/uploads/2020/02/PDF-Report-for-Website.pdf>.

36 ‘Pentagon Concedes 211 More Civilian Deaths across Four War Zones in Latest Report to Congress’, Airwars, 7 May 2020, at <https://airwars.org/news-and-investigations/pentagon-concedes-211-more-civilian-deaths-across-four-war-zones-in-latest-report-to-congress/>.

37 ‘Europe’s shame: Claims by Key Allies of No Civilian Harm in War against ISIS Exposed’, Chris Woods, Airwars, 15 March 2020, at <https://airwars.org/news-and-investigations/europes-shame-claims-of-no-civilian-harm-exposed/>.

38 Lt. Gen. Hesterman, “Department of Defense Press Briefing Via Telephone from the Combined Air and Space Operations Center, Southwest Asia in the Pentagon Press Briefing Room”, 5 June 2015, available at: <https://www.defense.gov/Newsroom/Transcripts/Transcript/Article/607056/department-of-defense-press-briefing-by-lt-gen-hesterman-via-telephone-from-the/>.

39 ‘What the Mosul Study Group missed’, Amos Fox, Modern War Institute at West Point, 22 October 2019, at <https://mwi.usma.edu/mosul-study-group-missed/>.

a hateful image of what may be a Western-style liberation, leaving behind the seeds of an imminent resurgence of a new adversary”.⁴⁰

In the next three chapters, we will further examine how the use of explosive weapons in Mosul, Raqqa and Hawijah has significantly impacted the lives of civilians, and continues to do so today.



Destruction in Raqqa. (Image courtesy of Donatella Rovera, Amnesty International).

40 Translated from the Conclusion of ‘La bataille d’Hajin: victoire tactique, défaite stratégique?’, François-Régis Legrier, Revue Défense Nationale n° 817 - Février 2019, archived at https://www.asafrance.fr/images/legrier_fran%C3%A7ois-regis_la-bataille-d-hajin.pdf.

Case Study: الموصل, the Battle of Mosul

In what was described at the time by the United Nations as the largest urban assault since World War II, the 2016-17 campaign to drive ISIS from Mosul lasted 256 days. During those eight months, some 100,000 Iraqi and Kurdish troops, about 5,000 US military personnel and 29,000 US-led Coalition bombs, missiles and rockets helped defeat ISIS's occupying forces.

Yet the costs were high. At least 9,000 civilians were credibly reported killed by the different parties to the fighting, according to one major study, with a further 700,000 Moslawis displaced. According to city officials, in some parts of the city 80 per cent of the buildings were destroyed.

3.1 How the Battle Unfolded

The Battle of Mosul, also known as 'Operation We Are Coming, Nineveh' (قادمون يا نينوى, Qadimun Ya Naynawa) was fought in two clear stages. On 17 October 2016, Iraqi government and irregular forces, supported by the Kurdish Peshmerga, launched their offensive to recapture the eastern part of the city.⁴¹ As Peshmerga and Popular Mobilisation Units (PMUs) established a cordon near the city's outskirts, Iraqi Special Forces began pushing into Mosul. On 24 January 2017, Iraq's prime minister at the time, Haider al-Abadi, announced that east Mosul had been fully recaptured.

However, the capture of east Mosul came at significant cost—with very high numbers of reported casualties among the assaulting Iraqi forces. Between 4,000 and 6,000 Iraqi Counter Terrorism Service (ICTS) fighters of a total of 8,000 troops were killed or injured. Part of the blame for those high casualties was placed on what were claimed to be overly restrictive ROEs governing the Coalition airstrikes.⁴² In the final weeks of the Obama administration in December 2016, those ROEs were relaxed. According to investigative reporter Anand Gopal, the difference for civilians on the ground “was like night and day”, with a marked and immediate jump in locally reported civilian casualties.⁴³

41 'Battle of Mosul: How Iraqi Forces Defeated the Islamic State', Dan Lamothe et al., Washington Post, 10 July 2017, at <https://www.washingtonpost.com/graphics/2017/world/battle-for-mosul/>.

42 See for example: 'The ISIS Killers: The Men Leading the Battle for Mosul Might be Wiped Out Along the Way', Mike Giglio, BuzzFeed, 3 June 2017, at <https://www.buzzfeednews.com/article/mikegiglio/on-the-front-lines-of-the-fight-with-isis>.

43 "What we know is in December the number of people who had the authority to call in airstrikes was broadened. Commanders closer to the ground were able to call in airstrikes and both of us know from tracking this very closely on the ground that there was a marked difference... There are questions of tempo and the number of strikes you are conducting. But from December 20th, from then we immediately began to see a change. The number of cases we documented in East Mosul, just within 15 days it was like night and day so it was a real change on the ground." Anand Gopal, cited in 'Counting the Uncounted', Airwars, 2 December 2017, at <https://airwars.org/news-and-investigations/the-uncounted/>.

On 19 February 2017, the battle for west Mosul officially began. The densely packed neighbourhoods and narrow streets of west Mosul made for a far more challenging battleground than the eastern part of the city. Inexperienced Iraqi troops and paramilitary police now supplemented the heavily depleted Iraqi Special Forces. The incoming Trump administration also signalled that it was now planning to take a far more aggressive stance towards ISIS.

While Peshmerga forces maintained control of areas north-west of the city, Iraqi government troops first recaptured areas south and west of Mosul, before entering the city proper on 24 February.

Due to a desire to avoid large-scale casualties among Iraqi forces, this second phase of the battle relied much more on wide-area-effect munitions to clear ISIS from urban territory, including air and artillery strikes, rocket attacks and heavy mortars.⁴⁴

The 500-pound general-purpose bombs that the US-led Coalition used primarily in Mosul contained around 200 pounds of high explosive, and were lethal up to a 230-metre radius.⁴⁵ In March 2017 alone, the Coalition reported firing 5,000 munitions into the city—more than all the bombs and missiles fired by international aircraft in Afghanistan that same year.⁴⁶

Amnesty International reported additionally that “pro-government [Iraqi] forces used an array of air-to-surface ordnance, including missiles, air-dropped bombs and cannon shells fired from fixed-wing planes and missiles, rockets, cannon shells and machine-gun ammunition fired from attack helicopters. They also used surface-to-surface ordnance such as projectiles launched from rocket artillery, cannons, howitzers and BM-21 ‘Grad’ multiple rocket launchers, as well as heavy mortars and IRAMs”.⁴⁷

Finally, thousands of ISIS fighters unleashed devastating firepower in an effort to retain Mosul. Artillery and heavy mortars were supplemented by more than 750 vehicle-borne IEDs driven by suicide bombers. The terror group also routinely fired upon civilians attempting to flee the fighting, and reportedly used civilians as unwilling human shields in an effort to stall advances by Iraqi forces.

After nine gruelling months of battle, on 29 June 2017 Iraq’s prime minister finally announced that the whole of Mosul was now recaptured.

44 ‘Iraq’s Post-2014 Counter Terrorism Service’, Washington Institute, October 2018, at <https://www.washingtoninstitute.org/uploads/Documents/pubs/PolicyFocus157-Witty-2.pdf>.

45 At Any Cost: The Civilian Catastrophe in West Mosul, Iraq’, Amnesty International, July 2017, at <https://www.amnesty.org/en/latest/campaigns/2017/07/at-any-cost-civilian-catastrophe-in-west-mosul-iraq/>.

46 Official Operation Freedom’s Sentinel data, US Air Force Central Command, at https://www.afcent.af.mil/Portals/82/Documents/Airpower%20summary/Airpower%20Summary%20-%20December%202017_Released.pdf.

47 ‘At Any Cost: The Civilian Catastrophe in West Mosul, Iraq’, Amnesty International, July 2017, at <https://www.amnesty.org/en/latest/campaigns/2017/07/at-any-cost-civilian-catastrophe-in-west-mosul-iraq/>.

3.2 The Reported Civilian Toll at Mosul

At the start of the Battle of Mosul in October 2016, the United Nations had estimated that up to a million non-combatants remained trapped within the besieged city. The total number of civilian fatalities resulting from the ensuing assault has been estimated variously at between 1,260 and 20,000 or more.⁴⁸ The most likely tally, based on the available public records, is that between 9,000 and 12,000 non-combatants died as a result of actions by all parties to the fighting at Mosul—with most killed by explosive weapons with wide area effects.

Besides the direct deaths and injuries, the use of explosive weapons in Mosul caused massive damage to houses and critical infrastructure, leading in turn to a disruption of basic services and significant population displacement. Furthermore, as UN Habitat notes, with an estimated 5,000 buildings in the Old City either razed to the ground or severely damaged, the damage to the cultural heritage of Mosul is immense.⁴⁹

The United Nations Secretary-General also highlighted recent military operations in Mosul and Raqqa in his latest report on the protection of civilians in armed conflict. He concludes that “the impact of conflict on civilians and civilian objects was particularly acute when fighting took place in densely populated areas and involved the use of explosive weapons with wide-area effects.” The UNSG additionally identifies air- and ground-launched attacks using explosive weapons as a cause of significant numbers of civilian deaths and injuries in Syria, as well as leading to the destruction of essential infrastructure, schools and hospitals. Similarly, in Iraq he identifies shelling and airstrikes as a key cause for concern for civilian safety and as a cause of destruction to homes and infrastructure.⁵⁰

3.2.1 Official estimates

Former Iraqi prime minister, Haider al-Abadi, told Associated Press in October 2017 that 1,260 non-combatants had been killed by all parties in the successful effort to capture Mosul city from ISIS.⁵¹ By March 2019 however, Mr al-Abadi was claiming that just eight women and children had died during the fierce battle for west Mosul.⁵² This was a demonstrably untrue claim, since the United States had itself admitted to at least 105 civilian deaths in just one Old City event during that attack.⁵³

48 ‘Mosul is a Graveyard: Final IS Battle kills 9,000 Civilians’, Susannah George, Associated Press, 20 December 2017, at <https://apnews.com/bbea7094fb954838a2fdc11278d65460>

49 United Nations Human Settlements Programme (UN-Habitat), ‘Initial Planning Framework for the Reconstruction of Mosul’, January 2019, available at: https://unhabitat.org/sites/default/files/download-manager-files/190214_Initial_Planning-Framework_Mosul-update.pdf.

50 United Nations Secretary-General, ‘Report on the Protection of Civilians in Armed Conflict’, 14 May 2018, available at: <http://undocs.org/s/2018/462>.

51 ‘Mosul is a Graveyard: Final IS Battle Kills 9,000 Civilians’, Susannah George, Associated Press, 20 December 2017, at <https://apnews.com/article/bbea7094fb954838a2fdc11278d65460>.

52 Cited in ‘Failing to Acknowledge Mosul’s Suffering Makes Moving Toward the Future all the more Difficult’, Mina al-Orabi, The National, 10 March 2019, at <https://www.thenational.ae/opinion/comment/failing-to-acknowledge-mosul-s-suffering-makes-moving-toward-the-future-all-the-more-difficult-1.835390>.

53 Incident Assessment CI550, Airwars, accessed 15 September 2020, at <https://airwars.org/civilian-casualties/ci550-march-17-2017/>.

More than 3,000 corpses of both fighters and civilians were in fact removed from the Old City by federal recovery teams in early 2018, according to official reports, although such details were later censored. Over just four days in May 2018, for example, some 763 bodies were retrieved from the banks of the River Tigris in Old Mosul.⁵⁴



A federal Iraqi recovery team removes a body from the ruins of west Mosul, May 2018. (Image courtesy of Mosul Eye).

Separately from official Iraqi estimates, the US-led Coalition has so far independently conceded between 443 and 479 deaths from its own actions during the Battle of Mosul.⁵⁵ Coalition officials recognise that this is probably a significant underestimate. A senior US military commander told Airwars' executive director in early 2018 that they would not be surprised if the true figure for deaths caused by Coalition actions was over 1,000 fatalities—while noting that in many cases it remained hard to attribute responsibility for deaths to any one party.

More than three years on from the defeat of ISIS, such Coalition admissions intermittently continue. On 9 September 2020 for example, the US-led alliance declared that its forces had killed 16 civilians and injured a further three in an airstrike near Mosul on 6 January 2017.

⁵⁴ Cited by Mosul Eye, Facebook, 18 May 2018, at <https://www.facebook.com/MosulEye/posts/1608449975943165>.

⁵⁵ The figure of 443-482 conceded deaths is taken from official Operation Inherent Resolve monthly civilian casualty reports, archived at <https://www.inherentresolve.mil/Releases/CIVCAS-Releases/>.

The great majority of civilian-harm events so far conceded by the Coalition for the Battle of Mosul were the result of US actions. Australia too has proactively sought to assess the impact of its own airstrikes on Mosul's civilian population. Other nations have failed to admit any casualties from their own strikes during the eight-month battle to retake Mosul.

3.2.2 Admissions of civilian deaths by Coalition allies during the Battle of Mosul

Overall Coalition-conceded fatalities during the Battle of Mosul	443-479
Deaths publicly conceded by the US only	432-456
Deaths publicly conceded by Australia	9-21
Deaths publicly conceded by the Netherlands	0
Deaths publicly conceded by the UK	0*
Deaths publicly conceded by France	0
Deaths publicly conceded by Belgium	0

**According to the Coalition, a January 2017 UK strike in fact killed two civilians.*

Despite declaring that it had struck more than 900 targets in Mosul during the battle for the city, the official UK position remains that no civilians were harmed in its own urban strikes. This is not a view shared by military analysts within the US-led Coalition itself. A Coalition whistle-blower informed the BBC that a confirmed British airstrike on the city in January 2017 had likely killed several civilians. The UK Ministry of Defence then overruled that statement, determining that no civilians had been harmed. However, when US military personnel at the Coalition independently assessed the event, they determined that “two civilians were unintentionally killed”.⁵⁶

France—which carried out extensive air and artillery strikes on Mosul—has so far refused to say whether its individual actions resulted in any civilian harm. And Belgium and the Netherlands too have remained silent, despite publicly taking responsibility for a September 2015 airstrike on the city in which four civilians were killed.

This unwillingness on the part of most Western militaries to investigate properly whether their own use of explosive weapons in populated areas resulted in civilian harm critically undermines any claim that their implementation of IHL is enough to protect civilians against these weapons. Indeed, all credible public estimates point to the opposite conclusion.

⁵⁶ 'Islamic State: US Military says RAF Airstrikes may have Killed Civilians', Jonathan Beale, BBC, 16 March 2020, at <https://www.bbc.co.uk/news/uk-51900898>.

3.2.3 Public estimates of civilian casualties

With the federal Iraqi government, Nineveh provincial authorities and the US-led Coalition each declining to conduct a comprehensive post hoc review of reported civilian harm during the Battle of Mosul, academics and the media have instead sought to address the issue. Collectively, these indicate that the US-led Coalition has underestimated by a factor of ten the true civilian toll from its own actions in Mosul.

A major survey of Mosul households by Johns Hopkins University epidemiologists, for example, concluded that “Death and injuries during the military offensive to liberate Mosul considerably exceeded those during ISIS occupation. Airstrikes were the major reported cause of deaths, with the majority occurring in west Mosul. The extensive use of airstrikes and heavy artillery risks an extensive loss of life in densely populated urban areas.”⁵⁷

Some 505 civilians were killed by intentional violence in the 1,200 households surveyed by Johns Hopkins, approximately 75 per cent as a result of explosive weapons. “The leading cause of reported deaths from intentional violence was airstrikes—accounting for 201 civilian deaths—followed by 172 deaths from explosions. Reported deaths from airstrikes were most common in west Mosul, while reported deaths from explosions were similar on both sides of Mosul,” the study found.

Two separate media investigations also reported substantial civilian harm. After studying death certificates and official morgue reports, Associated Press concluded in December 2017 that an estimated 9,000 to 12,000 civilians had died during the Battle of Mosul—with one third likely killed by ISIS, one third by the US-led Coalition and Iraqi forces, and the final third killed in events where a determination of responsibility was unclear.⁵⁸

A less well-known study also found high civilian fatalities. US National Public Radio (NPR) was able to retrieve nearly 5,000 civilian names on individual death certificates dating to the Battle of Mosul. NPR cited Dr Raid al-Abadi, director of the central morgue in Mosul, as saying: “Those are just the bodies that have reached me. We have entire families under the rubble. We still haven’t pulled them out yet.”⁵⁹

Airwars itself tracked more than 7,200 locally alleged civilian fatalities in the vicinity of Mosul as a result of claimed US-led Coalition actions alone during the battle. The organisation noted however that “most of these incidents remain difficult to vet, and in the majority of cases several actors in addition to the Coalition are blamed—including ISIS and Iraqi security forces.”⁶⁰

57 ‘Injury and Death during the ISIS Occupation of Mosul and its Liberation: Results from a 40-cluster Household Survey’, Lafta, al-Nuaimi and Burnham, PLOS Medicine, 15 May 2018, at <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002567>.

58 ‘Mosul is a Graveyard: Final IS Battle Kills 9,000 Civilians’, Susannah George, Associated Press, 20 December 2017, at <https://apnews.com/bbea7094fb954838a2fdc11278d65460>.

59 ‘More Civilians than ISIS Fighters are Believed Killed in Mosul Battle,’ Jane Arraf, NPR, 19 December 2017, at www.npr.org/sections/parallels/2017/12/19/570483824/more-civilians-than-isis-fighters-are-believed-killed-in-mosul-battle.

60 ‘Mosul’s Capture sees ISIS Vanquished – But at a Terrible Cost’, Samuel Oakford, Airwars, 1 July 2017, at <https://airwars.org/news-and-investigations/mosuls-capture-sees-isis-vanquished-but-at-a-terrible-cost/>.

3.2.4 Why did so many civilians die at Mosul?

According to public records, it is clear that many thousands of Moslawis died during the battle to liberate the city—though liberating forces have shown scant interest to date in properly estimating casualties. Why, then, did so many non-combatants die?

The intensity of the bombardments of Mosul, the population density of civilians trapped within the city and the extensive use of explosive weapons with wide area effects all contributed to the significant death and destruction. As an inhabitant from west Mosul's al-Tenak neighbourhood told Amnesty International, "The strikes targeted the IS snipers. A strike would destroy an entire house of two storeys. They shelled during night and day. They hit so many houses. They'd hit one house and also destroy the two houses on either side. They killed a huge number of people."⁶¹

Early on in the battle for west Mosul, civilians were warned via leaflets dropped from the air to stay at home and to stay away from ISIS. However ISIS prevented civilians from evacuating, sometimes trapping them physically in their homes and killing hundreds of civilians who attempted to flee.⁶² Both the Coalition and Iraqi forces were also often supposedly unaware of civilians sheltering from the violence in close proximity to the sites of proposed strikes.

The deadliest Coalition airstrike in the battle of Mosul took place on 17 March, when Coalition planes targeted two ISIS snipers on the roof of a building in al-Jadida neighbourhood. It was confirmed by the Coalition itself that at least 105 and perhaps as many as 141 civilians were killed in that one attack, with locals reporting that as many as 520 civilians died in air and artillery strikes on the wider neighbourhood.⁶³

Amnesty International, among others, criticised the choice of munition for the strike: "The GBU-38 was an excessively large bomb to use against a target of this nature. Even if the planners could not have anticipated the secondary explosions, it should have been clear that the choice of a 500-pound bomb, containing the equivalent of 190 pounds of TNT and creating a wide area effect, to strike two snipers on a building full of civilians was likely to cause harm to civilians that would be excessive in relation to the military advantage, and therefore it would be a disproportionate attack."⁶⁴ A 500-pound bomb has a large lethal area, thereby putting civilians at risk when used in populated areas. Anyone within a distance of 250 metres from the point of detonation faces a 10 per cent risk of being incapacitated, and there is a 0.1 per cent (1 in 1,000) risk of being incapacitated at 425 metres.⁶⁵

61 'At Any Cost: The Civilian Catastrophe in West Mosul, Iraq', Amnesty International, July 2017, at <https://www.amnesty.org/en/latest/campaigns/2017/07/at-any-cost-civilian-catastrophe-in-west-mosul-iraq/>.

62 'At Any Cost: The Civilian Catastrophe in West Mosul, Iraq', Amnesty International, July 2017, at <https://www.amnesty.org/en/latest/campaigns/2017/07/at-any-cost-civilian-catastrophe-in-west-mosul-iraq/>.

63 Airwars assessment CI550, accessed 15 September 2020, at <https://airwars.org/civilian-casualties/ci550-march-17-2017/>.

64 'At Any Cost: The civilian catastrophe in West Mosul, Iraq', Amnesty International, July 2017, at <https://www.amnesty.org/en/latest/campaigns/2017/07/at-any-cost-civilian-catastrophe-in-west-mosul-iraq/>.

65 Article 36, 'Written Submission to the Inquiry on UK Military Operations in Mosul and Raqqa', 1 July 2018, available at: <http://www.article36.org/wp-content/uploads/2018/07/Article-36-Submission-Mosul-Raqqa-June-2018-FINAL.pdf>.



Destruction in Mosul. (Image courtesy of Donatella Rovera, Amnesty International).

According to Amnesty, this incident was “exceptional only in the sense that it had such a high civilian death toll and the fact that—due to its high profile—the US military investigated the incident and disclosed its findings.”⁶⁶ Amnesty concluded that Iraqi and Coalition forces “appear to have repeatedly carried out indiscriminate, disproportionate or otherwise unlawful attacks, some of which may amount to war crimes”.⁶⁷

In another incident in June 2017, 35 members of a single Mosul family, including 14 children, nine women and two respected imams, died when Australian and US aircraft bombed their home. The apparent target of several airstrikes using 500-pound bombs was one or more nearby ISIS fighters, though the attacks devastated several buildings. The presence of a significant number of civilians had not been known.⁶⁸

Both CIVIC and InterAction have asserted that the Coalition could have done far more in its munition selection to reduce the risks for civilians trapped in Mosul. “While the coalition for the most part used guided munitions and calibrated bombs to reduce collateral damage, the population density and ISIS tactics such as booby-trapping buildings increased the risk of civilian harm,” their joint report noted.⁶⁹

66 ‘At Any Cost: The Civilian Catastrophe in West Mosul, Iraq’, Amnesty International, July 2017, at <https://www.amnesty.org/en/latest/campaigns/2017/07/at-any-cost-civilian-catastrophe-in-west-mosul-iraq/>.

67 ‘At Any Cost: The Civilian Catastrophe in West Mosul, Iraq’, Amnesty International, July 2017, at <https://www.amnesty.org/en/latest/campaigns/2017/07/at-any-cost-civilian-catastrophe-in-west-mosul-iraq/>.

68 Civilian harm incident CI760, Airwars, accessed 15 September 2020, at <https://airwars.org/civilian-casualties/ci760-june-13-2017/>.

69 ‘Protection of Civilians in Mosul: Identifying Lessons for Contingency Planning’, CIVIC and InterAction, 17 October 2017, at https://civiliansinconflict.org/wp-content/uploads/2017/10/civic-interaction-protection-of-civilians-in-mosul-october-2017_final.pdf.

3.2.5 Long-term effects on Mosul

The consequences of the Battle of Mosul on non-combatants extend far beyond the thousands of documented deaths and injuries. Some 700,000 people were initially displaced from the city by the fighting; and the UN has estimated that approximately 130,000 homes were destroyed during the battle. City officials report that 80 per cent of some areas of the city were levelled.⁷⁰ It has also been estimated that it may take up to a decade to clean up the approximately eight million tons of rubble and garbage.⁷¹

The UN International Organisation for Migration (IOM) reported in June 2019 that entire neighbourhoods of Mosul had yet to be rebuilt, and that insufficient basic services and poor sanitation were leading to serious public health problems.⁷² According to the IOM, there were two main issues preventing civilians from returning to west Mosul: mutual distrust and resentment between different social groups and a consequent fear of cycles of intercommunal conflict; and a lack of essential services, education and job opportunities.⁷³ During the first wave of the COVID-19 pandemic in 2020, Mosul still had few functioning hospitals to serve a city of two million people.

Another major problem for civilians returning to Mosul has been unexploded ordnance. The Danish Demining Group (DDG) is one of the few organisations working to clear mines and unexploded ordnance in the city. Lene Rasmussen from DDG stated in 2019 that “it is practically impossible to move through [the city] due to the large number of explosives hidden in the ruins”. Unexploded bombs, missiles, rockets and shells littered the city—along with IEDs planted by ISIS. According to Rasmussen, “That is also why so few of Mosul’s inhabitants have returned—they simply do not know if there are hidden bombs in their backyard, in their refrigerator or in their children’s beds.”⁷⁴

70 ‘Mosul’s Capture sees ISIS Vanquished – But at a Terrible Cost’, Samuel Oakford, Airwars, 1 July 2017, at <https://airwars.org/news-and-investigations/mosuls-capture-sees-isil-vanquished-but-at-a-terrible-cost/>.

71 ‘Hidden Bombs and Eight Million Tonnes of Rubble Keep the People of Mosul from Returning Home’, Danish Demining Group, 19 February 2019, at <https://danishdemininggroup.dk/news/hidden-bombs-and-eight-million-tonnes-of-rubble-keep-the-people-of-mosul-from-returning-home>.

72 ‘West Mosul: Perceptions on Return and Reintegration among Stayees, IDPs and Returnees’, UN International Organization for Migration, June 2019, at <https://reliefweb.int/sites/reliefweb.int/files/resources/Perceptions%20on%20return%20and%20reintegration%20%28June%202019%29.pdf>.

73 ‘West Mosul: Perceptions on Return and Reintegration among Stayees, IDPs and Returnees’, UN International Organization for Migration, June 2019, at <https://reliefweb.int/sites/reliefweb.int/files/resources/Perceptions%20on%20return%20and%20reintegration%20%28June%202019%29.pdf>.

74 ‘Hidden Bombs and Eight Million Tonnes of Rubble Keep the People of Mosul from Returning Home’, Danish Demining Group, 19 February 2019, at <https://danishdemininggroup.dk/news/hidden-bombs-and-eight-million-tonnes-of-rubble-keep-the-people-of-mosul-from-returning-home>.

4

Case Study: الرقة the Battle of Raqqa

Even as the US-led Coalition was still battling to capture the last neighbourhoods in Mosul, it had begun a parallel campaign to force ISIS from the city of Raqqa—the terror group’s self-declared capital within Syria.

Despite copious recent evidence from Mosul that a combination of saturation strikes and high population density had led to significant civilian casualties, the Coalition appears not to have significantly modified its tactics during this second major assault on a city. Indeed, shortly before the military campaign to liberate Raqqa from ISIS control began, US Secretary of Defense James Mattis promised a “war of annihilation” against the militant group.⁷⁵

The campaign did eventually recapture the Syrian city after six gruelling months, but the annihilation reached far beyond ISIS. According to a major 2019 study by Airwars and Amnesty International, at least 1,600 civilians were likely killed in US-led Coalition strikes during the Battle of Raqqa. The United Nations would later describe Raqqa as the most destroyed city in Syria, with an estimated 80 per cent of all buildings levelled during the Coalition’s assault.

As with Mosul, the primary munition used by the Coalition at Raqqa was the 500-pound air-delivered bomb, along with thousands of artillery rounds fired by US marines stationed several miles outside the city. In total, the US-led Coalition reported that it had fired 21,000 munitions into Raqqa during the battle to recapture the city.⁷⁶

4.1 Military Forces at Raqqa

Raqqa was the first large Syrian city to fall into the hands of armed opposition groups, in early March 2013. By the end of that year, ISIS had in turn seized Raqqa, declaring it the initial de facto capital of its so-called ‘caliphate’.

On 6 November 2016, the Syrian Democratic Forces (SDF)—proxies of the US-led Coalition in Syria—launched ‘Operation Wrath on the Euphrates’, with the goal of recapturing Raqqa and the surrounding territory. The SDF, with the help of US-led Coalition forces, eventually encircled Raqqa by spring 2017, with a major offensive to recapture the city proper starting on 6 June.⁷⁷

75 See for example: ‘Defense Secretary Mattis says US Policy against Isis is now “Annihilation”’, Martin Pengelly, The Guardian, 28 May 2017, at

<https://www.theguardian.com/us-news/2017/may/28/james-mattis-defense-secretary-us-isis-annihilation>.

76 Cited in ‘Raqqa: a City Destroyed then Forgotten’, Samuel Oakford, Airwars, 12 March 2018, at

<https://airwars.org/news-and-investigations/raqqa-a-city-destroyed-then-forgotten/>.

77 “‘War of Annihilation’: Devastating Toll on Civilians, Raqqa - Syria’, Amnesty International, 2018, at

<https://www.amnesty.org/download/Documents/MDE2483672018ENGLISH.PDF>.

The earlier assault on Mosul—and the associated destruction and civilian harm—had involved many belligerents. Multiple international partners within the Coalition fought alongside both regular and irregular Iraqi and Kurdish troops. ISIS too fielded significant forces—and was directly responsible for much of the city’s destruction.

However the great majority of both the urban destruction and civilian harm in Raqqa resulted largely from the actions of just one party to the fighting: the United States. According to Airwars’ analysis of the city’s siege, at least 21,000 Coalition munitions struck Raqqa during the campaign.⁷⁸

Overall, US forces were responsible for more than 90 per cent of approximately 4,000 airstrikes on the city, and for every one of thousands of artillery rounds fired into Raqqa. A-10 ‘Warthog’ ground assault aircraft were joined by Reaper armed drones, B2 and B-52 bombers, F-15 and F-16 fighters, and long-range artillery. As Senior Enlisted Advisor to the Joint Chiefs of Staff, Sergeant Major John Wayne Troxell, noted in November 2017, the US “fired more rounds in five months in Raqqa than any other Marine artillery battalion since the Vietnam War.”⁷⁹

While both the United Kingdom and France also conducted strikes on the city during the assault, numbers were low compared with US actions. British aircraft carried out some 215 airstrikes according to official records, while the French military declared some 50 airstrikes.⁸⁰ Neither country has publicly admitted any civilian harm from its actions at Raqqa—although official UK data shows that 63 per cent of targets struck by the Royal Air Force (RAF) in the city were buildings.⁸¹

On the ground, SDF troops were both lightly armed and lightly armoured. Due to geopolitical sensitivities regarding this mainly Kurdish force, SDF forces were equipped only with assault rifles, rocket-propelled grenades (RPGs), heavy machine guns, and 120-millimetre mortars provided by the US. As the SDF had relatively few troops and lacked tanks and armoured personnel carriers, they relied heavily upon both air and artillery strikes to clear ISIS from Raqqa’s neighbourhoods. While artillery created wide area effects because of the relative inaccuracy of delivery, the 500-pound air-delivered bombs had a large blast and fragmentation radius, thereby also generating an impact that extended beyond the target and consequently putting significant numbers of civilians at risk in Raqqa.

As in the Battle of Mosul, ISIS used civilians as human shields against SDF forces, prevented civilians from leaving the city by setting up checkpoints and planting mines

78 ‘Raqqa: A City Destroyed and then Forgotten’, Samuel Oakford, Airwars, 12 March 2018, at <https://airwars.org/news-and-investigations/raqqa-a-city-destroyed-then-forgotten/>.

79 ‘Raqqa: A City Destroyed and then Forgotten’, Samuel Oakford, Airwars, 12 March 2018, at <https://airwars.org/news-and-investigations/raqqa-a-city-destroyed-then-forgotten/>.

80 Cited in “‘War of Annihilation’: Devastating toll on civilians, Raqqa - Syria”, Amnesty International, 2018, at <https://www.amnesty.org/download/Documents/MDE2483672018ENGLISH.PDF>.

81 Cited in ‘Credibility Gap – UK Civilian Harm Assessments for the Battles of Mosul and Raqqa’, Airwars, Written Evidence to UK Parliament Defence Select Committee, September 2018, at <https://airwars.org/wp-content/uploads/2018/09/UK-Inquiry-into-Mosul-and-Raqqa-2018.pdf>.

and IEDs along exit routes, and killed civilians who tried to escape.⁸² However overall, the destruction and casualties resulting directly from ISIS actions were on a significantly smaller scale. While more than 750 vehicle-borne IEDs had been deployed in Mosul for example, Coalition officials reported fewer than 12 such attacks during the Battle of Raqqa.

4.2 Civilian Harm: At Least 1,600 Civilians likely Killed by Coalition Actions

Raqqa was officially declared freed from ISIS on 20 October 2017. In January 2018, the Raqqa Reconstruction Committee (RRC), an official agency of the SDF-installed city council, began recovering bodies from the rubble.⁸³

A year after the liberation of Raqqa, Amnesty International reported that 2,521 bodies had so far been recovered from the ruins, the majority reportedly killed by Coalition airstrikes.⁸⁴ In September 2020, Hasan Qassab from Raqqa, a former team member in the research unit of the Euphrates Project, which funded many reconstruction and body retrieval projects in Raqqa, said that to date some 6,000 bodies had been retrieved from the rubble of Raqqa, with two thirds of these believed to be civilians.⁸⁵

Despite the retrieval of thousands of bodies from Raqqa by a partner agency and the well-catalogued destruction of so much of the city, the US-led Coalition has continued to deny large-scale civilian harm from its own actions. As of September 2020, the US-led Coalition has publicly acknowledged the deaths of 179 civilians and the injuring of a further 62 people during the Battle of Raqqa.⁸⁶ All but 12 of those casualties have been admitted by the United States.⁸⁷ According to Coalition military assessors, a British airstrike on Raqqa on 13 August 2017 killed a dozen civilians. However, the UK's Ministry of Defence continues publicly to deny those deaths.⁸⁸

In the absence of any realistic effort by the US-led Coalition to determine the scale of civilian harm during the battle for Raqqa, Amnesty International and Airwars partnered to produce a major report published in April 2019. It concluded that at least 1,600 civilians were likely killed as a result of Coalition strikes during the Battle of Raqqa.⁸⁹

The joint study—based on field investigations, open-source monitoring and analysis of thousands of satellite images, videos and photographs—identified nearly 500 alleged

82 “‘War of Annihilation’: Devastating Toll on Civilians, Raqqa - Syria’, Amnesty International, 2018, at <https://www.amnesty.org/download/Documents/MDE2483672018ENGLISH.PDF>.

83 ‘A City Full of Flies: The Crews Digging out the Bodies in Raqqa’, Airwars, 30 May 2018, at <https://airwars.org/news-and-investigations/rrc-interview/>.

84 ‘Rights Group Criticizes US-led Coalition for Raqqa Deaths’, Hiba Dlewati, Associated Press, 12 October 2018, at <https://apnews.com/17e010cb495d489591583154c382157f>.

85 Interviewed by Airwars, September 2020.

86 The figure of 178 conceded deaths during the Battle of Raqqa is taken from official Operation Inherent Resolve monthly civilian casualty reports, archived at <https://www.inherentresolve.mil/Releases/CIVCAS-Releases/>.

87 In its annual reports to Congress on civilian harm from US military actions for 2019 and 2020, the Pentagon has to date confirmed responsibility for all but one ‘credible’ civilian harm event during the Battle of Raqqa.

88 ‘Islamic State: US Military says RAF Airstrikes may have Killed Civilians’, Jonathan Beale, BBC, at <https://www.bbc.co.uk/news/uk-51900898>.

89 ‘At least 1,600 Civilians Died in US-led Coalition Actions at Raqqa, Major New Study Finds’, Airwars, 25 April 2019, at <https://airwars.org/news-and-investigations/raqqa-amnesty-airwars/>.

Coalition civilian-harm incidents in Raqqa between June and October 2017 in which, according to local sources, more than 3,000 civilians were allegedly killed.

Based on the available evidence, Airwars and Amnesty conservatively determined that it was likely that at least 1,600 civilians had died as a result of Coalition strikes on Raqqa. The names of at least 1,000 of those victims are known.⁹⁰

4.2.1 Why did so many civilians die in Raqqa?

By spring 2017, the US-led Coalition was acutely aware of the risks to civilians of intense bombardment of heavily populated areas—even while using precision munitions. In March 2017 more than 5,000 Coalition munitions were fired into west Mosul, leading to catastrophic reported civilian harm. Following an international outcry, the Coalition reduced the number of munitions fired on Mosul by 30 per cent the following month. Reported civilian harm also fell by 30 per cent. The link between bombardment saturation, population density and negative outcomes for civilians could not have been clearer.⁹¹

Yet these harsh lessons were not applied at Raqqa, with devastating implications for non-combatants. In 2018, Amnesty International conducted field investigations into four Coalition airstrikes on Raqqa—noting that in all cases, wide-area-effect munitions were used on buildings full of civilians who had been sheltering there for long periods of time. Amnesty also said it had found no evidence that ISIS fighters were present in the buildings at the time of the strikes.⁹²

Unwilling or unable to clear streets and buildings with lightly armed and armoured troops, the Coalition instead depended upon air and artillery fire to defeat ISIS. Most civilians died when the buildings they were sheltering in collapsed on top of them. The Coalition rarely knew of their specific presence, calling in thousands of devastating strikes.

According to Amnesty, the US-led Coalition violated international humanitarian law during the Battle of Raqqa, noting that “although IS exacerbated the challenges inherent to urban combat by operating amongst civilians and using them as human shields, their tactics were known well ahead of the Raqqa campaign. Coalition forces did not take adequate account of civilians present in the city and failed to take the precautions necessary to minimise harm to civilians and civilian objects.”⁹³

90 ‘War in Raqqa: Rhetoric versus Reality’, Amnesty International and Airwars, April 2019, at <https://raqqa.amnesty.org/>.

91 Cited in ‘Death in the City: High Levels of Civilian Harm in Modern Urban Warfare Resulting from Significant Explosive Weapons Use’, Airwars, May 2018, at <https://airwars.org/wp-content/uploads/2018/05/Airwars-Death-in-the-City-web.pdf>.

92 “‘War of Annihilation’: Devastating Toll on Civilians, Raqqa - Syria’, Amnesty International, 2018, at <https://www.amnesty.org/download/Documents/MDE2483672018ENGLISH.PDF>.

93 “‘War of Annihilation’: Devastating Toll on Civilians, Raqqa - Syria’, Amnesty International, 2018, at <https://www.amnesty.org/download/Documents/MDE2483672018ENGLISH.PDF>.



Destruction in Raqqa. (Image courtesy of Donatella Rovera, Amnesty International).

While the Pentagon's public position remains that civilian harm from Coalition actions at Raqqa was relatively limited, Department of Defense officials were concerned enough by the Amnesty/Airwars study to commission its own review of the Battle of Raqqa from the RAND Corporation, which was due to be published in late 2020.⁹⁴ However, several sections of that report are expected to remain classified.

In the early days following the establishment of the Coalition, people in Raqqa reportedly did not see themselves as victims of the Coalition. However this perspective changed with the increase in the number of airstrikes and the ensuing civilian casualties. From that moment, according to a study by the University of Utrecht, the Coalition was increasingly seen as a threat to civilians.⁹⁵

4.2.2 "The most destroyed city in modern times"

Raqqa has been described as "the most destroyed city in modern times". Some 11,000 buildings were destroyed in the fight to capture the city. Local monitoring network Raqqa is Being Slaughtered Silently (RBSS) reported that 90 per cent of the city had been

⁹⁴ The RAND corporation is a non-profit US thinktank, offering research and analysis to the US military and other clients.

⁹⁵ Marrit Woudwijk, University of Utrecht, 'The Lesser Truth: Truth Construction on Remote Warfare and the Case of the US-led Anti-ISIS Coalition in Syria', August 2019, available at: <https://intimacies-of-remote-warfare.nl/publications/the-lesser-truth-truth-construction-on-remote-warfare-and-the-case-of-the-us-led-anti-isis-coalition-in-syria/>.

levelled. Among the destroyed buildings were eight hospitals, 29 mosques, more than 40 schools and five universities.⁹⁶ The city's water irrigation systems were also destroyed.⁹⁷

According to the UN, 436,000 people were displaced during the fighting in Raqqa.⁹⁸ A key risk for returning residents has been the number of mines and IEDs that ISIS placed in civilian homes, shops and public buildings and on roads. In addition, unexploded ordnance from Coalition forces also posed a threat. According to Amnesty International, men and boys who worked as labourers to clear the rubble were especially at risk, as well as women and children trying to find items in the rubble to sell. Hundreds of civilians were reportedly killed and injured in Raqqa by these explosive remnants of war.⁹⁹

By November 2018, Reuters was reporting that 44 schools had now reopened with 45,000 children enrolled since the end of the Battle of Raqqa. However, children were going to school in buildings without doors, windows and proper sanitary systems in the middle of winter.¹⁰⁰

The destruction of dozens of vital bridges forced civilians instead to use boats and makeshift pontoons for passenger transport and the transportation of goods. A resident told Voice Of America in December 2018: "Most people go to the other side of the city through the river. (...) But crossing the Euphrates with these old boats is very risky. A lot of people have drowned in the past few months."¹⁰¹ As of August 2019, only three bridges had been rebuilt.¹⁰²

In May 2019, Kate Allen, director of Amnesty UK, reported in The Guardian after a visit to the Syrian city: "Street after street of windowless, hollowed-out buildings. Miles of rubble. Piles of twisted metal. Utter ruin. There has been no assistance for residents desperate to rebuild, and entire families are reduced to living in bombed-out husks of buildings. Meanwhile, many children spend all day scavenging in the rubble for bits of steel and plastic they can sell so as to buy food. They risk injury and death from unsafe buildings and uncleared landmines."¹⁰³

96 'Statistics of #Raqqa's battles since the declaration till the end of the battle 09.06.2017 to 15.10.2017 #Raqqa #Syria #ISIS #YPG #USA', Raqqa is Being Slaughtered Silently, Twitter, 16 October 2017, at https://twitter.com/Raqqa_SL/status/919913784516505600.

97 'Irrigation Systems are Out of Service in Raqqa', Hamoud Almousa, Raqqa is Being Slaughtered Silently, 2 November 2017, at <https://www.raqqa-sl.com/en/>.

98 'North-east Syria Crisis: Situation Report No. 17', OCHA, October 2017, at OCHA, <https://reliefweb.int/sites/reliefweb.int/files/resources/NES%20Sit%20Rep%201%20to%2020%20October%20no%2017%20Final.pdf>.

99 "'War of Annihilation': Devastating Toll on Civilians, Raqqa - Syria', Amnesty International, 2018, at <https://www.amnesty.org/download/Documents/MDE2483672018ENGLISH.PDF>.

100 'With Little Aid, Syria's Raqqa Struggles to Revive Schools', Aboud Hamam, Reuters, 26 November 2018, at <https://www.reuters.com/article/us-mideast-crisis-syria-raqqa-education/with-little-aid-syrias-raqqa-struggles-to-revive-schools-idUSKCN1NV1I7>.

101 'Efforts to Rebuild Raqqa Continue After Islamic State', Sirwan Kajjo, VOA, 1 December 2018, at <https://www.voanews.com/extremism-watch/efforts-rebuild-raqqa-continue-after-islamic-state>.

102 'Syria's Raqqa Struggles to Recover, 2 Years After IS Ousted', Sirwan Kajjo, VOA, 11 August 2019, at <https://www.voanews.com/extremism-watch/efforts-rebuild-raqqa-continue-after-islamic-state>.

103 'Raqqa is in Ruins like a Modern Dresden. This is Not "precision bombing"', Kate Allen, The Guardian, 23 May 2019, at <https://www.theguardian.com/commentisfree/2019/may/23/raqqa-ruins-bombing>.

REACH¹⁰⁴ reported in June 2019 that although access to water continued to improve in Raqqa, water quality and sewage issues persisted. In most neighbourhoods, residents had access to electricity for eight to 12 hours. In seven neighbourhoods, between 26 and 50 per cent of residents were still living in severely damaged shelters.¹⁰⁵

The time required to rebuild the city of Raqqa in the three years since its liberation from ISIS shows that long after the bombs have stopped, explosive weapons with wide area effects continue to disrupt and harm civilian lives.



Destruction in Raqqa. (Image courtesy of Donatella Rovera, Amnesty International).

104 REACH is a joint initiative of IMPACT Initiatives, ACTED and the United Nations Operational Satellite Applications Programme (UNOSAT), see: <https://www.reach-initiative.org/who-we-are/>.

105 'Situation Overview: Area-Based Assessment of Ar Raqqa City', REACH, June 2019, at https://reliefweb.int/sites/reliefweb.int/files/resources/reach_syr_situationoverview_raqqa_aba_june2019.pdf.

Case Study: الحويجة, Hawijah—an Aerial Attack on the Industrial District

Hawijah is a city in Kirkuk Province in Iraq with an estimated peacetime population of around 100,000, of whom 85 per cent are Sunnis and the rest mainly Shia Turkmen and Kurds.¹⁰⁶ Hawijah had been amongst the first towns to hold anti-government demonstrations during the Arab Spring in 2011, and it was among the last remaining ISIS strongholds in 2017. It suffered heavy damage from ISIS, as well as from military operations conducted by the Government of Iraq (GoI) and the US-led Coalition to retake the city.

One particular devastating attack by the Coalition was an airstrike on a factory in Hawijah manufacturing Vehicle-Borne Improvised Explosives Devices (VBIED) in summer 2015, which led to very high levels of civilian harm. No individual member of the Coalition admitted to the attack until 2019, when an investigation by two Dutch news organisations revealed that the Netherlands had conducted the airstrike.¹⁰⁷

In the following sections we examine the direct and indirect impact on civilians of this particular attack.

5.1 Background

On the night of 2-3 June 2015, a Coalition airstrike targeted an ISIS munitions factory in Hawijah. Although described by CENTCOM as located in an “industrial area”, pictures from before the attack shown to the Dutch broadcaster NOS indicate that the area was also home to many smaller structures such as shops and a tea house.¹⁰⁸ Next to the target were residential areas. The aerial attack itself was performed using a relatively small explosive munition,¹⁰⁹ but a large supply of close to 40,000 pounds (18,000

106 The exact population size is unknown and in flux, see: Al-Ghad League for Woman & Child Care, 2020, ‘Hawija City Based Assessment’, available upon request.

107 Dutch newspaper NRC, ‘De Nederlandse Precisiebom op een Wapendepot van IS’ (‘The Dutch precision bomb on an IS weapon depot’), 18 October 2018, available in Dutch at: <https://www.nrc.nl/nieuws/2019/10/18/de-nederlandse-precisiebom-op-een-wapendepot-van-is-a3977113>.

108 NOS, ‘In Hawija is Niemand de Nederlandse Bomaanval Vergeten’ (‘Nobody in Hawijah has forgotten the Dutch bombing’), available in Dutch only, 18 October 2019. Video of the area available at: <https://nos.nl/artikel/2306655-in-hawija-is-niemand-de-nederlandse-bomaanval-vergeten.html>.

109 Lt. Gen. Hesterman, ‘Department of Defense Press Briefing Via Telephone from the Combined Air and Space Operations Center, Southwest Asia in the Pentagon Press Briefing Room’, 5 June 2015, <https://www.defense.gov/Newsroom/Transcripts/Transcript/Article/607056/>. When asked in Parliament about the specific precision bomb that was used, Dutch Minister of Defence, Ank Bijleveld, replied that she could not give that information because it was “operational information”, see: Proceedings of the Lower House of the States-General, 5 November 2019, #19, item 23, publication date 6 December 2019, available in Dutch at: <https://zoek.officielebekendmakingen.nl/h-tk-20192020-19-23.html>.

kilograms) of TNT stored in the VBIED factory detonated after the first impact.¹¹⁰ The destructive power of the secondary explosions was immense, and was reportedly felt in Kirkuk, around 50 kilometres away.¹¹¹ The explosions reportedly left a 6-metre-deep crater. The impact of the explosions extended well beyond the industrial area into the adjacent neighbourhoods.¹¹² According to the mayor of Hawijah, the impact of the shock wave from the secondary explosions reached a diameter of more than 2 kilometres.¹¹³

“It looked like that nuclear bomb that was dropped on Hiroshima. Everywhere was dust, soil. Everyone fell. Later we learned that the bomb fell almost two kilometres away”.

*Alaa Qader Ridha, Hawijah resident. Both his wife and son were injured during the attack.*¹¹⁴

It was not until late 2019, four years later and following the publication of a major investigation by the Dutch media organisations NOS and NRC, that the Dutch Ministry of Defence eventually publicly took responsibility for the airstrike.

Though the VBIED factory was deliberately targeted, according to the Dutch Ministry of Defence, Dutch pre-strike estimates of possible secondary explosions assessed that these would not extend beyond the industrial area.¹¹⁵ However, documents declassified in 2020¹¹⁶ showed that the Dutch military official with a potential veto over its strikes—known as the Red Card Holder—was aware before the airstrike that the expected damage could in fact be greater than the CDE was indicating, and the CIA had already warned about the potential for civilian harm because of the proximity of the adjacent residential area.¹¹⁷ Airwars also reported that at least one other nation in the Coalition had declined the strike, following a review of the CDE.¹¹⁸

110 See: Airwars, ‘Newly Released Documents Reveal the Dutch Knew About Possible High Risk to Civilians at Hawijah’, 20 March 2020, available at: <https://airwars.org/news-and-investigations/newly-released-documents-reveal-the-dutch-knew-about-possible-high-risk-to-civilians-at-hawijah/>.

111 NOS, ‘In Hawija is niemand de Nederlandse bomaanval vergeten’ (‘Nobody in Hawijah has forgotten the Dutch bombing’), available in Dutch only, 18 October 2019, available at: <https://nos.nl/artikel/2306655-in-hawija-is-niemand-de-nederlandse-bomaanval-vergeten.html>.

112 NRC, ‘De Nederlandse precisiebom op een wapendepot van IS’, (‘The Dutch precision bomb on an IS weapon depot’), 18 October 2019, available in Dutch on: <https://www.nrc.nl/nieuws/2019/10/18/de-nederlandse-precisiebom-op-een-wapendepot-van-is-a3977113>.

113 Subhan al-Jabouri, mayor of Hawijah, in a written interview conducted by Airwars on 28 September 2020.

114 NRC, ‘Het leek net de atoombom die op Hiroshima werd gegooid’ (‘It looked like the nuclear bomb dropped on Hiroshima’), 13 May 2020, available in Dutch at: <https://www.nrc.nl/nieuws/2020/05/13/het-leek-net-de-atoombom-die-op-hiroshima-werd-gegooid-a3999557>.

115 Dutch Lieutenant General Eichelshaim in a technical briefing to the Dutch parliament on ‘Hawija Targeting Process’ on 13 May 2020, available in Dutch at: <https://debatgemist.tweedekamer.nl/debatten/targeting-proces-hawija>, last accessed 20 August 2020.

116 ‘WoB Besluit Defensie over Aanvullend Onderzoek Defensie Burgerslachtoffers Hawija’ (‘Decision pursuant to Government Information (Public Access) Act (WOB) regarding Ministry of Defence on Additional Investigation by the Ministry into Civilian Casualties in Hawijah’), available in Dutch at: <https://www.rijksoverheid.nl/documenten/wob-verzoeken/2020/02/17/wob-besluit-defensie-over-aanvullend-onderzoek-defensie-burgerslachtoffers-hawija>.

117 NOS, ‘Amerikanen waarschuwden voor burgerdoden bij Nederlands bombardement Hawijah’ (‘The US warned about civilian casualties from Dutch bombardment on Hawijah’), 21 April 2020, available in Dutch at: <https://nos.nl/artikel/2331199-amerikanen-waarschuwden-voor-burgerdoden-bij-nederlands-bombardement-hawija.html>

118 Airwars, ‘Newly Released Documents Reveal the Dutch Knew About Possible High Risk to Civilians at Hawijah’, 20 March 2020, available at: <https://airwars.org/news-and-investigations/newly-released-documents-reveal-the-dutch-knew-about-possible-high-risk-to-civilians-at-hawijah/>.

The Dutch nevertheless claimed that even though they had expected the explosions to be bigger than the CDE, they still did not expect the explosions to reach the residential area and therefore considered the expected damage to be proportionate for the military gain.¹¹⁹ The result for Hawijans was unfortunately catastrophic, and this led to a change of targeting policy. After the attack, in September 2015, US General Sean MacFarland announced that the Coalition's target development procedures would be adjusted to "increase scrutiny of targets in populated areas that have the expected potential (e.g. VBIED and IED facilities) for secondary explosions".¹²⁰

When the news broke that Dutch fighter jets were responsible for the attack, despite the Dutch government never having reported on the potentially large number of civilian casualties to the Dutch parliament, it sparked an intense public and parliamentary debate on transparency and accountability in the Netherlands. As a result, the Dutch Minister of Defence Ank Bijleveld announced greater transparency in informing parliament about investigations into civilian casualties from Dutch military actions.¹²¹ In June 2020 she added that as of 1 July 2020, the Dutch targeting development procedures had been changed so that the Red Card Holder must "request information more proactively to assess whether the Dutch should carry out certain airstrikes or not".¹²² Meanwhile dozens of Iraqi survivors are in the process of filing a lawsuit against the Dutch government for both the material and immaterial damage that was inflicted upon them.¹²³ It was not until October 2020, in response to a parliamentary motion, that the Dutch Minister of Defence announced that the Dutch government would install a temporary, independent commission to address how it could be possible that so many civilians lost their lives in this particular attack and establish what lessons should be learned for the future. The Minister also announced that the Netherlands is planning to voluntarily assist the affected community in Hawijah, with the aim to address the needs in reconstruction as a result of the attack. The Dutch government refused individual compensation to the victims however, because this would assume legal responsibility while they claim to have acted in accordance with IHL.¹²⁴

119 Airwars, 'Newly Released Documents Reveal the Dutch Knew About Possible High Risk to Civilians at Hawijah', 20 March 2020, available at: <https://airwars.org/news-and-investigations/newly-released-documents-reveal-the-dutch-knew-about-possible-high-risk-to-civilians-at-hawijah/>.

120 LTG Sean MacFarland, 'Continuation Sheet for DA Form 1574 in Reference to the Informal AR 15-6 Investigation Findings and Recommendations for the Al Hawijah ISIL VBIED Factory Strike on 2 June 2015', 25 September 2015, available at: https://www.scribd.com/embeds/457514137/content?start_page=1&view_mode=scroll&show_recommendations=true&access_key=key-fweBwYAO9yAPU3yVCddw.

121 Dutch Minister of Defence Ank Bijleveld in a letter to parliament, 25 November 2019, dossier 27925, file 673, available in Dutch at: <https://zoek.officielebekendmakingen.nl/kst-27925-673.html>.

122 Dutch Minister of Defence Ank Bijleveld in a letter to parliament 'Voortgang Transparantie beleid slachtoffers' ('Progress on Transparency in Policy regarding Civilian Casualties'), 30 June 2020, reference BS2020012363, available in Dutch at: <https://www.rijksoverheid.nl/documenten/kamerstukken/2020/06/30/kamerbrief-voortgang-transparantiebeleid-burgerslachtoffers>.

123 NRC, 'Miljoenenclaim van vijftig Irakezen tegen Nederland om luchtaanval Hawijah' ('Fifty Iraqis sue the Netherlands for millions to compensate for aerial attack on Hawijah'), available in Dutch at <https://www.nrc.nl/nieuws/2020/04/29/miljoenenclaim-van-vijftig-irakezen-tegen-nederland-om-luchtaanval-hawija-a3998191>.

124 Dutch Minister of Defence Ank Bijleveld in a letter to parliament 'Uitvoering motie-Belhaj (27925-714) en de stand van zaken vrijwillige vergoedingen wapeninzet Hawija', ('Implementation Motion-Belhaj (27925-714) and status quo on voluntary compensation of weapon use in Hawijah'), 2 October 2020, reference BS2020018473, available in Dutch at: https://www.tweedekamer.nl/kamerstukken/brieven_regering/detail?id=2020Z17812&did=2020D38508.



*Photos of Hawijah industrial area and adjacent areas before and after the attack.
Credits: Azmat Khan, New York Times.*

5.2 Civilian Harm at Hawijah

5.2.1 Direct harm (primary and secondary effects)

Civilians reportedly killed:	At least 70 ¹²⁵
Civilians wounded:	80-500 ¹²⁶
Buildings destroyed or damaged:	400-500, including homes, schools, factories and shops ¹²⁷
Damage to other infrastructure:	Electricity transmission station, water pipelines, roads, surface water sewage system ¹²⁸

The secondary explosions caused by the Dutch bombing levelled almost the entire 'industrial area' and also destroyed parts of the adjacent residential areas. The local hospital treated 200 victims on the night of the bombing, according to the General Hospital's director Osama Sulaiman: "Some were badly wounded, others died here. Among them are probably IDPs [internally displaced persons] from the South. Nobody knows them, and no one misses them."¹²⁹

Sulaiman concluded that there were very probably more fatal victims than the official number of 70 civilians, the Dutch newspaper NRC reported. Other sources also indicated that it is likely that there were more bodies buried under the rubble, because the area was home to many IDPs from southern regions such as Tikrit at the time of the attack.¹³⁰

"I ran with my sons and wife and took cover under the staircase. Three to four powerful explosions followed the first blast and I felt the roof of my house was about to collapse over our heads."

*67-year-old Hawijah resident Hassan Mahmoud al-Jubbouri*¹³¹

125 Airwars, see: <https://airwars.org/civilian-casualties/ci070-june-3-2015/>, and Subhan al-Jabouri, mayor of Hawijah, in a written interview conducted by Airwars on 28 September 2020.

126 Airwars, see: <https://airwars.org/civilian-casualties/ci070-june-3-2015/>, and Subhan al-Jabouri, mayor of Hawijah, in a written interview conducted by Airwars on 28 September 2020

127 To our knowledge there is no official list of the type and number of buildings destroyed by this particular attack. The additional investigation into the Hawijah bombing by the Dutch Ministry of Defence speaks of "400 buildings", see: <https://airwars.org/news-and-investigations/minister-announces-fresh-transparency-moves/>, while the mayor of Hawijah, as well as an anonymous source, reported 500 buildings to PAX.

128 While multiple anonymous sources reported damage to roads, water pipelines and an electricity transmission station, only one source mentioned communication lines, and only one reported damage to the surface sewage system specifically to PAX in September 2020.

129 NRC, 'De Nederlandse Precisiebom op een Wapendepot van IS' ('The Dutch precision bomb on an IS weapon depot'), available in Dutch at: <https://www.nrc.nl/nieuws/2019/10/18/de-nederlandse-precisiebom-op-een-wapendepot-van-is-a3977113>.

130 Al-Ghad League for Woman & Child Care, 2020, 'Hawija City Based Assessment', available upon request; NRC, 'Miljoenenclaim van Vijftig Irakezen tegen Nederland om Luchtaanval Hawija' ('Fifty Iraqis sue the Netherlands for millions to compensate for aerial attack on Hawijah'), 29 April 2020, available in Dutch at: <https://www.nrc.nl/nieuws/2020/04/29/miljoenenclaim-van-vijftig-irakezen-tegen-nederland-om-luchtaanval-hawija-a3998191>.

131 Reuters, 'Air Strike in North Iraq Killed Dozens, Including Civilians, Residents Say', 4 June 2015, available at: <https://uk.reuters.com/article/uk-mideast-crisis/air-strike-in-north-iraq-killed-dozens-including-civilians-residents-say-idUKKBN0OK27A20150604>.

The casualties were caused by the secondary explosions that resulted from the detonation of the explosives that ISIS had stored in the factory. These made buildings collapse and pieces of glass and debris fly around. It has been reported furthermore that the attack left around 2,000 people in need of psychological support, although no revalidation or psychological support programme has yet been provided.¹³² The mayor of Hawijah explains: “The absence of direct health care and the inability of the people to help their families, so that they had to watch them die under the rubble, induced trauma for the people. This is in addition to the loss of their homes, properties and sources of income and their experiences of being displaced.”¹³³

Several survivors reported that their children are still afraid when they hear airplanes, while another survivor reported that the psychological stress prevents his wife and children from returning to Hawijah.¹³⁴ Furthermore, there are reported fears amongst Hawijah residents that a toxic chemical mix was released during the attack from stored fertiliser that ISIS used for its bomb production.¹³⁵ In a letter to parliament, the Dutch Minister of Defence mentioned local reports of radiation, and affirmed these could not have resulted from the munition used by the Dutch, but that nevertheless the ministry was reviewing these claims.¹³⁶

Although to our knowledge there is no official list of buildings destroyed by this particular attack, PAX sources report damage to some 400-500 buildings, among them a mosque, many shops, homes, schools, warehouses, workshops and a couple of pharmacies, as well as to cars.¹³⁷ The attack also destroyed several industrial sites, including an ice factory, a brick factory and a flour factory, the latter being one of the structures that have been rebuilt since.¹³⁸ The airstrike reportedly also caused major damage to infrastructure such as roads, water pipelines, an electricity transmission station, communication lines and the surface water sewage system.¹³⁹

132 Al-Ghad League for Woman & Child Care, 2020, ‘Hawija City Based Assessment’, available upon request.

133 Subhan al-Jabouri, mayor of Hawijah, in a written interview conducted by Airwars on 28 September 2020.

134 Jannie Schipper from Dutch newspaper NRC in an email to PAX on 15 September 2020.

135 Deutsche Welle, ‘Hawija Iraqi Bomb Victims demand Dutch Compensation’, 12 February 2020, available at: <https://www.dw.com/en/hawija-iraqi-bomb-victims-demand-dutch-compensation/a-52333351>.

136 Dutch Minister of Defence Ank Bijleveld in a letter to parliament, ‘Voortgang transparantiebeleid burgerslachtoffers’, (‘Progress in Transparency Policy concerning Civilian Casualties’), 30 June 2020, reference BS2020012363, available in Dutch at: <https://www.rijksoverheid.nl/documenten/kamerstukken/2020/06/30/kamerbrief-voortgang-transparantiebeleid-burgerslachtoffers>.

137 While multiple anonymous sources mentioned a mosque, shops, homes, warehouses, workshops and cars to PAX, only one source mentioned pharmacies and schools.

138 NRC, ‘Miljoenenclaim van vijftig Irakezen tegen Nederland om luchtaanval Hawija’ (‘Fifty Iraqis sue the Netherlands for millions to compensate for aerial attack on Hawijah’), 29 April 2020, available in Dutch at: <https://www.nrc.nl/nieuws/2020/04/29/miljoenenclaim-van-vijftig-irakezen-tegen-nederland-om-luchtaanval-hawija-a3998191>, NRC, ‘Dutch Bomb Killed Seventy in Iraq’, 18 October 2019, available at: <https://www.nrc.nl/nieuws/2019/10/18/dutch-bomb-killed-seventy-in-iraq-a3977301> and anonymous sources to PAX in September 2020.

139 While multiple anonymous sources reported damage to roads, water pipelines and an electricity transmission station, only one source mentioned communication lines, and only one reported damage to the surface sewage system specifically to PAX in September 2020.

5.2.2 Indirect harm (tertiary or reverberating effects)

As the attack destroyed many homes, a significant number of families in Hawijah became displaced. The attack also destroyed or damaged water and electricity infrastructure, leaving the whole area without access to critical resources.¹⁴⁰ People lost their jobs as all the shops, car show rooms and factories were damaged or destroyed, with only some being rebuilt since then.¹⁴¹ As the mayor of Hawija put it: "The great damage caused to the infrastructure of the region and the surrounding areas, as well as damage to the power station and water pipelines, led to the displacement of a large number of families from the affected areas and a decrease in access to basic services to them."¹⁴²

5.2.3 Longer-term harm

In 2020 the affected areas of Hawijah still largely remain a pile of rubble. Many houses and shops have not been rebuilt because little to no compensation has been paid to the owners yet for reconstruction.¹⁴³ The factories have not completely reopened, nor have their owners returned to the area.¹⁴⁴ By 2020, only the main road in the area had been rebuilt, and most of the debris had not yet been removed.¹⁴⁵ According to one source, the 50 to 60 per cent of buildings that have been reconstructed were rebuilt without compensation funds and often on the cheap.¹⁴⁶ The mayor of Hawijah, while stressing that it is difficult to make an estimate, assesses that fewer than 40 per cent of the buildings have been rebuilt and that much rubble remains.¹⁴⁷ Five years later, many people who had fled after the attack were reportedly still dispersed. Although some returned to Hawijah, others went back to their home towns where they had lived before seeking refuge in the city, some stayed in Kirkuk or in IDP camps, while yet others sought refuge abroad, including in the Netherlands.¹⁴⁸

Even though an Iraqi Government Compensation Committee was set up, the people of Hawijah have yet to receive disbursements. According to different anonymous sources keeping track of the compensation process, although most people say they submitted claims years ago, none had received any compensation except for one or two situations where people received USD 2,000 - 4,000 for lost family members.¹⁴⁹ Other reports mention a lack of accessibility to compensation, citing the fact that people need to travel to Kirkuk, and that corruption and bribes in the application procedure impede access.

140 Anonymous sources to PAX in September 2020.

141 Anonymous sources to PAX in September 2020.

142 Subhan al-Jabouri, mayor of Hawijah, in a written interview conducted by Airwars on 28 September 2020.

143 NOS, 'In Hawija is Niemand de Nederlandse Bomaanval Vergeten' ('Nobody in Hawijah has forgotten the Dutch bombing'), available in Dutch only, 18 October 2019; video of the area available at: <https://nos.nl/artikel/2306655-in-hawija-is-niemand-de-nederlandse-bomaanval-vergeten.html>; anonymous sources to PAX in 2020.

144 Subhan al-Jabouri, mayor of Hawijah, in a written interview conducted by Airwars on 28 September 2020.

145 Subhan al-Jabouri, mayor of Hawijah, in a written interview conducted by Airwars on 28 September 2020.

146 Anonymous source to PAX in September 2020.

147 Subhan al-Jabouri, mayor of Hawijah, in a written interview conducted by Airwars on 28 September 2020.

148 NRC, 'De slachtoffers van Hawija zoeken zelf naar de waarheid', ('Hawijah victims are seeking the truth on their own'), available in Dutch at: <https://www.nrc.nl/nieuws/2019/11/28/de-slachtoffers-van-hawija-zoeken-zelf-naar-de-waarheid-a3982086>.

149 Anonymous sources to PAX in September 2020.

One example was given where a family had to pay bribes worth half of the amount of the compensation in order to secure payment.¹⁵⁰



*Photo showing part of the impacted area in Hawijah, September 2019.
Credits Lex Runderkamp NOS.*

Although some of the water pipelines are reported to have been reconstructed, there is still a reported shortage of water in the area, as well as a dysfunctional electricity grid.¹⁵¹

With regard to the suspected environmental impact of the attack, the mayor of Hawijah notes that “there are still concerns among the residents about the radiological effects and the polluting materials as a result of the tremendous force of the explosion, as some believe that radioactive materials are present in the area”.¹⁵²

The lack of water and infrastructure, the accumulated debris and demolished houses as well as security concerns are all mentioned as factors preventing the return of people, and stopping people from re-opening their businesses in the ‘industrial area’.¹⁵³

150 NRC, ‘PodCast Vandaag Nieuws’, (‘PodCast Today News’), 21 October 2019, available in Dutch at: <https://www.nrc.nl/nieuws/2019/10/21/hoe-een-nederlandse-bom-70-mensen-in-irak-doodde-a3977445>.

151 Anonymous sources to PAX in September 2020.

152 Subhan al-Jabouri, mayor of Hawijah, in a written interview conducted by Airwars on 28 September 2020.

153 Anonymous sources to PAX in September 2020.

5.2.4 Looking at Hawijah city outside the 'industrial area'

The attack on 2-3 June 2015 and its impact on civilians did not take place in isolation. Many aspects of the harm resulting from this single attack should also be seen in the larger context of the destruction inflicted by ISIS in Hawijah preceding the Coalition's campaign.

Although it is beyond the scope of this report to assess all of the impact in wider Hawijah, it is important to be aware of the context for the June 2015 incident, and to realise how this overall pattern of harm to the city aggravates the specific civilian harm caused by this attack on the 'industrial area' by the Coalition.

The use of explosive weapons in populated areas is known to have a negative impact on the access, availability and quality of health care.¹⁵⁴ In Hawijah, healthcare centres were damaged as well as the General Hospital. The latter has now been renovated and is, according to our information, operational again. There are reportedly few specialised healthcare services left in Hawijah such as maternity care, treatment for chronic diseases or psychological care, and there is a lack of sanitation facilities.¹⁵⁵ For more specialised procedures, residents have to travel to Kirkuk, or elsewhere—a particular challenge since victims of explosive weapons often require specialised healthcare to facilitate rehabilitation and healing.¹⁵⁶ There are not enough physical or psychosocial revalidation programmes available in Hawijah, while psychosocial problems are reportedly widespread.¹⁵⁷ Furthermore, there is a reported shortage of doctors and nurses, many of whom are said to have moved away to Kirkuk and IDP camps, and have not returned.¹⁵⁸

Despite the above, one source also asserts that when the city was occupied by ISIS, healthcare facilities would only treat ISIS-affiliated patients, so in that sense the accessibility of health care has likely improved since the city was liberated.¹⁵⁹

Access to electricity remains an issue for many people in the city of Hawijah as a whole. The pattern in the industrial area, where many shops are still closed because they depend on electricity to operate, is reflected in Hawijah more broadly, and in general people

154 See for example Harvard Law School's International Human Rights Clinic & PAX, 'Operating Under Fire: The Effects of Explosive Weapons on Health Care in the East of Ukraine', May 2017, available at <https://www.paxforpeace.nl/publications/all-publications/operating-under-fire>.

155 REACH Initiative (REACH) in collaboration with the Norwegian Refugee Council (NRC), Handicap International (HI), and Save the Children, 'Hawija City Area-based Assessment', October-November 2018, available at: https://reliefweb.int/sites/reliefweb.int/files/resources/reach_irq_report_aba_hawija_november_2018.pdf; anonymous sources to PAX.

156 See for example: Save the Children, 'Blast Injuries', 17 May 2019, available at: <http://www.inew.org/resources/blast-injuries/>.

157 NRC, 'Miljoenenclaim van vijftig Irakezen tegen Nederland om luchtaanval Hawijah' ('Fifty Iraqis file a lawsuit against the Netherlands asking for millions to compensate for aerial attack on Hawijah'), available in Dutch at <https://www.nrc.nl/nieuws/2020/04/29/miljoenenclaim-van-vijftig-irakezen-tegen-nederland-om-luchtaanval-hawija-a3998191>; AI-Ghad League for Woman & Child Care, 2020, 'Hawija City-Based Assessment', available upon request.

158 AI-Ghad League for Woman & Child Care, 2020, 'Hawija City-Based Assessment', available upon request; anonymous source to PAX in September 2020.

159 Jannie Schipper from the Dutch newspaper NRC in an email to PAX on 15 September 2020.

reportedly have unstable access to electricity. This also affects the functioning of the water treatment plant for Hawijah. As a result, drinking water availability and quality in Hawijah are reportedly much poorer than before 2014.¹⁶⁰ Before ISIS rule, Hawijah city had two functional water treatment plants. One of these has reportedly sustained damage because of airstrikes and is not functional. The one remaining functional water treatment plant is dependent on the unreliable public grid for electricity, however, causing capacity problems for the city.¹⁶¹ Significant damage to the water network adds to the disruption of services.¹⁶²

Livelihood opportunities have been negatively affected further by the fact that many of Hawijah city's factories and shops were destroyed and the labour force has shrunk as many workers have left the area. The lack of functioning infrastructure is often reported as one of the key reasons for people not returning to Hawijah.¹⁶³ This again leads to a smaller pool of workers and fewer services, becoming a vicious cycle that is difficult to break.

5.3 Conclusions

Although Dutch forces attempted to limit the anticipated impact on civilians on 2-3 June 2015 by using the smallest munition in their arsenal, they failed miserably. Even though they believed they could control the radius of the explosions, they were in fact unable to control the wide area impact of their attack, given the large stock of explosives held at the ISIS factory.

Together with the proximity of civilians nearby, this created tremendous and long-lasting civilian harm. The scope of this case study only provides a snapshot of what the real impact of the attack on the industrial area has been. Due to time and travel constraints, it was not possible to visit the site, conduct face-to-face interviews and elaborate further on the reverberating effects of the attack. Questions like "How are survivors impacted by the lack of rehabilitation programmes?", "What is the impact of the shortage of electricity and water services on healthcare services?", "How did the loss of jobs impact families' economic situation?" and "How did the damage to pipelines affect water and sanitation services or how did this impact the environment?" remain unanswered in this report. However, from the information we did gather, the picture is often rather grim.

It is our hope that the ongoing civilian suffering as the result of the Dutch airstrike on Hawijah will be addressed soon. But at the time of writing, five years after the attack, the area is still largely a pile of rubble, compensation to victims has not been paid, people are still displaced, and the essential services upon which civilians depend are still not

160 REACH Initiative in collaboration with the Norwegian Refugee Council, Handicap International, and Save the Children, 'Hawija City Area-based Assessment', October-November 2018, available at: https://reliefweb.int/sites/reliefweb.int/files/resources/reach_irq_report_aba_hawija_november_2018.pdf.

161 Anonymous source to PAX in September 2020.

162 REACH Initiative in collaboration with the Norwegian Refugee Council, Handicap International, and Save the Children, 'Hawija City Area-based Assessment', October-November 2018, available at: https://reliefweb.int/sites/reliefweb.int/files/resources/reach_irq_report_aba_hawija_november_2018.pdf.

163 Al-Ghad League for Woman & Child Care, 2020, 'Hawija City-Based Assessment', available upon request.

functioning properly, preventing the area from regaining its function as both a residential area and a source of income for many. This pattern of harm is seen in affected towns and cities worldwide; it is foreseeable when explosive weapons with wide area effects are used in towns and cities, and this should be taken into account in military planning and practice.

6

Conclusions and Recommendations

The world has seen a significant and disturbing shift towards large-scale urban combat across multiple conflict nations. When explosive weapons with wide area effects are used in populated areas, this incurs an unacceptable risk of harm to civilians. They kill and injure people upon use, and often have an impact that extends far beyond the time and place of the attack.

Explosive weapons are a main driver of forced displacement, not only because of fears about the risk of death and injury and the destruction of homes, but also because of their profound impact upon critical infrastructure services such as health care, education and water and sanitation services—leading in turn to unsafe and dysfunctional towns and cities long after the attack.

As the examples of Raqqa, Mosul and Hawijah in this publication demonstrate, this impact can last for years and affects whole communities and cities. In all three places, civilians continue to suffer from the attacks that the international Coalition and other parties to the conflict carried out years ago. This unfortunately is not unique, but instead follows a distinct pattern of harm that has been documented for many actors in many places around the world.

As our cases have further shown, even when states claim to act in accordance with the rules of international humanitarian law, there are still cases where immense civilian harm has been caused when explosive weapons were used in populated areas.

IHL in itself does not indicate what technical characteristics of specific weapons systems, or what characteristics of operational contexts, should be factored into the application of the law. These case studies highlight the need for all military actors to develop stronger operational standards (rather than amend the law).

With regard to the claims of ‘precision’ as a way to prevent civilian harm, the cases in this report show that precision, is not the key determinant of civilian harm. Rather, it is the wide area effect of an explosive weapon in relation to the proximity of civilians in populated areas.

Whilst some civilian casualties are the result of intentional and illegal targeting of civilians, or of careless targeting of a military objective, even states with notably higher standards can and should improve their policies on explosive weapon use in populated areas to better protect civilians.

In the last decade, states have come together on multiple occasions to discuss an international political commitment to prevent the widespread humanitarian harm caused by the use of explosive weapons in populated areas.

In order to better protect civilians from the use of explosive weapons in populated areas, we therefore call upon states to integrate the direct, indirect and reverberating effects of the use of explosive weapons into their military planning and operations and to support an international declaration that:

- ◆ Recognises and describes the full extent of the civilian harm caused by explosive weapons in populated areas;
- ◆ Commits states to avoiding the use of explosive weapons with wide area effects in populated areas, and to developing national policies and procedures to this end;
- ◆ Commits states to increasing efforts on collecting and sharing data on the use of explosive weapons in populated areas, as well as tracking civilian harm from the use of Explosive Weapons In Populated Areas (EWIPA), including data segregated by age, sex and disability where possible;
- ◆ Commits states to collecting and publicly sharing information about civilian harm incidents, assessments and investigation processes;
- ◆ Commits states to providing victim assistance to those affected by the use of explosive weapons in populated areas.

Glossary

CAOC	Combined Air Operations Centre
CCARs	Civilian Casualty Assessment Reports
CDE	Collateral Damage Estimate
CJTF-OIR	Combined Joint Task Force - Operation Inherent Resolve
EWIPA	Explosive Weapons in Populated Areas
GoI	Government of Iraq
ICRC	International Committee of the Red Cross
ICTS	Iraq Counter Terrorism Service
IDPs	Internally Displaced Persons
IED	Improvised Explosive Device
IHL	International Humanitarian Law
IOM	UN International Organisation for Migration
ISIS	Islamic State of Iraq and Syria
ISF	Iraqi Security Forces
JFACC	Joint Forces Air Component Command
NGO	Non-Governmental Organisation
OIR	Operation Inherent Resolve
PMU	Popular Mobilisation Unit
RHC	Red Card Holder
ROEs	Rules of Engagement
RAF	Royal Air Force
RRC	Raqqa Reconstruction Committee
SDF	Syrian Democratic Forces
UN	United Nations
UNSG	United Nation Secretary General
(US) CENTCOM	(United States) Central Command
VBIED	Vehicle Borne Improvised Explosive Device



PAX is a Dutch peace organisation, working with local partners in 14 conflict zones to enhance the protection of civilians and work towards peaceful and inclusive societies. Part of its work focuses on the development, production (and investments in production), use, trade and impact of weapons. By enhancing international norms and agreements, PAX strives towards greater protection of civilians against the impact of weapons.

Airwars

Airwars documents civilian harm from the use of wide area effect weapons by militaries. Since 2014 Airwars has been assessing civilian harm from military operations in Iraq and Syria, and later in Libya, Somalia and Yemen. In some situations, Airwars engages with militaries to generate an improved understanding of civilian harm allegations. It also publishes information to hold actors accountable for civilian deaths. In all cases, Airwars respects the victims and their families.