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EXPLOSIVE VIOLENCE means armed violence using explosive weapons.

ARMED VIOLENCE means the intentional use, or threatened use, of weapons to inflict injury, death, psychosocial harm or damage, which may undermine development.¹

EXPLOSIVE WEAPONS cause injury, death or damage by projecting explosive blast, and often fragmentation, from the detonation of an explosive device. Explosive weapons include artillery shells, bombs (such as aircraft bombs, improvised explosive devices including car bombs and 'suicide' bombs), grenades, landmines, mortars and rockets etc.

FOREWORD

Events in 2009 in such places as Sri Lanka, Gaza, Afghanistan and Iraq have once again reminded us of the terrible price paid by civilians when explosive weapons, such as air dropped bombs, artillery shells, improvised explosive devices, car and truck bombs, etc., are used in densely populated areas.

According to this timely report by Landmine Action, each year thousands of direct civilian casualties result from the use of explosive weapons in such circumstances. Some are killed outright or later succumb to their injuries, while others are left maimed and traumatized. There are further indirect costs that come from damage to infrastructure and the often long-term threat to civilians, particularly children, and to livelihoods of munitions left unexploded. Ultimately, development is impaired, further compounding the plight of those individuals, families and communities that have suffered the effects of explosive weapons.

This report presents a comprehensive and compelling case for States, the United Nations, international organisations and civil society to question in a new and critical way the acceptability of explosive weapons, particularly when used in populated areas. I would strongly encourage States and other relevant actors to consider carefully the issues raised in this report and to begin a genuine dialogue on the steps that need to be taken to ensure more effective protection for civilians from the effects of such weapons.



John Holmes

Under-Secretary-General for Humanitarian Affairs
and Emergency Relief Coordinator
New York
August 2009

PREFACE

This report argues for a reframing of conventional attitudes to weapons and violence. It presents explosive weapons (e.g. bombs, artillery shells, rockets, grenades) as a category of technology generally considered unacceptable where those employing armed force are directly responsible to the population amongst whom they are operating. The general exclusion of explosive weapons from civilian ownership or from use in domestic policing by states is so widespread that we tend to take it for granted. Yet in this pattern of common practice there are grounds for asking critical questions about when, where and amongst whom the use of explosive weapons does become acceptable.

From airstrikes in Afghanistan and Georgia, to artillery attacks in Gaza and car-bombs in Baghdad, the use of explosive weapons in populated areas is a consistent cause of severe civilian suffering. The direct deaths and injuries in such attacks are likely to be in the tens of thousands each year, and these are augmented by related patterns of psychological harm and social and economic losses. In addition, there are further indirect costs that come from damage to infrastructure and the ongoing threat of munitions left unexploded. Through these effects, explosive weapons impair development. Furthermore, explosive violence often communicates a disregard for civilian protection that works directly against political resolution and reconciliation.

States claim a monopoly over the legitimate use of explosive weapons. However, the extensive and ongoing employment of this technology by non-state groups illustrates the inability of states to enforce this monopoly in practice. The international pattern of explosive violence broadly articulates a line of confrontation between states and non-state actors. If conflict between states and non-state groups is going to be an enduring paradigm of violence over the decades ahead, this report argues that states stand to gain from the progressive stigmatisation of the use of explosive weapons in certain contexts, and have much to lose from their continued proliferation and expanded acceptability.

This report urges states, international organisations and civil society to 'recalibrate' the acceptability of explosive weapons through a particular focus on preventing their use in populated areas. By recognising the use of explosive weapons in populated areas as a serious ongoing cause of humanitarian harm, states, international organisations and civil society can adopt a common language that puts civilian protection ahead of inter-state, political and sectarian differences. This, in turn, can provide a basis for building new standards of responsibility and accountability in the protection of civilians, and for assistance to the victims of armed violence more broadly.

In the current practice of states, the transition to 'armed conflict' could almost be defined as the threshold at which it is considered acceptable to endanger civilians through the use of explosive weapons. Yet broad categories of 'war' and 'armed conflict' are increasingly recognised as inadequate to describe the varied patterns

of violence and accountability in which states and non-state actors now operate.² Furthermore, the very basis of international humanitarian law is a recognition that characterising a situation as 'conflict' does not provide a wholesale suspension of legal and moral obligations. Beyond blanket assertions of 'conflict', this report urges states to make explicit the situations, domestically and internationally, in which the use of explosive weapons becomes acceptable.

In this context, explosive violence is best understood under the overarching framework of "armed violence" - which the OECD-DAC has recently defined as "the intentional use, or threatened use, of weapons to inflict injury, death or psychosocial harm which undermines development." Such a framing can be used to cut across traditional distinctions of 'conflict' and 'non-conflict' violence which often serve to reinforce inequitable expectations and standards regarding human security and accountability. The recommendations of this report should be seen then as working towards the commitment made by states under the 2006 Geneva Declaration on Armed Violence and Development, "to achieve, by 2015, measurable reductions in the global burden of armed violence and tangible improvements in human security worldwide."³



Photo © Marc Garlasco.
Gaza, January 2009 -
a boy lies in the
rubble of his
demolished home.

EXECUTIVE SUMMARY AND RECOMMENDATIONS

This report considers the broad humanitarian problems arising from the use of “explosive weapons” – weapons that cause injury, death or damage by projecting explosive blast, and often fragmentation, from the detonation of an explosive device. Explosive weapons are a subset of what are often called “conventional weapons.”⁴ As a technological category, explosive weapons include artillery shells, bombs (such as aircraft bombs, car bombs, ‘suicide’ bombs), grenades, landmines, mortars and rockets, amongst others. The category covers both mass-produced explosive ordnance and improvised explosive devices – in other words, it includes weapons associated with both state and non-state use.

The category of explosive weapons is distinct from firearms, which fire bullets, and from weapons that blind with lasers, heat the body with microwaves, or burn people and property with incendiary substances, and is distinct from nuclear, biological or chemical weapons, the so-called weapons of mass destruction. The boundaries between categories of technology will always be blurred in some places, but explosive weapons can be seen to form a relatively distinct grouping.

This report proposes that:

- ✘ Explosive weapons cause substantial and ongoing humanitarian suffering – direct injury and death, damage to infrastructure leading to further suffering, and long-term contamination with explosive remnants. From air strikes in Afghanistan and Georgia, to artillery attacks in Gaza and car bombs in Baghdad, the use of explosive weapons, particularly in populated areas, causes a consistent pattern of unacceptable civilian harm;
- ✘ Explosive weapons are prone to creating effects (across areas in the immediate environment and in the longer-term) that the users of these weapons cannot accurately foresee or control. As a result they present particular risks of being “indiscriminate.” As an indicator of this, data from Iraq suggest that explosive weapons, by comparison with other weapon types, have a higher proportion of child deaths and female deaths amongst the civilian casualties that they cause;
- ✘ States already recognise that explosive weapons constitute a single, coherent technological and ethical category through the widely adopted exclusion of these weapons from domestic policing and ‘de facto’ ban on civilian ownership. States have also recognised that the users of explosive weapons have a special responsibility regarding their longer-term risks to civilians;
- ✘ States claim a monopoly over the legal control and use of explosive weapons;
- ✘ States tend to limit use of explosive weapons to situations occurring outside their sovereign (or governed) territory amongst people to whom, consequently, the user expects and accepts only limited accountability. Where explosive weapons are used within sovereign territory it usually indicates a fracturing of state control;
- ✘ This division illustrates that presumptions as to what is “indiscriminate” are calibrated differently in different contexts: broadly, within one’s territory there is a relatively low threshold for attacks being considered indiscriminate whereas outside one’s territory the threshold is significantly higher;

The use of explosive weapons in populated areas consistently causes an unacceptable level of harm to civilians. This pattern of harm is seen in individual incidents of violence as well as in major conflicts. In 2009, the United Nation’s Secretary-General, Ban Ki-moon, expressed growing concern at the severe humanitarian impact of this violence.⁵

Addressing ‘explosive weapons’ as a single technological category can provide a powerful point of engagement for organisations and institutions concerned with civilian protection. States, international organisations and civil society should document the civilian harm caused by explosive weapons, work to prevent the use of explosive weapons in populated areas, support efforts to minimise the harm that explosive weapons cause after use, and work with the victims of explosive weapons for the full realisation of their rights.

- ✘ The concept of “indiscriminate” attacks in international humanitarian law has developed with particular reference to certain uses of explosive weapons in populated areas. However, international humanitarian law as currently formulated and implemented is failing to minimise effectively civilian harm from explosive weapons;
- ✘ States are particularly vulnerable to the use of explosive weapons by non-state actors. Relatively small amounts of explosives can be used to undermine state provision of security and public services;
- ✘ Widespread use of improvised explosive devices (IEDs) illustrates the inability of states to maintain the monopoly that they claim over the use of explosive weapons. Furthermore, a failure by states to control more appropriately and explicitly their own use of explosive weapons may blur moral distinctions between certain state and non-state actors.
- ✘ A context of globalisation and increased transnational interdependence between peoples and states argues for stronger requirements of local accountability for potential users of explosive weapons, and for increasing the burden of justification, and threshold of acceptability, for explosive weapon use;
- ✘ In particular, given the evident pattern of civilian harm, the use of explosive weapons in populated areas should be presumed to be unacceptable according to a common standard;
- ✘ Stigmatisation and rejection of the use of explosive weapons in populated areas would reduce civilian suffering. Such a rejection would serve better to differentiate accountable and unaccountable actors in the use of force.
- ✘ States, international organisations and civil society should work to build such stigma through the adoption of a common language to describe these patterns of violence, develop greater transparency and accountability regarding the use and impact of explosive weapons and ensure the rights of victims of explosive weapons.

The following paragraphs elaborate some of these points in order to provide a sense of how this argument is developed through the report:

Explosive weapons create highly damaging effects that are difficult for users to control

The tendency of explosive weapons to affect areas around the point of detonation means that people and objects in the vicinity of a target are likely to be harmed. Due to this technical characteristic, they pose fundamental problems when used amongst populations to whom no harm is ‘intended.’ These problems are exacerbated by the well-recognised, and militarily-valued, capacity of explosive weapons to degrade infrastructure; and extended by their tendency to create an ongoing threat in the form of unexploded ordnance. This report sketches out these characteristics using data on the civilian harm caused by explosive weapons (Chapters 1 and 2) and examining the legal concept of “indiscriminate” attacks as it has evolved with consistent and particular reference to explosive weapons (Chapter 4).

Explosive weapons impose a severe human and developmental cost

As examined in Chapter 2, the characteristic patterns of harm caused by explosive weapons are associated with relatively high rates of immediate death amongst people close to the blast and high rates of complex injuries – increasing pressure

on medical and health facilities often in countries with pre-existing shortage of such resources. Explosive weapons cause severe physical injuries and psychosocial impairments that increase requirements to provide rehabilitation and ongoing post-trauma support. Again, provision of such support can be extremely limited in resource-poor settings.

Explosive weapons have a high capacity to damage the social and economic infrastructure upon which civilian populations rely. The destruction of housing, power supplies, water and sanitation systems, health facilities, schools, markets and energy infrastructure, present direct humanitarian problems and necessitate high levels of reconstruction expenditure. Explosive weapons may be used to impair the functioning of such infrastructure in an effort to undermine social and community-level interactions and challenge the credibility of the state as a guarantor of public services and human security.

Use of explosive weapons results in items of unexploded ordnance being left in the environment, often in large quantities where use has been sustained. These items may detonate if disturbed, causing death or injury. Where contamination is particularly dense, fear of death or injury can result in resources such as agricultural land and water sources being denied from productive use. Some explosive weapons, such as landmines are specifically designed to deny access to areas. The processes of finding and removing ordnance contamination are relatively expensive and are often paid for from humanitarian aid budgets, diverting funds from other imperatives.

Explosive weapons are recognised by states as a weapon category

Chapter 3 notes that the ownership and use of explosive weapons is subject to categorical management by states. Virtually every government, worldwide, adopts a categorical prohibition against private ownership of explosive weapons. Similarly, states adopt a categorical presumption against the use of explosive weapons as instruments of civil force amongst their own populations for purposes of domestic policing. The use of these weapons does, by contrast, become generally permissible in military operations and armed conflict. In effect, the acceptability of the use of explosive weapons is determined by social and political demarcations drawn between different population groups and contexts.

The exclusion of explosive weapons from domestic policing stems from concern that these weapons will kill and injure people that the state does not wish to kill and injure, and that as a result the fundamental 'social contract' of legitimacy between government and people may be breached. Amongst other populations – that is, broadly, populations to whom the weapon user is unlikely to be directly accountable, and particularly where special circumstances of "armed conflict" are evoked – the presumption that these weapons are unacceptable breaks down. However,

SRI LANKA, 2009

In Sri Lanka, a Médecins Sans Frontières (MSF) surgeon operating in Vavuniya hospital reported having 1,700 patients in a hospital with 450 beds, with up to 50 patients coming in a day and 75% of those requiring surgery suffering from blast injuries from explosive weapons.⁶ In response to a situation described as "nothing short of catastrophic," the International Committee of the Red Cross (ICRC) stated that it was "particularly concerned about the impact on civilians from weapons such as artillery."⁷ The situation here was considered exceptional because combat was "occurring in a very densely populated area." Human Rights Watch also criticised the Sri Lankan Government's use of "heavy weapons" in an area crowded with displaced civilians.⁸ Government officials had previously tried to deny such use stating that troops "were not using heavy fire power, they are using only guns and personal weapons."⁹ Such official denials illustrate a recognition that the pattern of explosive violence being employed was likely to be externally unacceptable.

states rarely articulate this transition in terms of the changing relationship of accountability to the local population. Under an increasingly coherent international legal framework of binding agreements affirming the universality of fundamental entitlements and rights of each person – wherever they are – such lines effectively designating areas or circumstances in which states can set aside their moral, if not legal, accountability, should be increasingly subject to critical examination.

At the same time, the use of explosive violence by non-state actors is increasing. This report notes that trend and argues that the state-asserted monopoly on explosive weapons is not being maintained in practice. Furthermore the unacceptability of non-state use of explosive weapons is diminished by the failure of states to enact appropriate categorical controls on the use of these weapons in populated areas, or to attend to the relationships of diminished local accountability that such use articulates.

In June 2009, UN Under-Secretary-General John Holmes asserted in the UN Security Council that “suicide attacks and bombs left in public places have become so commonplace, not just in Afghanistan but also in such places as Iraq and Somalia, as to warrant no longer the same degree of attention and outrage as they once did.”¹⁰ This disturbing assertion speaks to an increased acceptance of explosive violence as a means of communicating political grievances between national, ethnic or factional groups – a trend that states, international groups and civil society concerned with the protection of civilians must work to counter.

Explosive weapons are not yet treated coherently in international policy and law

A critical concern of this report is that despite the broad coherence of explosive weapons as a technological category, a pattern of harm that can be attributed to that category, and the clear categorical management of explosive weapons in the common practice of states (based on fundamental underpinnings about how individual lives are treated in different circumstances), there has until recently been little or no categorical discussion of explosive weapons in international public discourse, policy or law.¹¹ Focusing on a category of weapon technology can help to frame the acceptability or otherwise of its use. This approach underpinned the successful stigmatization of, and prohibitions against, biological and chemical weapons and specific explosive weapons such as antipersonnel landmines and, more recently, cluster munitions. Chapter 4 notes that despite the absence of a categorical approach to explosive weapons in international policy and law, concerns regarding certain types or uses of explosive weapons have been a driving force in the ongoing evolution of international humanitarian law from the middle of the 19th century. Explosive weapons have been central in the ongoing negotiation of what is “indiscriminate” in the use of force in armed conflict. If framed in legal terms, this report can be read as calling for a reorientation of existing law, and a recalibration of its provisions, through the adoption of a strong presumption that the use of explosive weapons in populated areas will be considered an indiscriminate attack.

RECOMMENDATIONS: TOWARDS A STRONGER INTERNATIONAL NORM

Changing economic, social and political relationships, driven by globalisation, extension of human rights discourse, evolving concepts of sovereignty and a stronger role of transnational, international and non-governmental organisations, have created new opportunities for, and new pressure towards, more robust moral and legal frameworks for the promotion of equitable humanitarian standards.

In this context, claims regarding the acceptability of explosive weapon use require more rigorous justification. This report calls for states, international organisations, NGOs and wider civil society to work to strengthen further an underlying presumption that the use of explosive weapons in populated areas is unacceptable. The strengthening of such a presumption represents a movement towards the moral orientation that generally pertains where the users of force are accountable to the population amongst whom they are operating. In other words, the humanitarian standards states apply to their own populations, they should aspire to apply to the populations of others.

1. Build the debate

The first need is to build recognition that these categories of technology and context should be a consistent part of responses to this pattern of violence. Adoption of the terms “explosive weapons” and “populated areas” allows for the development of a common language of humanitarian concern that can bridge differences of political or policy orientation. At a basic level it allows us to develop a common ‘filing system’ for specific incidents of violence. Such language can also be used in different messages that might be adapted, on an ongoing and responsive basis, to engage with specific patterns or incidents of violence. Such messages can be used in advance of conflict to caution against the use of explosive weapons in populated areas. They can be used in response to explosive violence by state and non-state actors alike. They can be used in response to aerial bombing or car bombs. They are compatible with very different political and legal orientations towards the violence in question, and they do not preclude more detailed political or legal assertions. They range from the permissive to the restrictive, but all frame the problem in broadly the same terms:

- ✘ “We urge the parties to take all possible care to avoid civilian harm, particularly when considering the use of explosive weapons in populated areas.”
- ✘ “Parties must consider the serious risk to civilians before using explosive weapons in populated areas.”
- ✘ “We are deeply concerned by the use of explosive weapons in populated areas. Such actions are exposing the civilian populations to grave risks, causing extensive suffering and will greatly increase the challenge of post-conflict reconstruction.”

“How can we gain wider acceptance of this norm? ... I have no doubt that if we can achieve a prohibition on the use of explosive force in populated areas, it will have a profound effect on conflict everywhere ... [I]t will erect a moral and legal barrier to escalation, thereby giving conflict resolution efforts more time to succeed. [It will make] more straight-forward, reliable, and universal the moral and political opprobrium focused on those who would inflict the scourge of war on non-combatants.”

Mayor Tadatoshi Akiba, Mayor of Hiroshima, 28 October 2008, Mayors for Peace Seminar ‘Cities are not Targets’

- ✘ “We condemn this incident of explosive violence in the middle of a populated area.”
- ✘ “The use of explosive weapons in populated areas must stop.”

Developing a common recognition that the use of explosive weapons in populated areas represents a distinct humanitarian problem, and framing this in a common humanitarian language, should take precedent over more specific arguments about policy or legal solutions to this problem.

2. Build transparency

Beyond these responsive messages, states, international organisations and civil society should develop better data as a basis for policy making on explosive weapons. As first steps in such a process:

- ✘ States should recognise their responsibility to gather and publish data on explosive violence undertaken by the state, or on territory under the jurisdiction or control of the state. As actors that claim a monopoly over the use of explosive weapons, states have a special responsibility to document and report on their implementation of this monopoly;
- ✘ United Nations agencies, international organisations, non-governmental organisations, and other independent monitoring bodies, should systematically document activities and effects of armed violence undertaken by states and other actors;
- ✘ Amongst both groups the following data should be gathered:
 - date, location and context of incidents;
 - details of the weapons used (at a minimum whether these were explosive weapons, firearms, other etc.);
 - the actors using these weapons;
 - actors targeted and other actors in vicinity;
 - the numbers of dead or wounded amongst different groups;
 - demographic information on casualties;
 - damage caused to property and other assets;

3. Build accountability

States should publish policy statements regarding when the use of explosive weapons becomes acceptable. In particular, they should explain the conditions under which the use of explosive weapons in populated areas is considered justified and elaborate how accountability to local populations is factored into such justifications. Important questions would be:

- ✘ Under what circumstances and in accordance with what policies and procedures would explosive weapons be used amongst the domestic population? Including 'inter alia':
 - What standard would be required for verification of the targets?
 - What force options would be considered first and what would be the process of escalation?
 - What specific explosive weapons would be used?
 - What warnings would be given?
- ✘ Under what circumstances and in accordance with what policies and procedures would explosive weapons be used in different contexts, amongst other populations or in circumstances described as "armed conflict"? Including 'inter alia':

- What standard would be required for verification of the targets?
- What force options would be considered first and what would be the process of escalation?
- What specific explosive weapons would be used?
- What warnings would be given?

4. Build recognition of the rights of victims

States should recognise and act on their responsibilities to victims of explosive weapons.

- ✘ Explosive weapon victims include persons who have been killed or suffered physical or psychological injury, economic loss, social marginalisation or substantial impairment of the realisation of their human rights due to the use of explosive weapons – this includes persons directly impacted as well as their affected families and communities;
- ✘ In conjunction with recommendation 2, states should gather data on explosive weapon victims under their jurisdiction or control;
- ✘ In line with the highest standards of international humanitarian and human rights law, and on a non-discriminatory basis, states must provide assistance to victims of explosive weapons, including medical care, rehabilitation and psychological support, as well as provide for their social and economic inclusion;
- ✘ As part of this responsibility to assist affected communities, States must ensure the rapid clearance of unexploded and abandoned explosive weapons from territory over which they have jurisdiction or control. Furthermore:
 - The users of explosive weapons must act on their special responsibility to assist clearance through the provision of detailed information on their use of these weapons and through the provision of practical and financial support.¹²

There is no doubt that weapon technologies developed over the last 200 years have exponentially increased the capacity of humankind to kill and injure itself. Whilst technology cannot be 'un-thought', the same period has also provided some grounds for optimism that identified categories of weapon technology can be rendered less acceptable, and hence less likely to be used, by changes in the social and economic context. Our common, global social and legal responses to biological and chemical weapons, to antipersonnel landmines, and to cluster munitions provide the groundwork on which broader, more comprehensive prohibitions on inhumanity can be built and reinforced. Over time, there is potential to recalibrate the contexts that dictate the acceptability or otherwise of explosive violence and this should be the subject of concerted collective effort. A stigma against the use of explosive weapons in populated areas would provide a basis for better differentiation between those acting on their common responsibility to protect civilians and those subordinating civilian protection in the pursuit of other goals.

Photo © Richard Moyes. Vietnam, December 2005 – the casings of aircraft bombs and cluster munitions are still being salvaged for scrap metal more than 30 years after the U.S. bombing.



A SHORT HISTORY OF EXPLOSIVE WEAPONS

The precursors of modern explosive weapons were developed in China under the Song Dynasty (960-1279), including early forms of rockets, mines and grenades.¹³ Texts also record the use of fragmentation (metal or porcelain)¹⁴ to augment the wounding capacity of these items. Explosive shells have been attributed to the early Ming Dynasty (around 1400).¹⁵ Early explosive weapons used ‘black powder’, also called ‘gunpowder’ – a low explosive that releases energy through deflagration rather than detonation.

The history of modern explosive weapons is bound up with developments in explosive chemistry, metallurgy and the wider technologies of transportation. Explosive weapons were transformed from the mid 19th century by the invention of high explosives. Nitro-glycerine was discovered in the 1840s and was developed by Alfred Nobel into dynamite in the 1860s. The same period also saw the development of TNT.

Also during the 19th century, metallurgy was transforming the capacity of guns and ships. From the 1820s, the first guns to fire explosive shells with the flat trajectory of cannons were developed and these were adopted by various navies from the 1840s onwards.¹⁶ Whilst naval explosive shells were often indecisive in battles fought at sea, explosive force from torpedoes and naval mines was increasingly effective at sinking ships.¹⁷ On land, the first modern mechanically-fused high-explosive antipersonnel mines were created by Confederate troops in the 1860s during the US Civil War.¹⁸

Changes in technology were accompanied by changes in societal frameworks that formed part of the context for these technologies. In the course of the 19th century the science of “wound ballistics” developed in response to injuries caused by bullets and projected fragments. This branch of military science would become important in the development of fragmentation weapons in the 20th century.¹⁹ The second half of the century saw the development of the “propaganda of the deed” as a concept with a particular affinity to

explosive violence. Associated with anarchist groups, this concept saw the communicative and symbolic potential of individual acts of violence. The implications of developing weapon technologies, notably “various explosive compounds and aerial balloons equipped to hurl projectiles,” spurred Czar Nicholas II to call in 1898 for the First Hague Conference which was to become one of the foundations of modern international humanitarian law.²⁰

The invention of the fixed wing aircraft in the first decade of the 20th century was quickly recognised as offering potential for the delivery of explosive force. Aerial bombing was widely used by some colonial powers.²¹ On the ground during World War I (1914-1919), explosive shells were responsible for large numbers of infantry being killed and wounded. World War I saw the first widespread use of industrially manufactured fragmentation hand grenades. There was also a growing realisation of the problems of unexploded ordnance.

World War II (1939-1945) saw numerous developments in explosive weapons, notably shoulder launched rocket propelled grenades, recoilless anti-tank guns, and shaped charge and squash-head warheads. There were developments in the engineering of explosive charges so as to focus their effects in a way that could defeat certain targets. However, the most significant developments were the massive use of explosive weapons in aerial bombing, the development of the V-2 rocket and the use of the atom bomb. The doctrine of “strategic bombing” saw explosive weapons inflict massive casualties on the civilian population in an effort to degrade economic and logistical capacity and erode public support for government.²² The V-2 rocket was self propelled and could cover a range of some 300km. Its development was the foundation of modern long range rocket systems and guided missiles.²³ Whilst not ‘explosive weapons’ as the term is used in this report, the dropping of the atom bombs on the cities of Hiroshima and Nagasaki in August 1945 created a new scale for the delivery of explosive force.²⁴

In the Korean War of the early 1950s the threat of massed infantry attacks spurred in the US

a greater focus on the casualty-producing efficiency of explosive anti-personnel weapons such as anti-personnel mines, fragmentation shells, aircraft bombs and grenades. These weapons were then deployed by the US in Vietnam, Cambodia and Lao during the 1960s and 70s. This latter conflict saw a massive use of cluster munitions, and in particular variants that were designed to maximise anti-personnel fragmentation effects across wide areas.²⁵

Long range missiles were developed significantly during the 1950s and subsequent decades have seen numerous changes to guidance, targeting and flight systems in conjunction with advances in electronics. These have led to developments in long-range missile technology, as well as in air-to-air missiles, and man-portable ground-to-air missiles. Developments in electronics and communications technology have also led to great increases in the precision with which certain explosive weapons can be delivered to a specific target.

From the late 19th century onwards the placing of individual bombs in public places has been used as a tool of political and social protest or to further ideological agendas. In specific examples, bombs have been placed aboard aircraft to spread fear and disrupt civil aviation, “letter bombs” have been sent through the mail to target individuals, and large-scale bombs have been used against official buildings. Such attacks have been undertaken variously by lone individuals, organised groups and states.²⁶

Since 2000, conflicts in Afghanistan and Iraq, as well attacks in non conflict areas, have seen the widespread use of improvised explosive devices (IEDs). These weapons range from bombs borne on the person and car bombs to roadside bombs that use machine-tooled shaped charges to penetrate armour. IEDs may adapt commercially manufactured munitions or be made wholly from chemicals and other components. Despite some countries spending large amounts of money on efforts to counter IEDs,²⁷ these weapons continue to kill troops and civilians on a regular basis.

Overview of key explosive weapon types

Class	Summary
Air-dropped bombs	Explosive weapons dropped from aircraft. Common subtypes include: <ul style="list-style-type: none"> ✘ General purpose / high explosive (GP / HE) bombs ✘ Penetration bombs ✘ Carrier bombs (for delivery of other payloads, including submunitions, see below)
Booby traps	Victim-activated explosive weapons designed or improvised to detonate when an apparently harmless act is performed.
Demolition charges	Blocks of explosive for engineering or sabotage use.
Grenades	Relatively small 'land-service' explosive weapons for use against personnel or vehicles, which can be either thrown or fired from weapons. Common subtypes include: <ul style="list-style-type: none"> ✘ Hand grenades - blast and/or fragmentation ✘ Anti-armour grenades ✘ Rifle grenades ✘ Spin stabilized grenades
Improvised explosive devices (IEDs)	Explosive weapons (of any class, e.g. grenade, bomb, rocket) that are not mass-produced. However, IEDs may use mass produced explosives or explosive ordnance as a component. Common subtypes include: <ul style="list-style-type: none"> ✘ Person-borne bombs (so-called 'suicide bombs') ✘ Vehicle-borne bombs ✘ Roadside bombs
Landmines	Generally victim activated explosive weapons. Common subtypes include: <ul style="list-style-type: none"> ✘ Anti-personnel mines ✘ Anti-vehicle mines
Missiles	Missiles have a propulsion system and a guidance system. Common subtypes include: <ul style="list-style-type: none"> ✘ Air-to-air missiles ✘ Air-to-surface missiles ✘ Anti-tank guided missiles ✘ Surface-to-air missiles (static and mobile) ✘ Surface-to-air missiles (portable/shoulder launched) ✘ Surface-to-surface missiles
Mortar bombs	Mortar bombs are indirect fire weapons which are normally (but not always) muzzle-loaded. Common subtypes include: <ul style="list-style-type: none"> ✘ High explosive ✘ Carrier (for delivery of other payloads, including submunitions, see below)
Projectiles	Explosive projectiles are fired through a barrel by the ignition of a propellant charge. Common subtypes include:

- × Armour-piercing high explosive (APHE)
- × High explosive anti-tank (HEAT)
- × High explosive fragmentation (HE frag)
- × High explosive 'squash head' (HESH)
- × Carrier (for delivery of other payloads, including submunitions, see below)

Some projectiles are not explosive weapons.

Rockets	Rockets are unguided munitions with an integral propulsion system. Common subtypes include: <ul style="list-style-type: none">× Air-launched rockets× Artillery rockets× Rocket propelled grenades (RPG)
Submunitions	Submunitions are smaller explosive weapons delivered by carrier bombs, projectiles or mortar bombs (often 'cluster munitions'). Subtypes include: <ul style="list-style-type: none">× Anti-armour× High explosive fragmentation× DPICM (dual purpose improved conventional munitions)
Underwater	There are a variety of explosive weapons intended for detonation under water, including: <ul style="list-style-type: none">× Depth charges× Limpet mines× Naval mines× Torpedoes

Comments:

There are numerous exceptions to these generalisations. Many of these categories can also have non-explosive payloads.

1. CHARACTERISTICS OF EXPLOSIVE VIOLENCE

A GLOBAL PATTERN OF DEATH AND INJURY

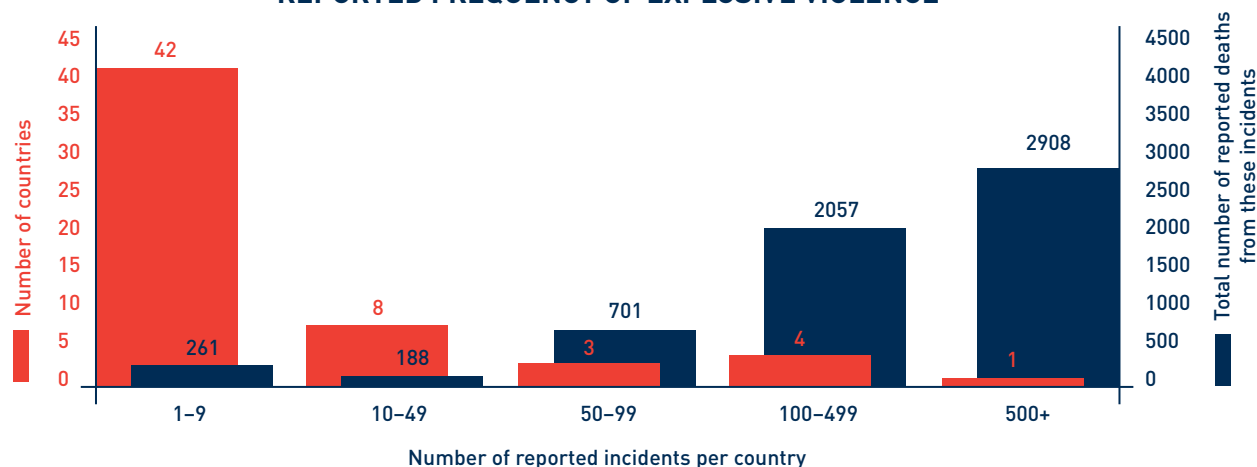
In 2006, Landmine Action and Medact gathered a data-set, based on media reports of incidents of explosive violence worldwide, using a methodology developed by Robin Coupland and Nathan Taback.²⁸ The data come from English language newswire sources on incidents involving the use of explosive weapons occurring internationally from April to September 2006 inclusive, and are referred to hereafter as 'the Landmine Action dataset' or 'the dataset'.²⁹ The data are not comprehensive and are subject to limitations and qualifications – these are primarily general under-reporting and geographical biases; the data are also likely to under-report combatant casualties and civilian casualties from major military engagements.³⁰ However, the dataset helps to structure a basic argument that explosive weapons cause a particular pattern of humanitarian harm. It allows us, at the start of this report, to make five grounded observations regarding current characteristics of explosive violence:

- ✗ Within a short sample period, explosive violence was geographically widespread, but with intensive incidence in a few contexts;
- ✗ Incidents of explosive violence generally produce multiple deaths and injuries.
- ✗ Explosive violence kills and injures significant numbers of people who are not combatants;
- ✗ Attacks with explosive weapons in populated areas are linked to elevated levels of civilian harm;
- ✗ In attacks in populated areas, civilians make up the great majority of victims.

1. Within a short sample period, explosive violence was geographically widespread, but with intensive incidence in a few contexts.

In the six month period of the dataset, acts of explosive violence were reported in 58 countries and territories.³¹ The majority of incidents were reported in Iraq, Afghanistan, Pakistan, India, Sri Lanka, Israel and the Occupied Palestinian Territories, Turkey and Lebanon (each of which had more than 50 incidents during the period). Iraq produced by far the greatest number of reported incidents (696) and also the greatest number of casualties (2,908 killed, 6,850 wounded). So whilst a low level of explosive violence is geographically widespread, the incidence of explosive violence is high in a limited number of contexts. However, as noted above, there are likely significant biases of geographical coverage in the media reporting upon which this data is based that would result in under-reporting from some locations.

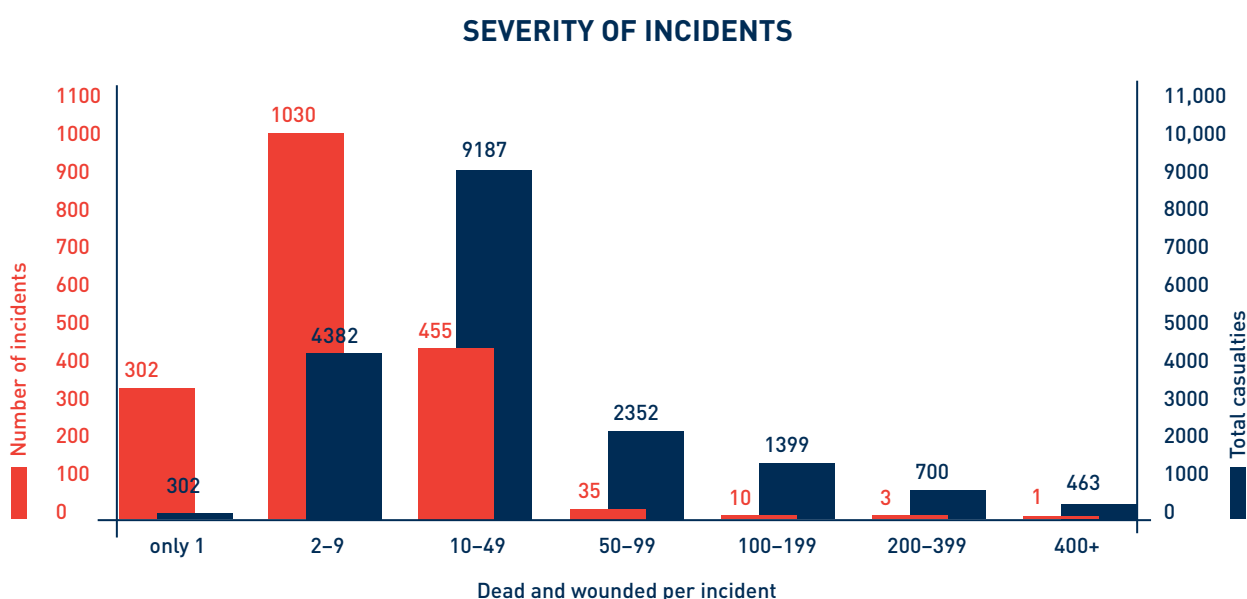
REPORTED FREQUENCY OF EXPLOSIVE VIOLENCE



At one end of the spectrum, a few countries experienced high rates of explosive violence with attendant casualties. At the other end of the spectrum, there were a large number of countries where explosive weapons were used but where casualties were significantly lower.

2. Incidents of explosive violence generally produce multiple deaths and injuries.

A total of 1,836 incidents were documented over the 6 month period resulting in a total minimum reported killed of 6,115 and a total minimum reported wounded of 12,670.³² The mean average reported killed per incident was 3.33 persons and the mean average reported wounded was 6.90 persons. Individual incidents causing between 10 and 49 deaths and injuries in total were collectively responsible for almost 50% of the total deaths and injuries.



3. Explosive violence kills and injures significant numbers of people who are not combatants.

Analysis of the 1,836 incidents finds that civilians (defined here as persons who were not identifiable in the reports either as armed actors or security personnel) make up the majority of casualties. Such persons were involved in 64% of incidents (1,180), comprising 69% of the total reported killed (4,237), and 83% of the total reported wounded (10,556). Moreover, among the remainder identified as non-civilian, it is important to note that the dataset groups together military and security personnel, including the police. It should not be assumed, therefore, that all of the dead and wounded who were identified as armed actors or security personnel would be legitimate military targets under international humanitarian law. In the 1,180 incidents involving civilians there were armed actors and security personnel reported to be present

"Other people were beneath me. When I stood up, I saw lots of dead people scattered across the courtyard, both men and women."

A triple bombing at a prominent Shia mosque in Baghdad killed at least 74 people and wounded more than 130 in the deadliest attack in months of sectarian strife.

amongst the casualties in 27% of incidents (320). As noted in the introduction to this section, there may be significant biases in media reporting that result in under-reporting of combatant casualties.

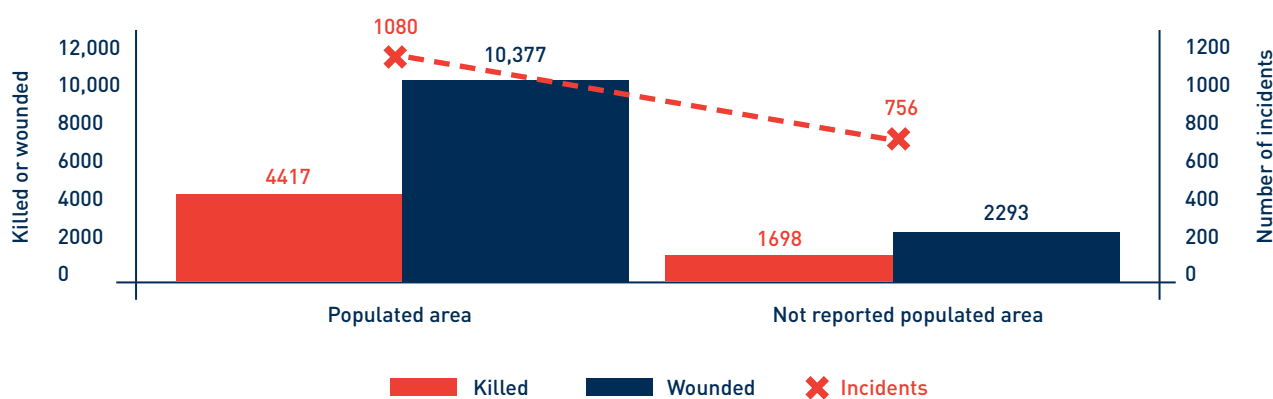
4. Attacks with explosive weapons in populated areas are linked to elevated levels of civilian harm.

Fifty-nine percent of incidents (1,080) occurred in populated areas, with a further 29% (526) being of unknown location and 12% (230) reported in unpopulated areas. To identify 'populated' areas, the dataset drew upon the definition of a "concentration of civilians" as used in Protocol III of the UN Convention of Conventional Weapons.³³ Explosive violence in populated areas presents distinctly higher average numbers of people killed and wounded per incident

	Incidents	Total killed	Total wounded
Attacks in populated areas	1,080	4,417	10,377
Other attacks	756	1,698	2,293

The average number reported killed in attacks in populated areas was almost twice as high as in unpopulated areas; the average number reported wounded was 3.16 times higher. This pattern is even more pronounced where attacks were reported taking place in crowded areas (227 incidents, 1,361 killed, 3,743 wounded). In absolute terms, the number killed in incidents in populated areas was almost three times higher than those killed in unpopulated areas, while the number of wounded was almost four times as high. However, it should be considered that media coverage may under-report deaths and injuries away from populated areas.

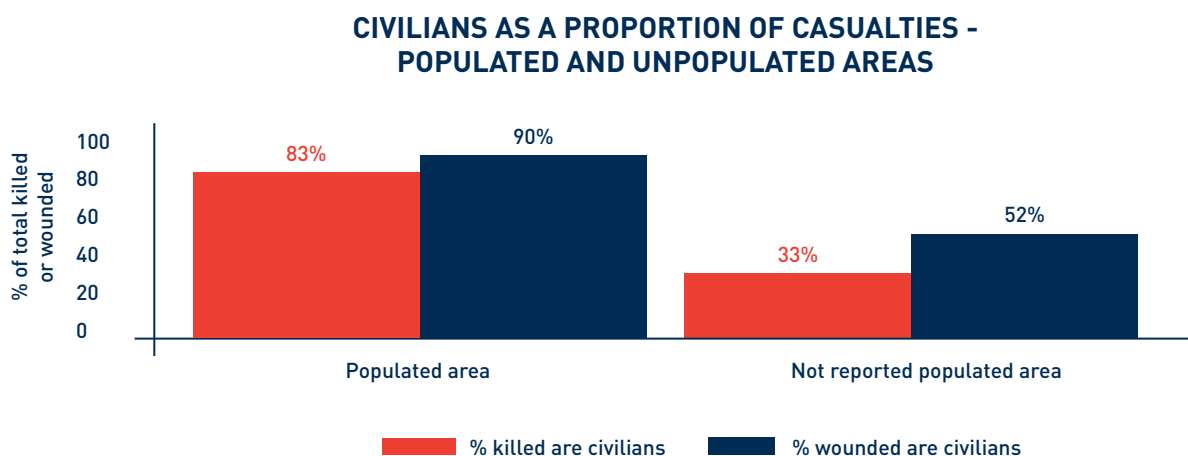
COMPARISON OF INCIDENTS, DEAD AND WOUNDED BETWEEN POPULATED AREAS AND OTHERS



5. In attacks in populated areas, civilians make up the great majority of victims

Eighty-three percent of all those killed in attacks in populated areas, and 90% of all those injured, were civilians (that is, they were not reported to be armed actors or security personnel). In areas not reported as populated, by contrast, 33% of those killed, and 52% of the injured were civilians. The correlation between explosive

weapon use in populated areas and elevated levels of civilian harm has been noted elsewhere.³⁴ The problem of explosive weapon use in populated areas has been an ongoing theme in legal discussions and we examine this in more detail in Chapter 4.



CONCLUSIONS

Explosive violence is geographically widespread, though it tends to be experienced at high frequency in contexts considered “armed conflict.” Explosive violence causes multiple deaths and injuries per incident (as well as wider effects that will be discussed elsewhere in this report).

In general, explosive weapons cause high levels of death and injury to civilians. However, when used in populated areas, explosive weapons result in further elevated levels of civilian harm – with more than 80% of those killed and some 90% of those injured considered civilians in this analysis. Data from Iraq (see case study below) suggest that explosive weapons, by comparison with other weapon types, have a higher proportion of child deaths and female civilian deaths amongst the civilian casualties that they cause. This evidence provides an indication that

the use of explosive weapons, relative to certain other weapons, may work counter to any special measures to protect women and girls from violence in situations of armed conflict and against special measures to protect children more generally from the effects of violence (e.g. UN Security Council Resolution 1325 on Women, Peace and Security; Declaration on the Protection of Women and Children in Emergency and Armed Conflict; Convention on the Rights of the Child).

Further research would be necessary to determine the extent to which biases in the source data influence these conclusions.

“As for my own rehabilitation, burns cover 65% of my body. It is worse for girls to have large scars on their bodies comparing to boys, as girls are expected to look good ... I hope I will get the kind of medical help that will make it possible for me to live a normal life like all others my own age.”

Ayat Syleiman Ali, Ban Advocate,
November 2005

The disproportionate impact of explosive violence on children and female civilians – Iraq 2003-2008

In 2005, Iraq Body Count published an analysis of their data on casualties in Iraq for the period 2003-2005.³⁵ Of 23,221 violent civilian deaths for which weapon information was available, more than half (53%) involved the use of explosive weapons. More detailed analysis shows that a greater proportion of children were killed by explosive weapons than by other weapon types.

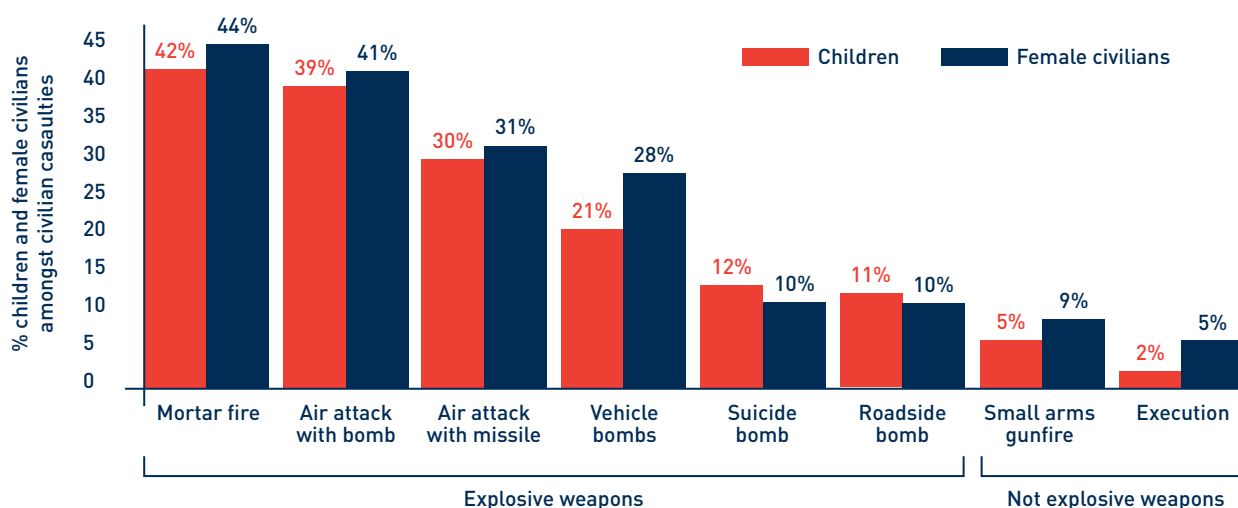
Iraq Body Count concluded that, if it is assumed that adults, not children, are the intended targets in war, the proportion of children to adult civilians killed by different types of weaponry can be used as an indicator of discrimination in these attacks. They noted that the least ‘child-lethal’ weapons were hand-held firearms, “which suggests that clearly-identifiable civilians are more likely to be spared when combatants are able personally to control and direct their fire.” By contrast, explosive weapons (both during attacks and where they are left unexploded) were the most child-lethal and, according to this analysis, most prone to causing indiscriminate harm.

This line of analysis was extended in an article in The New England Journal of Medicine in April 2009.³⁶ Using Iraq Body Count data for the longer period 2003-2008, using a slightly different categorisation of weapon types,

and including also specific data on female civilians, the results are very similar. The second analysis does not present data against the category of unexploded or abandoned ordnance (although the additional problem presented by that category is very pertinent to the argument of this report, and some 74% of the civilian casualties they identified against this category were children.) The graph below represents elements of the data presented in that paper on “female civilians and children killed by particular weapons in short-duration events of armed violence (March 20, 2003, through March 19, 2008)” for the purposes of this argument.

The papers’ authors conclude that, “female Iraqis and Iraqi children constituted the highest proportions of civilian victims when the methods of violence involved indiscriminate weapons fired from a distance: air attacks and mortars. That air attacks, whether involving bombs or missiles, killed relatively high proportions of female civilians and children is additional evidence in support of the argument that these weapons, like mortars, should not be directed at civilian areas because of their indiscriminate nature.” The line of argument in the article draws out the relative distance of weapon user from target as an important factor determining the likelihood of indiscriminate effects. However, this is not at odds with an analysis that points to the distinction between explosive and non-explosive weapons as a significant determinant of indiscriminate impact.

PERCENTAGE OF CHILDREN AND FEMALE CIVILIANS AMONGST REPORTED CIVILIAN DEATHS WHERE GENDER OR AGE WAS KNOWN, BY WEAPON TYPE



2. EXPLOSIVE VIOLENCE: DEATHS, INJURIES & SOCIO-ECONOMIC IMPACT

"A black car exploded next to me. My brother, Ali, was with me. At the time of the explosion, he was torn into pieces of flesh".

Zahraa Hussein, 14, crying as she lay in a Najaf hospital with leg and arm wounds. A car bomb had exploded killing at least 13 people.

This chapter considers some of the patterns of death and injury caused by explosive weapons, and looks at broader impacts of explosive violence on socio-economic development and people's livelihoods. It looks at the physical mechanisms of wounding common to explosive weapons, and at some of the particular challenges that explosive weapons present for medical management; and it sets out some of the longer-term difficulties faced by the survivors of explosive violence.

The category of technology described by 'explosive weapons' produces distinctive patterns of mortality and morbidity (in both short- and long-term), of wider social and economic damage and of post-deployment humanitarian threat. Individually or in combination these effects are capable of severely retarding or actively reversing developmental gains, in particular in low-income settings.

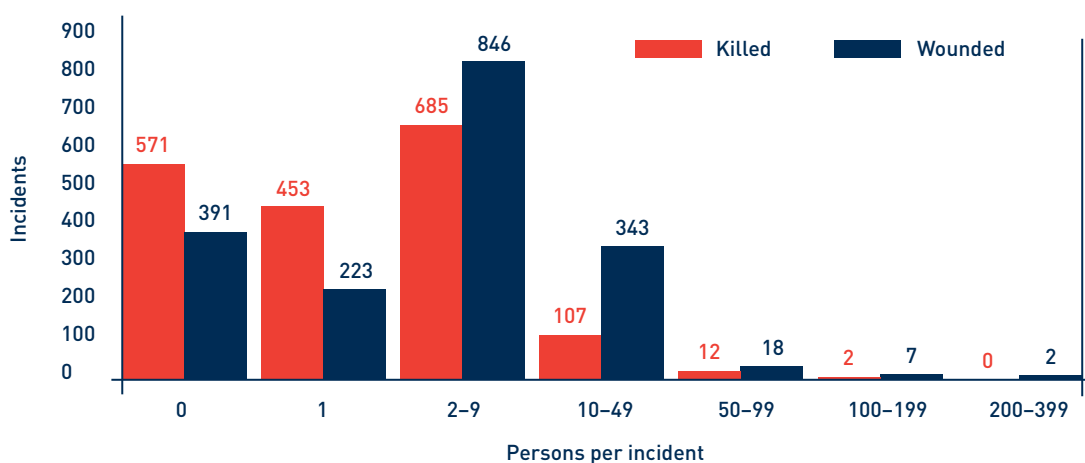
Immediate effects of explosive violence on individuals

Explosive weapons produce a common pattern of wounding, with variations attributable to scale (the force of the blast and size of fragments), location of the blast, and susceptibility of individual victims.³⁷ Wounds occur through a number of different mechanisms that can be attributed in turn to:

- ✗ The direct effect of the explosive blast wave on organs and tissue;
- ✗ The projection of fragments and material into the body;
- ✗ The propulsion of the body into other objects; &
- ✗ A range of additional factors such as burns, dust inhalation and the collapse of buildings.³⁸

Individuals immediately proximate to an explosive detonation may suffer complete disruption of the body, leaving few identifiable remains. Beyond this, medical analyses of explosive violence incidents involving 'bombs' highlight traumatic amputation and exsanguination, massive air embolism and brain injury as common

PERSONS REPORTED KILLED AND WOUNDED PER INCIDENT



causes of immediate death.³⁹ Immediate mortality rates are affected by the magnitude of the explosion, proximity of potential victims, presence of building collapse and whether the incidents occurs in a closed or open environment.⁴⁰

Of the 1,836 incidents in the Landmine Action dataset, the death of 1 or more individual was reported in 69% (1,259). The distribution of persons killed and wounded per incident is represented in the chart opposite (NOTE: all incidents had at least one person killed or wounded, however some incidents were reported with one or more people killed but zero people wounded – and vice versa):

Complexity of wounds increases the burden on medical services

The multiplicity and severity of wounds that may be experienced by a single victim of explosive violence increase the demands on medical response and management, and recovery and health follow-up. Individual patients may suffer complex combinations of damage to internal organs, traumatic amputation, burns and numerous penetrating wounds containing embedded fragments. Comparing explosive violence to other mechanisms of violent injury, it has been noted that “victims of explosive injuries have extended stays in intensive care and hospital as the magnitude and diversity of their injuries is greater than those from gun shots or shrapnel alone.”⁴¹ A comparison of bombing and non-bombing casualties in the Israeli National Trauma Registry supports the same conclusion, noting specifically that explosive violence patients “consumed more hospital resources and had worse outcomes.”⁴² The medical challenge of explosive violence is clearly acknowledged by practitioners; a former commander of the US Walter Reed Army Institute of Research has recently noted that “the assessment of acute injury from blast is still poorly understood.”⁴³

Large explosive violence events create additional problems of medical management

In large-scale incidents of explosive violence the challenge of triage at the scene may be further exacerbated by structural damage that results in some of the dead or wounded being inaccessible. Beyond the difficulty of triage, the number of victims from major incidents can result in bottlenecks for evacuation and for key hospital resources such as imaging facilities and operating theatres. Required attention to victims of explosive violence incidents, and for longer-term medical and rehabilitative follow-up, can crowd out health services intended for the wider population, especially in resource-poor countries.

LONG TERM IMPACT OF EXPLOSIVE VIOLENCE ON INDIVIDUALS

For survivors, immediate injuries can result in a range of long-term physical conditions including amputations, blindness, loss of hearing and brain trauma. The sustained and often permanent impact on survivors and those exposed to the aftermath of explosive violence can also include psychological effects such as post-traumatic stress disorder. Further compounding trauma experienced by survivors are the discrimination and social and economic exclusion they may face as persons with disabilities.

Traumatic brain injury (TBI)⁴⁴

There is a relatively high prevalence of traumatic brain injury reported amongst US and allied forces wounded in recent conflicts in Afghanistan and Iraq.⁴⁵ It has been argued that the widespread use of explosive weapons in those contexts, coupled with the improved personnel and vehicle protection available, and advances in acute trauma care, is resulting in people surviving exposure to explosive violence which would have proved fatal in the past.⁴⁶ However, there is a lack of comparable data on traumatic brain injury from troops in other environments by which to put this data into context.

Post-traumatic stress disorder (PTSD)⁴⁷

Exposure to explosive violence can create patterns of debilitating stress and psychological and psychiatric impairments, including post-traumatic stress disorder. PTSD affects not only those in immediate proximity to explosive weapons incidents, including both combatants and civilians, but also those that have had to deal with the aftermath of such events (such as medical services personnel). Surveys have indicated that combat troops reporting exposure to blasts had significantly higher levels of PTSD.⁴⁸ Studies of children, adolescents and medical staff have correlated exposure to bomb attacks with likelihood of developing post-traumatic stress disorder.⁴⁹ PTSD can result in impairment of occupational functioning (with consequences for income, household livelihoods etc), elevated risk of chronic disease and diminished social functioning.

VICTIM ASSISTANCE

The physical and psychological effects of explosive violence on individuals are experienced in a wide variety of social, economic and political contexts. Many countries where such incidents are experienced quite frequently lack both the medical and social services infrastructure to provide support, and may fundamentally lack the expectation of such support either amongst the population or the institutions of the state. By contrast, a particular challenge of explosive violence for relatively wealthy countries is that expectations of medical care and ongoing rehabilitation are growing all of the time. This makes the long-term and complex implications of explosive violence incidents potentially very costly.

In relatively poor countries, explosive violence survivors lack fundamental support

Many countries lack the basic frameworks needed to provide adequate assistance to victims of explosive weapons. The Landmine Monitor (2008) reports that “in the vast majority of states [where there are landmine and unexploded ordnance victims] the number of mine and UXO survivors, and especially their needs, are not adequately known.” Beyond difficulties in understanding

STRESS EXPERIENCED DURING SUSTAINED USE OF EXPLOSIVE WEAPONS

“This is a special kind of war. You never see the enemy, so you feel helpless.” [Serbian Red Cross] psychologist Jelena Vlajkovic reported that the Red Cross received up to 30 calls a day from Belgraders who felt they were on the verge of mental breakdown as a result of the bombing. Other residents showed the physical effects of stress: insomnia, shortness of breath, stomach cramps.⁵⁰

“They say time heals all wounds,” Lucia said. “But sometimes that’s just not true. Most of my patients are fleeing Madrid on the bombing anniversary. Their memories are just too painful. One year on from the attacks, they still dream and smell death.”

Lucia Sutil, a psychologist treating a number of the Madrid bombing victims.

DEVELOPING NORMS TO ENSURE THE RIGHTS OF VICTIMS

Legal developments such as the 2006 Convention on the Rights of Persons with Disabilities (CRPD), Article V of the 2008 Convention on Cluster Munitions (CCM), and the politically binding Programme of Action on Victim Assistance (2008) of Protocol V of the Convention on Conventional Weapons (CCW) are establishing new normative standards regarding the responsibilities of states towards the victims of violence. The 'rights-based' victim assistance provisions within weapon treaties articulate a responsibility of states to facilitate the full enjoyment of rights by those victimized as a result of the use of certain weapons. Formulated on a 'non-discriminatory' basis, these instruments merely articulate what is a wider state responsibility to ensure the rights of citizens. Survivor Corps, a non-profit organization working with survivors of conflict worldwide notes that linked to these instruments concerned with specific weapons, the Convention on the Rights of Persons with Disabilities (CRPD) provides a progressive and holistic view of what it means to ensure equal access to enjoyment of human rights to all people in society.⁵¹ Such instruments should be used as tools to build expectations with respect to victim assistance, as well as for shaping policies and attitudes to facilitate such assistance.

the scale of needs, emergency and medical care, physical rehabilitation, psychological support and social and economic reintegration are all found to be weak in some contexts, with the latter categories of assistance commonly being weaker than the former.⁵² These conclusions, drawn from research across the more than 70 countries that have experienced landmine or UXO casualties, provide a reasonable indication of the inadequate support available to explosive violence survivors more broadly.

Having noted in Chapter 1 some evidence that children have an elevated likelihood of being amongst those killed where incidents of violence involve explosive weapons, it is worth noting that child survivors of explosive violence may face increased costs of care (due to the need for adaption during growth), disruption to education as well as suffering social exclusion.⁵³

In relatively wealthy countries, explosive violence survivors may be costly to support

In the U.S., economists analysing the cost of conflict injuries estimate care for a single brain injured soldier at "a minimum of \$4.3 million."⁵⁴ In the U.K., the level of payments made to wounded troops has been a contentious issue. Despite Ministry of Defence efforts to keep payment levels down, legal rulings and media campaigns have gone against the government and forced higher levels of remedial spending.⁵⁵

SOCIO-ECONOMIC IMPACTS OF EXPLOSIVE VIOLENCE

Explosive weapons have a high capacity to damage the social and economic infrastructure upon which civilian populations rely. The destruction of housing, power

supplies, water and sanitation systems, health facilities, schools, markets, roads and transport links, and energy infrastructure present direct humanitarian problems, deplete local and national capacity for production and growth, and necessitate high levels of reconstruction expenditure, diverting scarce resources from investments necessary to achieving developmental targets such as the Millennium Development Goals. Explosive weapons may be used to impair the functioning of such infrastructure in an effort to undermine social and community-level interactions and challenge the credibility of the state as a guarantor of public services and human security.

Sustained use of explosive weapons results in items of unexploded ordnance littering the environment. These items may detonate if disturbed, causing death or injury. Where contamination is particularly dense, fear of death or injury can result in resources such as agricultural land and water sources being denied from productive use. The processes of finding and removing ordnance contamination are relatively expensive and are often paid for from humanitarian aid budgets.

Impact of explosive violence on infrastructure

Explosive violence can disrupt infrastructure. This is a key value of explosive weapons as perceived by both state and non-state forces. Such attacks have been conceptualised both as part of efforts to disrupt the physical functioning of an enemy's systems, but also as part of a 'coercive' strategy to influence policy.⁵⁶ Both the legality and the strategic effectiveness of such attacks against the kinds of infrastructure on which the civilian population relies, have been subject to ongoing scrutiny and debate.⁵⁷ Arguments about the acceptability of attacks on infrastructure are often conducted in the terms of international humanitarian law (IHL), concerning themselves with the intention of the attacker and the balance of military advantage and civilian risk. However, this report broadly rejects such a "case-by-case" approach (as systematically offering too little protection to civilians) in favour of adopting a broad categorical presumption against the use of explosive weapons in populated areas.⁵⁸

Sustained use of explosive weapons in populated areas impairs infrastructure vital for the health and well-being of the civilian population. UNDP has noted that, "The destruction of infrastructure such as bridges and roads is often one of the most visible aspects of the damage brought about by armed conflict. A country's physical capital is often seriously damaged because ports, telecommunication and electricity infrastructure, energy plants and other economically important physical facilities are directly targeted by one of the warring parties in order to gain a strategic advantage."⁵⁹ For many of these target-types explosive weapons provide the technological capacity to create the damage necessary to render facilities inoperable. Beyond the strategic advantage gained to specific warring parties, the destruction of infrastructure imposes a longer-term cost on the civilian population. The Geneva Declaration Secretariat, in their report on the Global Burden of Armed Violence, note that:

"armed conflict generates a series of lethal but indirect impacts on communities beyond the number of people killed in battle or combat. In the short term, indirect [...] deaths are a result of the loss of access to basic health care, adequate food and shelter, clean water, or other necessities of life. In the long run, armed conflict affects mortality by its destructive impact on the national economic and infrastructure (including health facilities), on social cohesion, and on psychological health..."⁶⁰

Whilst sustained patterns of violence of any type have a negative effect on the maintenance of public services, explosive weapons are particularly deleterious to infrastructure. Furthermore, even individual incidents or sporadic patterns of explosive violence against infrastructure can significantly weaken public services. The following examples simply provide snapshot illustrations of the problem:

- ✘ **Transport infrastructure:** In large scale conflict, explosive weapons are commonly used to degrade transport infrastructure. In the post-conflict period, lack of transport infrastructure can increase the vulnerability of isolated populations whilst decreasing the capacity of external bodies to provide assistance.⁶¹

Analysis has suggested that the US bombing during the conflict in South East Asia was such that it required the diversion of in excess of 300,000 people away from other economic activities to work on repair of roads and other

Photo © Simon Conway
 - Destroyed bridge on
 the road from Beirut
 to Tyre, Lebanon,
 September 2006



transportation lines.⁶² In Lao PDR the impact of this bombing is still being felt more than 30 years later in the delays and increased costs to infrastructure rehabilitation caused by unexploded bombs. In a more limited conflict, some 16% of fixed targets in Serbia during the NATO bombing in 1999 were linked to transportation (predominantly road and rail bridges).⁶³ Such attacks had a direct impact on the civilian population and raised concerns that areas of agricultural production would be undermined.⁶⁴

Individual incidents of explosive violence against transport infrastructure are also relatively common. In the six months covered by the Landmine Action dataset, 11 countries experienced explosive weapons attacks on or around public transport.⁶⁵ Transport networks were targeted in Madrid in 2004, in Mumbai in 2006, and in London in 2007. As well as killing and wounding large number of people these attacks raised wider fears regarding losses of economic confidence and declining tourism revenues. Whilst these attacks may be directed at civilians, other attacks aimed at infrastructure disruption can also claim civilian lives.⁶⁶ Roadside bombs and anti-vehicle landmines (see below) can impede movement, and in particular limit access by humanitarian agencies whose risk management mechanisms may prioritise staff safety over the delivery of aid.⁶⁷

- ✘ **Markets:** A significant number of individual explosive violence incidents take place in markets. In the Landmine Action dataset, 12 countries experienced attacks in public markets during a 6 month period.⁶⁸ These attacks were typically of high severity compared with the dataset as a whole.⁶⁹ Beyond the casualties and the cost of emergency response, such attacks can disrupt the functioning of these social and economic systems. For example, a bomb detonated in the public market of General Santos city in the Philippines in 2004 killed 15 people and injured at least 69 more. Traders reported to Human Rights Watch that activity at the market declined after the incident, resulting in reduced incomes.⁷⁰

- × **Power infrastructure:** Electric power infrastructure was a target during the NATO bombing of Serbia and Kosovo in 1999.⁷¹ In Kosovo, almost eight years after the cessation of hostilities, power cuts were still reported to be occurring several times a week, even in the capital city Pristina and often lasting several hours.⁷²

The use of explosive weapons to disrupt power supply may also be undertaken by informal insurgency groups. After the 2003 invasion of Iraq, small-scale attacks on power infrastructure, (against a background of dilapidated equipment across a complex network) limited output, which in turn stifled commercial activity, led to a redirection of security assets, and eroded the legitimacy of the Coalition Provisional Authority.⁷³

Breakdown of electricity power supply has a range of knock on effects, often affecting access to basic public health requirements such as clean water and sewage disposal.⁷⁴

- × **Energy infrastructure:** Particular targets for non-state armed groups employing explosive violence have been oil and gas pipelines, refineries and power plants.⁷⁵ These attacks disrupt economic networks and leverage states into costly countermeasures of limited effectiveness. Patterns suggest that some disruption can be caused to energy infrastructure with relatively limited explosive force.⁷⁶

Although the impact of these attacks is difficult to quantify, they can include direct losses in oil or gas production;⁷⁷ loss of life of security staff, general energy workers and civilians; secondary explosions leading to further loss of life; localised environmental damage; loss of power; diversion of state resources; and fluctuations to international oil and gas prices. Attacks on gas pipelines in Mexico in 2007 resulted in the closure of a power plant which resulted in manufacturing industries suspending operations for several days. The total economic loss in that instance was estimated at US\$1.6 billion.⁷⁸ The perceived threat to energy supplies is sufficient to warrant very large levels of investment in a wide variety of protective measures.⁷⁹

- × **Housing and shelter:** By destroying housing, explosive weapons increase the vulnerability of the civilian population and contribute to population displacement. A 2004 case-study publication on armed violence in Chechnya concluded that “the Russian forces’ extensive and indiscriminate use of heavy weapons has turned most parts of the rural and especially urban areas into rubble. The loss of dwellings and income-generating premises has denied the means of income to many Chechens with an expected lowering impact on their living standards (e.g., in terms of food, housing, health and education), while it has spread a well-founded fear among the Chechens who no longer feel safe even in their homes.”⁸⁰ In the aftermath of the 2008 conflict in Georgia, Amnesty International noted that both unexploded ordnance and “the large scale destruction of property in parts of the conflict area” affected the ability of tens of thousands of people to return to their homes.⁸¹ In 2009, fighting in the Swat valley of Pakistan resulted in the displacement from their homes of massive numbers of people. Fighting was reported to have overwhelmed medical resources, with most of the victims suffering “shrapnel wounds” according to media reports.⁸²

“Who would do something like this? What sort of person is this?” wondered Mustafa Iqbal, a trader, who had come for evening prayers, as he looked at the shoes.

14 April 2006. The twin blasts at the Jama Masjid, in the heart of New Delhi’s crowded old city, came about an hour before evening prayers.



Photo © Marc Garlasco. Georgia (Gori), August 2008 – a woman stands in front of the building where she lived, now largely destroyed by an aerial bomb.

- ✘ **Water and sanitation:** Destruction of water and sanitation systems causes immediate public health effects and may take years to remediate. For example, bombing during the 1991 Gulf War resulted in substantial damage to Iraq's sewage and sanitation infrastructure which was not effectively restored in the years that followed. This was subsequently linked to "an increase in infectious diseases associated with poor sanitation, including cholera and typhoid, as well as other water and sanitation-related diseases, which had reached greatly reduced levels prior to the war."⁸³
- ✘ **Health infrastructure:** Destruction of hospitals and clinics directly weakens capacity to provide health care causing extensive further indirect mortality. In Sri Lanka in February 2008 hospitals in the northern Vanni area were subject to shelling resulting in patients being killed and the wards subsequently being evacuated.⁸⁴ These incidents were only the latest in a long history of medical facilities in northern Sri Lanka being destroyed by explosive weapons – usually bombing and shelling.⁸⁵ Destruction of such facilities in turn has exacerbated underlying challenges to health resulting from degraded water and sanitation, malnutrition problems due to economic disruption. In populated areas, healthcare facilities can be damaged by attacks on targets nearby due to the area effect and imprecise nature of the explosive weapons used.⁸⁶ Even without damaging health infrastructure the ongoing threat or use of explosive violence can impede access to healthcare (either by preventing patients from travelling into hospital, or by preventing outreach and ambulance services from going out.) Healthcare facilities are provided special protection under international humanitarian law in recognition of their fundamental humanitarian importance.⁸⁷



Photo © REUTERS/
Stringer courtesy
www.alertnet.org - A
Tamil girl is held
by her mother near
their temporary
shelter at a refugee
camp located on the
outskirts of Vavuniya
town in northern Sri
Lanka, May, 2009. The
cornered Tamil Tigers
accused Sri Lanka
of killing hundreds
in an artillery
barrage, which the
military said the
guerrillas had fired
off themselves to win
sympathy for a truce
to stave off defeat.

Where explosive weapons are used in populated areas the likelihood of deliberate or inadvertent damage to infrastructure becomes greater. At the very least, housing, commercial properties and infrastructure near to specific military targets are at risk. More commonly, military targets and civilian infrastructure become blurred together resulting in the argument that such infrastructure is now a legitimate target (with scant constraint being leveraged by appeals to legal requirements for 'proportionality'). In many of the examples noted above, the full extent of civilian harm that will be experienced is likely to be hard to quantify at the time of the attack. Subsequent analyses of 'excess mortality' also struggle accurately to quantify indirect deaths resulting from the destruction of this infrastructure.⁸⁸

The Secretariat of the Geneva Declaration on Armed Violence has estimated "indirect" conflict deaths (i.e. excess mortality due to non-violent causes but resulting from the effects of violence) as at least four times the level of "direct" conflict deaths (and there is a recognition that a more accurate ratio would be significantly greater than this).⁸⁹ In conflict situations there are many factors that degrade public services and negatively effect public health (not least diminished investment by the state experiencing conflict.) However, explosive weapons have a particular capacity to directly and substantially impair infrastructure upon which the public health of the civilian populations depends.

Rendering inoperable the interlinked systems of power, water and sanitation in populated areas may have wide-ranging public health consequences to the civilian population that are likely to be outside any control that those planning and undertaking the attacks can exercise. Yet current legal rules in the context of armed conflict are based on attacks balancing 'foreseeable' humanitarian consequences against direct and concrete military advantage. This raises questions regarding the extent to which states have an obligation to analyse civilian harm that has resulted from the past use of explosive weapons so as to improve their ability to 'foresee'. Such rules also provide little guidance on how to approach situations where some degree of harm is foreseeable, but the extent of that harm is very uncertain.

The historical pattern of civilian harm from the accumulated impact of explosive weapons should strengthen the presumption that attacks on infrastructure produce extended harms that are foreseeable.

THE PERSISTENT THREAT FROM EXPLOSIVE WEAPONS

Explosive weapons consistently cause ongoing patterns of humanitarian harm after they have been used. Unexploded ordnance, abandoned ordnance and landmines have been a focus of legal controls and large-scale humanitarian programming due to their impact on civilian populations. These items can continue to cause deaths and injuries, as well as presenting a broader obstacle to the use of social and economic resources (thus obstructing development progress, exacerbating poverty, and requiring significant remedial actions and finance to remove.)

Whilst recognising that data-gathering in many contexts is very limited, the Landmine Monitor suggests that several thousand people are killed and injured each year by explosive weapons left in the post-conflict environment. The extensive remedial work of “mine action” currently limits the rate of victimisation. However, new conflicts and changes in social and economic context (for example, changes in the price of scrap metal⁹⁰) can increase the rate of incidents despite the ongoing efforts of mine action.

IMPACT OF UXO IN LAO PDR

UXO continues to kill and injure several hundred people each year in Lao PDR, almost 40 years after the end of the conflict. No national casualty surveillance system exists, so comprehensive victim information is unreliable and incomplete. However it is estimated that since 1973 more than 10,000 people have been killed and injured by UXO.⁹³

A large proportion of land affected by UXO is agricultural land; agriculture is the largest livelihood activity in what is one of the world's poorest countries. Clearance of UXO from all high-priority agricultural land by 2013 was established as a target in the National Socio-Development Plan.⁹⁴

UXO contamination hinders construction of public buildings such as schools and health posts, as well as large-scale infrastructure projects such as roads, communications, power lines, irrigation projects and so on. A minimum of US\$18.1 million has been added to the cost of infrastructure projects implemented with funds from the Asia Development Bank and other donors.⁹⁵ The presence of UXO has caused several NGOs to suspend, relocate or terminate projects.⁹⁶

Unexploded ordnance (UXO)

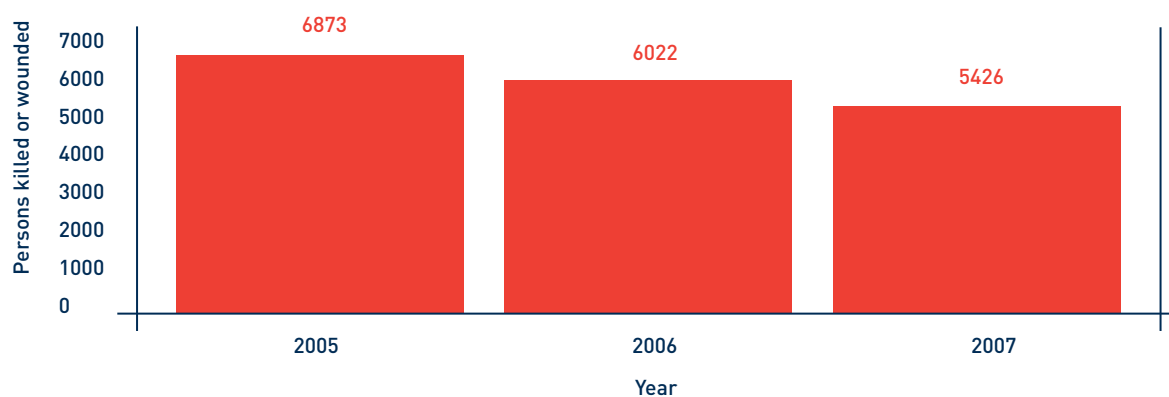
All explosive weapons are subject to potential failure. Wherever there has been fighting with explosive ordnance (manufactured explosive weapons)⁹¹ some level of UXO contamination will be created. More than 90 countries or disputed territories have been identified as containing some level of UXO contamination. A high proportion of casualties are male (often 70+%) and a relatively high proportion of casualties are children (compared with landmines). Deliberate contact with UXO is a common cause of accidents, and may be driven by poverty-related economic motivations (such as salvaging scrap metal). Even after extensive clearance operations, a continued level of residual ordnance contamination is almost always found.⁹²

Cluster munitions have been associated with particularly high levels of UXO contamination. This was one of the reasons cluster munitions were, as a complete class of (explosive) weapons, subjected to legal prohibition under the 2008 Convention on Cluster Munitions.

Assessing the longer-term impact of UXO is very difficult due to shortcomings in available data. UXO does not tend to cause land denial to the same degree as the presence of anti-personnel mines, except in instances where contamination is dense. In 2008, Landmine Action estimated projected economic losses as a result of the post conflict impact of cluster munition use during the 2006

conflict in Lebanon. Results showed prospective losses of between \$154 million and \$233 million based on the economic implications of casualties, agricultural land denial, and clearance work.⁹⁷

TOTAL RECORDED UXO, LANDMINE AND VICTIM-ACTIVATED IED CASUALTIES, BY YEAR (LANDMINE MONITOR, 2008)



Anti-personnel mines

Anti-personnel mines were subject to international prohibition in the 1997 Mine Ban Treaty after being shown, primarily by international organisations, NGOs and civil society groups, to be responsible for tens of thousands of deaths and injuries, large-scale economic impoverishment and obstructed development. Beyond immediate deaths and injuries, a wide range of social and economic impacts were documented as resulting from anti-personnel mine contamination, including blocked access to water sources; blocked arable land resulting in increased food insecurity; reduced household earnings; delayed repair of damaged infrastructure, irrigation systems and social services; isolation of communities where access was impeded; increased healthcare costs for individuals, families, communities and wider society; and delayed or dangerous return for IDPs and refugees after conflict.⁹⁸

Anti-vehicle mines

Anti-vehicle mine (AVM) contamination has been reported in at least 56 countries or disputed territories. This contamination varies from low-impact, long-standing historical problems through to severe-impact contamination in areas such as Afghanistan, Angola, Eritrea, Ethiopia and Sudan. AVM incidents usually involve people travelling in a vehicle and commonly result in multiple casualties. AVM incidents can cause a range of complex and serious injuries. Mortality rates are generally between 20–40%. Beyond immediate casualties AVMs can have a severe humanitarian impact where they block access to vulnerable populations.⁹⁹

Costs of addressing explosive contamination

The Landmine Monitor reported that in 2007 more than \$430 million of international funding and \$117 million in national funding (i.e. states' support to their own

Photo © Area Mine Action Centre - A truck destroyed by an anti-vehicle mine, Chehelstoon, southern Kabul, March 2006



national programmes) were spent on clearance, risk education, victim assistance and coordination activities to address UXO and landmines. Over the period 1992 to 2007 just under \$4 billion of international funds has been spent addressing the persistent effects of explosive weapon use.¹⁰⁰

PROBLEMS FROM THE TESTING AND STORAGE OF EXPLOSIVE WEAPONS

There are a number of ancillary factors relating to the management of explosive weapons that present humanitarian risks and significant costs:

Firing ranges

Poorly marked, sporadically used or abandoned firing ranges constitute another dimension of the UXO threat. For example, in Ecuador, Chad, Chile, Kenya, Nicaragua, Namibia, Occupied Palestinian Territories and Panama firing ranges or abandoned firing ranges have been identified as a problem and have resulted in casualties. As a result of casualties on abandoned ranges in Kenya the British Government made compensation payments to victims.¹⁰¹

Storage of explosive weapons

Internationally, problems with explosive weapon storage have caused a number of serious uncontrolled explosions. Geneva International Centre for Humanitarian Demining (GICHD) in its Guide to Ammunition Storage lists 54 such incidents across 30 countries from 2000 to mid-2008 which together are estimated to have resulted in some 2,618 people killed and 7,724 people injured. In addition to the casualties caused, such incidents have destroyed homes, required the evacuation of thousands, and caused military and civilian financial losses of hundreds of millions of dollars.¹⁰² Avoiding the risk of such incidents requires effective facilities, systems

and expenditure. In 2007, the German Government noted that it cost €250 per m² per annum to store artillery shells. With each m² storing approximately 40 shells, the annual cost of storing Germany's cluster munition artillery alone was around €500,000 per annum.¹⁰³

Abandoned explosive ordnance

Problems with abandoned ordnance stores have resulted from both recent and historic conflicts. According to the Emergency Mine Action Survey of Iraq, some 43% of dangerous areas identified in the south of Iraq after the 2003 invasion were abandoned ordnance stockpiles. Elsewhere, abandoned ordnance stores on the former World War II battlefields continue to be found, resulting in sporadic accidents and demanding the attention of state institutions.

In certain contexts unexploded ordnance and abandoned ordnance may be drawn upon for the creation of improvised explosive devices (IEDs). This has been noted in a number of countries but has been most acute in Iraq where high levels of abandoned ordnance were left in the wake of the conflict. Such problems have also been reported in Afghanistan, Abkhazia, Chechnya, Colombia, Georgia, Kashmir region and the Occupied Palestinian Territories.¹⁰⁴ In other contexts items of unexploded or abandoned ordnance may be used for fishing (either directly or after improvisation.)¹⁰⁵

JUBA ARMOURY EXPLOSION

A series of explosions at a former Government of Sudan ammunition warehouse in a military training centre in Juba, the state capital of South Sudan, on 23rd February 2005 threw out tens of thousands of items of ordnance over a radius of up to 2km from the blast site and started secondary fires, killing 31 people, injuring more than 150 others and causing widespread damage to property.

The market adjacent to the weapons store suffered massive damage from fire, compromising the livelihoods of many traders and market workers. Around nine hundred houses were also destroyed in the fires.¹⁰⁶ The initial clean-up operation was reported to be chaotic and poorly executed with soldiers dumping large numbers of UXO in the hills behind the blast site. Finally, an international mine clearance organization was called in for the work of clearing the many thousands of remaining munitions.¹⁰⁷



Photo © MAG – Abandoned ordnance at the Hatra ammunition storage facility, northern Iraq, 2003

CONCLUSIONS

Explosive weapons commonly result in multiple casualties, causing death and leaving other people wounded. Explosive weapons cause complex patterns of wounding that require greater medical resources than other trauma injuries. Explosive violence challenges medical management and the systems of social and economic support necessary to ensure the rights of survivors.

Explosive weapons create a range of humanitarian problems beyond non-combatant deaths and injuries caused at the time of attacks. By damaging infrastructure, explosive weapons can cause wider public health problems, social and economic disruption, more extensive requirements for reconstruction, and more severe delays and reversals in general socio-economic development. Through the legacy of unexploded ordnance and landmines, explosive weapons continue to present a threat to the non-combatant population despite billions of dollars of ongoing expenditure, primarily from humanitarian budgets. Inadequate storage of explosive weapons has resulted in thousands of people being killed and injured, and insecurely stored ordnance, abandoned ordnance and unexploded ordnance are all used, in certain contexts, for the construction of improvised explosive devices (which in turn kill and injure large numbers of non-combatants).

The persistent threats posed by explosive weapons have resulted in policy and legal consideration of certain types explosive ordnance and of explosive weapons as a whole category (through instruments such as CCW Protocol II, the 1997 Mine Ban Treaty, CCW Protocol V and the 2008 Convention on Cluster Munitions, as well as through the practice of “mine action”). Taken together these instruments establish that the users of explosive weapons have a special responsibility for their longer term impact. This categorical consideration of the post-conflict problems of explosive weapons highlights the corollary need for transparent and evidence-based consideration of the risks presented – categorically – by explosive weapons at the time of their use. It is this consideration, in the domestic sphere of governance, that results in explosive weapons being subject to categorical regulation and to their widespread rejection as an unacceptable technology for domestic civil security.

CASE STUDY: EXPLOSIVE VIOLENCE – ISRAEL AND GAZA, 2008-2009

The violence in Gaza and Israel from December 2008 to January 2009 provides a strong illustration of the pattern of harm associated with explosive weapons.

DEATHS AND INJURIES

Explosive weapons were responsible for the great majority of the direct deaths and injuries during this phase of violence, but few sources so far make this explicit. According to the Ministry of Health in Gaza, about 1,400 people were killed and more than 5,600 wounded during the conflict. Many of the seriously injured will be affected for life.¹⁰⁸ Amnesty International reported that “hundreds of civilians taking no part in the hostilities...were killed in attacks by Israeli forces in the Gaza Strip. Civilian homes and other buildings, including medical facilities, schools and a university, were also damaged or destroyed by Israeli air strikes and artillery and other attacks – artillery is an area weapon, not one that can be used with pinpoint accuracy, and so should never be used in densely-populated civilian areas.”¹⁰⁹ Human Rights Watch, in its analysis of Israeli use of white phosphorus in Gaza noted that “white phosphorus munitions did not kill the most civilians in Gaza – many more died from missiles, bombs, heavy artillery, tank shells, and small arms fire.”¹¹⁰ Casualty estimates rose rapidly at the end of the conflict due to the identification of bodies that had not previously been found or identified in inaccessible areas or under rubble produced by the use of explosive weapons.¹¹¹ In addition to casualties in Gaza, as reported by UN Office for the Coordination of Humanitarian Affairs (OCHA), the Magen David Adom national society list four Israelis killed, four critically injured, 11 moderately injured and 167 lightly injured from explosive weapon use by Hamas.¹¹²

Human Rights Watch noted specifically that the use of artillery in populated areas was problematic and liable to cause indiscriminate harm to the civilian population.¹¹³ According to an ABC media report the president of the

ICRC, Jakob Kellenberger, said that the nature of the injuries he saw in hospitals in Gaza shows the Israeli military used very heavy weaponry, which would have made it virtually impossible to distinguish between civilians and combatants.¹¹⁴ Both Human Rights Watch and the ICRC also criticised the indiscriminate use of rockets fired by Hamas towards populated areas of Israel.¹¹⁵

PSYCHOLOGICAL HARM

Explosive weapons are particularly associated with psychological trauma.¹¹⁶ According to a report in the Washington Post, “even the children who escaped physical injury face the psychological consequences of having lived under near-constant bombardment for 22 days and nights ... mental health experts, human rights advocates and parents say they worry that this generation of Palestinian children will suffer the effects of the war for decades to come.”¹¹⁷ According to an AP report, a wartime study among hundreds of Gaza children showed a rise in nightmares, bedwetting and other signs of trauma.¹¹⁸ Psychosocial support was identified as a vital need by a number of organisations including the UN OCHA¹¹⁹ and the Disasters Emergency Committee (DEC).¹²⁰ A number of reports have recognised the psychological impact of Hamas rocket attacks into southern Israel.¹²¹

DAMAGE TO INFRASTRUCTURE

At a time when the level of destruction throughout Gaza had not been fully assessed,¹²² UNOSAT produced analysis of satellite data pointing to over 1,000 specific indicators of damage from explosive weapons across this predominantly urban area.¹²³

Most damage to infrastructure can be attributed specifically to explosive weapons or to the use of explosive demolition charges to collapse buildings.¹²⁴

HOUSING AND SHELTER

Explosive weapons caused damage to housing and population displacement. According to ICRC preliminary findings, over 880 houses were fully destroyed and a further 650 partially destroyed across areas many areas of Gaza

City as well as in Khan Younis, Rafah and Khozaa in southern Gaza.¹²⁵ Many of these will have been destroyed by impact from explosive weapons (though the conflict also saw widespread use of explosive demolition charges to collapse buildings.¹²⁶) Population displacement had left over 18,600 people still being accommodated in 33 UNRWA shelters throughout the Strip as of the morning of 21 January, according to ICRC reports.¹²⁷ However, by 26 January reports from UNOCHA suggest that this number had fallen rapidly with most Gazans who had been displaced living with overstretched host families.¹²⁸

POWER INFRASTRUCTURE

Explosive weapons damaged power infrastructure. According to ICRC assessment as at 25 January 2009, while the main power lines in northern Gaza were repaired, the low-voltage lines taking electricity directly to households remained non-functional in Jabalia, Zaytun and Sudania. This also affected water-distribution networks in those areas.¹²⁹ According to UN OCHA towards the end of January 2009, “most of the Gaza Strip receives only intermittent electricity, with Gaza Governorate and North Gaza receiving an average of 12 hours of electricity every day, though some areas still do not have power due to localized damage.”

WATER AND SANITATION

Explosive weapons damaged water and sanitation services. According to ICRC on 23 January, about 300,000 had no access to piped water and the sewerage network in parts of Gaza had been badly damaged.¹³⁰ According to UN OCHA the water and sanitation situation was improving as of 26 January, although UNICEF were warning that a continued shortage of drinking water and overflowing sewage in residential areas posed serious public health risks.¹³¹

HEALTH INFRASTRUCTURE

Explosive weapons damaged the health system infrastructure. According to initial assessments carried out by the ICRC, three hospitals took direct hits during the conflict.

Other hospitals also suffered damage, mostly shattered windows from air strikes on neighbouring targets.¹³² NGO funded clinics were also reported to have been destroyed.¹³³

SCHOOLS

Schools were reported to have been severely damaged by attacks with explosive weapons¹³⁴ and were subsequently considered a priority for reconstruction.

UNDERMINING PAST HUMANITARIAN ASSISTANCE

Altogether the impact of explosive weapons on infrastructure is likely to have undermined millions of dollars of humanitarian aid investment made over previous years. The World Bank, for example, had been implementing a US\$23 million water and sanitation project in Gaza.¹³⁵ The extent to which past infrastructure investments have been lost had not been determined at the time of writing.

ONGOING HUMANITARIAN RISK

Unexploded explosive ordnance presented an ongoing risk to the civilian population.¹³⁶

The pattern of immediate and long term humanitarian harm from the use of explosive weapons in the Gaza conflict is a microcosm of the wider argument of this chapter. Explosive weapons killed and injured civilians, caused high-levels of psychological harm, destroyed vital infrastructure and left an ongoing threat to populations that must live with the aftermath of the fighting.

3. ACTORS RESPONSIBLE FOR EXPLOSIVE VIOLENCE

This chapter is concerned with the users of explosive weapons. Firstly it draws out some of the key features of states' regulation and use of explosive weapons amongst their national populations, noting in particular the categorical regulation of this weapon technology. This categorical regulation is illustrated by the general exclusions of explosive weapons from civilian ownership and from use in policing, while states primarily consider explosive weapons appropriate for use in special circumstances, often described as "armed conflict." The chapter then considers the use of explosive weapons by non-state actors, noting that the widespread use of improvised explosive devices illustrates a failure by states to maintain the special monopoly that they claim over explosive weapons. For both state and non-state users, this chapter highlights the 'communicative' capacity of explosive weapons; the risks to civilians from explosive weapons means that their use articulates underlying relationships of accountability (or otherwise) between the users of force and the populations amongst whom they are operating.

EXPLOSIVE VIOLENCE BY THE STATE

A central argument of this report is that states already adopt a categorical approach in practice to explosive weapons. This is most clearly evidenced in the widespread and broad categorical exclusion of explosive weapons as instruments of force for domestic policing. It is also evident in a general prohibition on civilian ownership of explosive weapons, which is often significantly more stringent than that applied to firearms. In general, explosive weapons are considered, by states, to constitute a category of technology that should be reserved for use only by states.

States generally assert a monopoly over the use of explosive weapons.

Civilian ownership of explosive weapons is widely prohibited by states and the acquisition, storage, movement and transfer of any kind of explosive is usually subject to comparatively stringent state regulations.

For example, the UK Firearms Act of 1968 has a section on "weapons subject to general prohibition" which covers grenades, rocket launchers and a variety of other explosives and bombs.¹³⁷ Under Australia's Weapons Prohibition Act of 1998 the list of prohibited weapons extends to "any bomb, grenade, rocket, missile or mine ... that is in the nature of ... an explosive, incendiary, irritant or gas." In the USA, explosive weapons fall under the designation "destructive devices" in the 1934 National Firearms Act.¹³⁸ The 1968 Gun Control Act prohibits transportation, importation or sale of "destructive devices" without a license from the Attorney General. Licensing for this category of weapons is at the most stringent and expensive level by comparison with "firearms other than destructive devices"¹³⁹ and then "ammunition for firearms other than destructive devices." Beyond this federal control, a further 15 US states have additional legislation prohibiting private ownership of explosive destructive devices outright.¹⁴⁰ In Cambodia, the Arms Law of 2005 prohibits the "equipping, possession, carrying, use, purchase, sale, trading, loan, transfer, rental, production, fabrication, repair, transportation, transit, import, export and stockpiling of weapons, explosives and ammunition of all its aspects by the civilian population."¹⁴¹

These specific instances exemplify a general tendency of states to prohibit or tightly restrict civilian ownership of explosive weapons. In addition to such prohibitions,

PRIVATE MILITARY COMPANIES

This report does not provide an analysis of explosive weapon policy or use by private military companies (PMCs). However, the mechanisms by which states devolve legitimate use of explosive weapons to such institutions deserve further consideration. In the context of the wider argument of this chapter (which suggests that failure by states better to control explosive violence serves to erode their position as the accountable and responsible users of force), the greater role of PMCs may serve to further exacerbate this trend – especially if PMCs continue to have extremely limited accountability in general, and in particular to the populations amongst whom they are operating.

other laws may be implemented to allow tighter controls over the movement and forensic processing of explosives. For example, under the 1991 Convention on the Marking of Plastic Explosives for the Purpose of Identification states must ensure that explosives manufactured in their territory are ‘marked’ in order to be detectable and must exercise additional controls over any unmarked explosives that remain in circulation. Protocol V (2003) of the UN Convention on Conventional Weapons also reinforces the general principle that states have a special responsibility for explosive weapons (see Chapter 4).

Explosive weapons are excluded from domestic policing

In addition to being prohibited from civilian ownership, explosive weapons are not generally used for the purposes of domestic policing. In the 1,836 reported incidents of explosive violence that comprise the Landmine Action

dataset, in only one case were police forces actively described as using explosive weapons, and in that instance the identity of the attackers was disputed and the action was clearly not officially sanctioned.¹⁴²

Although there are exceptions to this broad rule,¹⁴³ even specialised police armed response teams, such as US SWAT units and their international equivalents,¹⁴⁴ are very rarely equipped with explosive weapons. Such teams may use noise-flash grenades (the cases of which remain intact on initiation) and have access to explosives for gaining entry into buildings but they do not generally carry even small explosive weapons such as blast or fragmentation grenades.¹⁴⁵

The institutional concept of the “police” is by no means universal. There are substantial differences of identity, administrative organisation, functions, and accountability in police forces around the world, based on the history of their local development. The formal and conceptual relationship between the police and the military is more distinct in some contexts than in others. Yet, in spite of such variations in historical development and systems of policing internationally, the exclusion of explosive weapons from police use is virtually universal, and thus all the more notable.

Explosive weapons are subject to categorical management in the common practice of states

The extent to which explosive weapons are subject to categorical exclusion from the domestic context is actually remarkable. There are few direct parallels with other broad categories of weapon for this blanket exclusion of explosive weapons from the domestic context. Firearms are widely used in domestic policing as well as in military operations – though subject to different controls. Similarly, some regulated firearm ownership by the civilian population is also accepted in many countries. By contrast with explosive weapons, certain chemical agents with irritant or harassing effects are considered acceptable for use in policing though they might be considered prohibited under the 1993 Chemical Weapons Convention if used in the context of armed conflict.¹⁴⁶ Biological weapons are widely considered unacceptable across both contexts.



Photo © REUTERS/Faisal Mahmood courtesy www.alertnet.org - Residents who fled a military offensive two months earlier pass destroyed buildings as they enter the city of Mingora, in Pakistan's Swat Valley, about 260 km (161 miles) north west by road of Pakistan's capital Islamabad July, 2009.

There is little in the way of policy literature explicitly explaining this exclusion. The high lethality of explosive weapons in itself would not seem to justify this pattern of management given that lethal force is widely accepted as a necessary capacity for policing in certain situations. Given that the grounds for exclusion cannot be lethality 'per se' it seems reasonable to conclude that the exclusion stems, substantially, from the risk of potentially lethal harm to people and damage to property other than the intended targets. The tendency of explosive weapons to cause harm beyond that "intended" has been at the heart of concerns about what might be considered "indiscriminate" under international humanitarian law with respect to armed conflict (see Chapter 4).

State use of explosive weapons is considered acceptable in circumstances described as "armed conflict"

Of the 58 countries where explosive violence incidents were reported in the Landmine Action dataset, only in 12 of these were explosive weapons reported to have been used in attacks by state forces. All 12 of these countries¹⁴⁷ were classified as experiencing "armed conflict" according to the Uppsala Conflict Database.¹⁴⁸ Where state actors were recorded in the dataset using explosive weapons, the majority of incidents (76%) were of state actors operating on foreign soil,¹⁴⁹ and the vast majority of these were identified as part of a military force. In these incidents of state use, 83% of those reported killed and 96% of those reported wounded were not reported to be armed, nor identified as part of another state, security body or non-state force.

In situations where states do use explosive weapons amongst their own populations it is generally in situations where there is a perceived risk of political fragmentation i.e. it is held that the cohesion of the state rather than the interests of specific citizens is at stake. Such circumstances included attacks in Afghanistan against

THE COMMUNICATIVE IMPACT OF EXPLOSIVE WEAPON USE BY STATES

“The obliteration of many of the bodies has only complicated the tally of the dead. Government officials have accepted handwritten lists compiled by the villagers of 147 dead civilians, and were handing out cash payments in compensation in the provincial capital. An independent Afghan rights groups, Afghan Rights Monitor, put the number at 117. American officials say that even 100 is a “gross exaggeration,” but have yet to issue their own count [...] It is bombings like this one that, more than anything, have turned the people across southern Afghanistan against the government and the foreign military presence.”

'Airstrikes brought horror, Afghan villagers say', Carlotta Gall and Taimoor Shah The New York Times, International Herald Tribune, 15 May 2009

The United Nations Assistance Mission in Afghanistan reports that 261 civilians were killed in May alone. Anti-Government elements remain responsible for the majority of these civilian deaths through attacks on residential areas and schools, the use of improvised explosive devices and, often, targeted or otherwise reckless suicide attacks [...] Civilians continue to die in Afghanistan also as a result of the actions of pro-Government forces, particularly during air strikes. I welcome recent statements from the incoming leadership of United States and international armed forces in Afghanistan on the need to reduce civilian casualties, review rules of engagement and ensure their strict observance.

'Statement by Mr. John Holmes, Under-Secretary-General for Humanitarian Affairs and Emergency Relief Coordinator', UN Security Council, 26 June 2009, S/PV.6151, p. 3-4.

the Taliban and 'Al Qaida', in Colombia against FARC, by Georgian forces against Abkhaz separatists, in Iraq against 'insurgent forces', in Nepal against 'Maoists', in Pakistan against the Taliban, in Sri Lanka against the LTTE, and in Turkey against the PKK. All of these situations involve the use of explosive weapons against entities understood to want to subdivide, destroy or reframe the existing state structures.

In armed conflict, the use of explosive weapons is subject to policy regulations, under rules of engagement (RoE), and legal regulations under international humanitarian law (IHL). Rules of engagement may be structured according to a graduated response or “escalation ladder”, whereby different patterns of force are organised with reference to their lethality, and risks posed to the wider population, as well as tactical considerations that might condition the choice between, for example, direct and indirect fire. Graduated responses often recognise the communicative implications of different forms of violence (which mean that rapid escalations in force may create misunderstandings of political purpose that have unwanted effects on the relationship between the combatants and the wider society.) It is useful to note this context for the control of explosive weapons because it illustrates a recognition in military doctrine of the communicative capacity of violence and also provides another framework within which more explicit categorical and contextual constraints on the use of explosive weapons might be embedded in the future. It has not been possible in the preparation of this report to analyse if or how the step from firearms to explosive weapons (and then across different sub-categories of explosive weapons) is positioned in different rules of engagement, but the following chapter (Chapter 4) looks in more detail at the discussion of explosive weapons under international humanitarian law.

Conclusions regarding state control of explosive violence

The most striking feature of state control over explosive weapons is that it is strongly categorical in its approach. That is to say, in general, all explosive weapons are excluded from domestic policing, from small fragmentation grenades to large aircraft bombs. This suggests a perception that certain characteristics of explosive weapons are distinctive amongst the various means of projecting lethal force and that these characteristics warrant broad policy rules regarding the management of this category as a whole. Drawing together the analysis of explosive weapon use in the common practice of states we can suggest the following general pattern:

- ✘ Where the end being pursued is at the level of the citizen (i.e. it relates to the immediate safety of citizens or individual citizen's property rights), and where the users of force are accountable to the population amongst whom they are operating, it is not considered acceptable to expose other 'uninvolved' individuals to potentially lethal force in pursuit of that end, and so explosive weapons are unacceptable;
- ✘ Where the end being pursued is at the level of the state (i.e. it is held to concern the boundaries or overarching interests of the state), or where the users of force are not accountable to the population amongst whom they are operating, states may consider it acceptable to expose to potentially lethal force people that have no immediate role in the end being pursued, and so explosive weapons may be considered acceptable.

States' use of explosive weapons appears to be modified by categorisations of the people amongst whom they are operating. That explosive weapons are managed so distinctly in relation to these scenarios means that decision making about the use of explosive weapons serves as an articulation of the orientation being adopted by the users of force towards the local population. This communicative component is all the more distinct in populated areas where any risks to the local civilian population are likely to be significantly higher. As suggested here, the wider issues at stake in this transition from the unacceptability to the acceptability of explosive weapons relate to the relationship of accountability between the users of force and the local population, and whether the ends being pursued can be held to significantly limit the right to protection that this population should ordinarily enjoy.

EXPLOSIVE VIOLENCE BY INDIVIDUALS AND NON-STATE ACTORS

Although states assert a legal monopoly over explosive weapons they can't achieve absolute or effective control over relevant materials or technologies. Moreover, by virtue of their using explosive weapons in contested environments (and causing significant civilian harm), they cannot assert what might be described as moral monopoly over explosive violence as a form of communication and negotiation. In the Landmine Action dataset, 1,535 incidents (84%) did not report state forces as the primary armed actor. These incidents were responsible for 4,747 killed (76.6% of total killed) and 11,327 wounded (89.4% of total wounded).

Of these, 70% of those killed (3,324) and 83% of those wounded (9,397) were 'civilians' (i.e. they were not reported to have been armed or to be part of state forces, other non-state armed groups, or other security groups.) Although these attacks impose the greatest harm on civilians, in 847 incidents (55%) state forces, other non-state armed groups or other security personnel were reported to have also been amongst the victims.

In many of the incidents the actors involved were either not identified or were identified under general terms such as extremists, guerrillas, insurgents, militants, rebels, separatists and terrorists. Non-state armed groups that were reported included Islamic Jihad, Abu Sayyaf, Al Qaeda, Baluchistan Liberation Army, FARC, Hamas, Hizbullah, Jaish-e-Mohammad, Kurdistan Workers Party,

Many of the bombers who blew themselves up were children ... "These young boys are as much the victims of terrorism as those they kill. They are victims of the most brutal exploitation," said Anees Khan, a Lahore-based psychologist who is carrying out a study on the use of children as bombers for a local non-governmental organisation (NGO).

'Child suicide bombers "victims of the most brutal exploitation"' IRIN humanitarian news and analysis

Photo © REUTERS/Nir Elias courtesy www.alertnet.org - An Israeli policeman stands in front of a burnt out bus after two car bombs exploded at the busy Beit Lid junction, September, 2001.



LTTE, “Maoists”, New People’s Army, PKK, Taliban, ULFA and numerous others. A number of incidents explicitly identified more traditional “criminal” activity associated with drug gangs, robbers, extortionists and business disputes.

Improvised explosive weapons

Many attacks by non-state actors and individuals use so-called improvised explosive devices (IEDs).¹⁵⁰ Around 60% of the incidents recorded in the Landmine Action dataset were reported as involving “bombs” or “car bombs” (this is as distinct from aircraft bombs, artillery, grenades, landmines, and various other ordnance). Such incidents were reported across 38 countries. The weapons used in these incidents were predominantly forms of IED – although they were not necessarily described explicitly as such in the newswire report source data.

In the dataset’s six month period, the use of these weapons resulted in a reported minimum of 3,767 killed and 9,120 wounded. Some 2% of these casualties were amongst the actual users of these weapons, 16% were other armed actors or were security personnel and 82% were ‘civilians’.¹⁵¹

Where IED attacks took place in populated areas, approximately 90% of reported dead and wounded were ‘civilians.’ By contrast, where attacks were not reported to have been in populated areas, only 48% of the reported dead and wounded were of this group. In such acts of violence, attackers often appear to consider it acceptable to expose to potentially lethal force individuals that have no immediate and specific role in the end being pursued. Arguably, the death or injury of such individuals, considered collectively, serves as a means to an end (through the erosion of confidence in the state.)

In addition to deaths and injuries caused directly by IEDs, such explosive weapons are also used to degrade infrastructure, often in attacks that create losses and



Photo © REUTERS/
Nikola Solic courtesy
www.alertnet.org -
Rescuers search the
debris of a blast site
in the Baghdad suburb
of Sha'ab October,
2003.

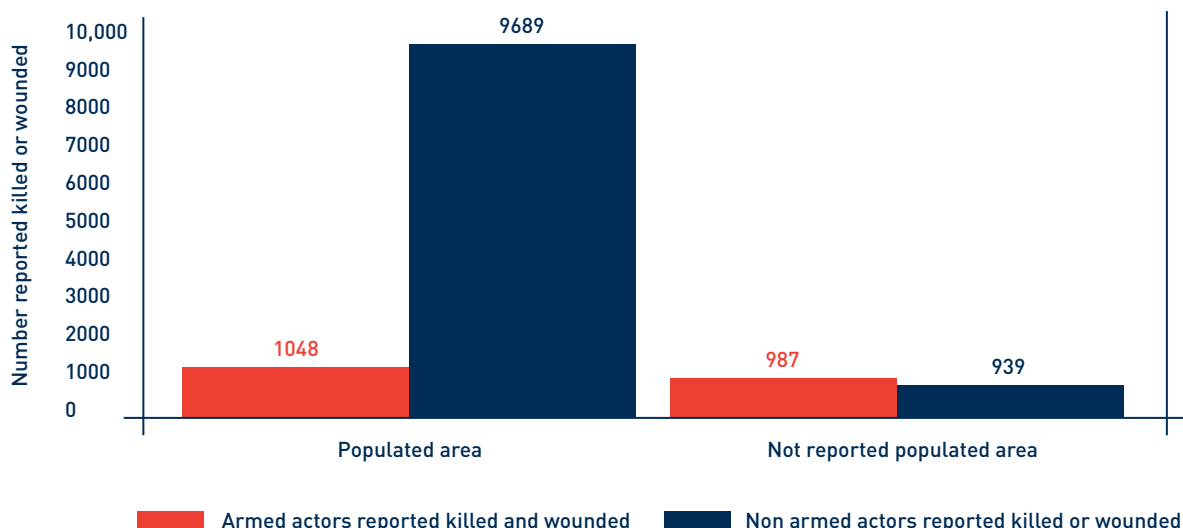
leverage expenditure for remediation that is greatly in excess of the cost of mounting the attack. For example, a 2004 attack on pipeline infrastructure in Iraq was estimated to have cost \$2,000 to carry out but to have resulted in \$500 million in lost oil exports.¹⁵²

Self-killing in explosive violence attacks

The Landmine Action dataset includes 175 attacks with self-killing ('suicide bombs') reported in 11 different countries: Afghanistan, China, Egypt, India, Iraq, Israel, Pakistan, Somalia, Sri Lanka, Thailand and Yemen. These attacks accounted for 1,350 people reported killed and 2,585 reported wounded (representing 36% and 28% of those killed and wounded by IEDs as a whole). The average numbers killed and wounded per incident for attacks with self-killing are both approximately double the averages for the dataset as a whole. Such attacks have an additional symbolic potential due to the apparent decision of an individual to kill themselves in pursuit of an end. However, in a number of contexts there have been reports that specific people undertaking attacks had elevated vulnerabilities to external pressure (notably children and people with mental disabilities).¹⁵³ In some cases the explosive device used may have a mechanism for remote initiation, such as by radio frequency, so that a person other than the bomb-carrier is capable of detonating the explosive.

For a short period in 2002 the US Government sought to move the media away from the use of the term "suicide bombing" based on a concern that this formulation gave too much emphasis to the symbolic power of the attacker and thereby downplayed the experience of the victims. Instead they proposed the term "homicide bombing," but this failed to gain traction in the public discourse.¹⁵⁴ However, given the communicative significance of explosive violence, consideration of these issues is important. Blanket application of the term 'suicide' may overstate the moral position of the attacker, attribute to them greater responsibility than is warranted and divert attention from the victims.

PROPORTIONS OF DEAD OR WOUNDED FROM IED'S, BY STATUS AND LOCATION¹⁵⁵



Underlying challenges: technological proliferation and symbolic acceptability

The widespread use of improvised explosive devices, in the face of state efforts to assert a monopoly over explosive weapons, illustrates a broad difficulty of containing access to this technology. In different contexts, various efforts have been undertaken to control access to chemicals and components that might be used in the construction of IEDs.¹⁵⁶ However, this represents a distinct challenge in a context of globalised engineering information, the diversity of technology that can be used and the diverse potential networks of procurement. The expanded threat of IEDs to civilians and traditional military forces represents a proliferation of explosive weapons out of the control of states.

Many of the non-state incidents reported in this dataset did not appear to achieve, or attempt to achieve, any direct, short-term acquisitive objective (such as allowing attackers to seize control of terrain or buildings). In so far as there is an objective beyond killing and injuring the people involved in the incident, or destruction of certain facilities, this objective is often diffuse and communicative¹⁵⁷ – perhaps contributing to an ongoing pattern that works to undermine confidence in, as well as capacity of, the actors that have responsibility for security or the provision of public services. Furthermore, as states assert a special monopoly over the use of explosive weapons, it is then not surprising that non-state actors, opposed to states in one form or another, deploy explosive violence as a way of communicating their own challenge to, and disavowal of, the state’s initial claim to authority. The use of explosive violence by non-state actors may come to be seen by some as more justifiable, and may be more difficult credibly to condemn, when it is undertaken in the context of state actors using explosive weapons amongst populations to whom they have limited bonds of accountability.

"I saw body parts everywhere," said one witness, Mohammed Asif, "I saw people collecting body parts and putting them in ambulances."

A powerful explosion tore through a large religious congregation in Karachi, leaving approximately 50 dead.

Conclusions regarding non-state actor use of explosive weapons

Internationally, the use of explosive weapons by non-state actors and individuals is widespread and taken as a whole it is a cause of substantial humanitarian harm. Explosive weapons are used in economically motivated criminal acts, but they are most widely associated with political acts often in opposition to the state (or what is perceived to be an occupying or illegitimate state). In such acts of political violence, attackers often appear to consider it acceptable to expose to potentially lethal force individuals that have no immediate and specific role in the end being pursued. These incidents provide evidence both of the proliferation in capacity to employ explosive weapons and of the tendency to exploit the communicative effects of violence with explosive weapons.

CONCLUSIONS

States treat explosive weapons as a distinct category of technology that is subject to categorical regulations and controls. States assert a monopoly over the use of explosive weapons and generally exclude explosive weapons from use as instruments of force in domestic policing. Thus states do not generally use explosive weapons amongst populations to whom they expect to be directly answerable – populations that vote them in or out of power for example. This categorical approach, and this exclusion from the domestic context, provides a strong basis for arguing for greater explicit explanation of the conditions under which the use of explosive weapons comes to be considered acceptable in other circumstances. As argued here, these conditions, from the perspective of the state, seem to be based upon the relationship of accountability between the users of force and population amongst whom they are operating (or rather, the absence of such a relationship). Implicit in the transition to the use of explosive weapons is a claim by user states that the end being pursued limits or overrides the right of that population to normal levels of protection. Given the evidence of harm associated with this category of weapons, states should establish further categorical limitations on the use of explosive weapons in order to allow for, and build, greater accountability to the wider – and ultimately transnational – civilian population.

Furthermore it is apparent that states are not able to enforce the monopoly that they claim for themselves over explosive weapons. The use of explosive weapons by non-state armed groups and by individuals has been widespread, and in some contexts frequent. Such attacks

ANALYSIS OF SO-CALLED 'SUICIDE' BOMBING INCIDENTS IN IRAQ: 2003-2007

The Iraq Body Count (IBC) database records 740 incidents of explosive violence where self-killing was reported as a component of the attack between 1 January 2003 and 28 December 2007 in Iraq. These 740 incidents were reported to be responsible for a minimum of 8,114 deaths.

Explosive violence incidents with self-killing generally resulted in a greater number of deaths than other incidents of explosive violence (average 11 reported deaths per incident for explosive violence with self-killing as compared to an average of 5 reported deaths per incident for explosive violence as a whole for IBC data during this period.)

Explosive violence incidents involving self-killing utilised a number of different technologies. The most common technology was the car bomb (63%), followed by bombs borne on the person (23%) and truck bombs (12%). Those instances where the explosive force was augmented, usually by mounting the bomb on a fuel or chemical tanker, produced attacks of significantly increased severity (average 54 killed per incident). Likewise, other truck borne bombs also created incidents of a higher level of severity (average 22 killed per incident). It is noticeable though that car bombs (average 8 persons killed) are generally less severe in their impact than person borne bombs (average 13 persons killed).

These incidents can also be roughly disaggregated by target types. Disaggregation is difficult because many incidents involved multiple elements (such as being aimed at police patrols within a civilian market). Attacks on police and army patrols were common (53% of incidents) and within this category, it is the police that have borne the brunt of attacks. It is noticeable then that a significant proportion of attacks were not targeted directly (or solely) at the civilian population but have been targeted, at least in part, at the security infrastructure of the Iraqi state.

Although police and army units were the most common individual targets, incidents in mosques (average 32 persons killed per incident), markets (average 20 persons killed) and funerals (average 18 persons killed) resulted in the highest average levels of death.

have claimed large numbers of civilian casualties, in particular through the use of improvised explosive devices (IEDs) in populated areas. The use of IEDs represents a proliferation of explosive weapons outside of the control of states. Many of these attacks do not seem to serve acquisitive military ends but rather have a broad communicative function aimed at undermining (or 'hollowing out') confidence in the state as a provider of

public services. As we have noted elsewhere in this report, states are particularly vulnerable to attacks against infrastructure and networks necessary for provision of public services. The absence of stronger normative categorical controls on explosive weapons by states may limit the public stigma against acts of explosive violence by non-state actors. Furthermore a reciprocal logic may allow non-state (and state) users to feel a greater entitlement to this form of violence where explosive weapons have been deployed against them or a population they claim to represent.

Taken together these two streams of argument raise questions about the communicative significance of the use of explosive weapons. In particular, explosive violence may communicate to the local population that its rights to protection are being made subordinate to other ends by actors with little local accountability. In this context greater stigmatisation of explosive weapon use, particularly in populated areas, and more explicit policy controls over the use of explosive weapons would strengthen the claim of states to be responsible and accountable in the use of force.

It is significant to note that in the 1,836 incidents of explosive violence in the Landmine Action dataset, none related to direct conflict between two sets of state military actors.¹⁵⁸ If conflict between states and non-state groups is going to be an enduring paradigm of violence over the decades ahead, states have much to gain from the progressive stigmatisation of the use of explosive weapons in certain contexts, and much to lose from their proliferation and expanded acceptability.



Photo © Simon Conway
- Beit Yahoun mosque,
September 2006

4. EXPLOSIVE VIOLENCE IN INTERNATIONAL HUMANITARIAN LAW

Explosive weapons have been and continue to be a challenge to legal control because of the risks that they present to people to whom it is claimed that no harm is 'intended'. Whilst explosive weapons are generally subject to categorical management by states in relation to the domestic population, the same cannot be said of their treatment under international humanitarian law (IHL). Explicit recognition of explosive weapons as a distinct category in IHL has only occurred recently (and then slightly awkwardly).¹⁵⁹ Nevertheless, these weapons can be seen to have been consistently linked to particular concerns about what is 'indiscriminate' in the use of force, especially in the context of 'populated areas.'

This chapter provides a sketch of how explosive weapons have been treated under IHL. IHL can be seen as an ongoing, formalised, discussion of what is acceptable and unacceptable in the application of force in the context of armed conflict. Through the evolution of general rules of conduct and development of new rules relating to specific technologies, IHL provides, amongst other things, a certain picture of human society debating how people can be killed and injured.

Armed conflict does not provide a blanket suspension of moral obligations

First and foremost, the customary provisions of IHL recognise that the right of parties to an armed conflict to choose methods or means of warfare is not unlimited.¹⁶⁰ Customary provisions of IHL provide a set of basic rules that are considered binding on all parties irrespective of whether they have adopted more specific treaties. The significance of this fundamental underpinning of IHL is that 'armed conflict' cannot be used to assert that there are therefore no grounds for asking more detailed questions about when, where or how the use of specific means – such as explosive weapons – become acceptable. This is to say, simply asserting that the situation is one of armed conflict does not make the use of explosive weapons, in any given situation, permissible. Indeed, as we discuss below, the acceptability of certain types or uses of explosive weapons, in certain contexts, has been a preoccupation implicit in much of the debate and ongoing development of IHL from the late 19th century to the present.

Customary international humanitarian law includes the prohibition on indiscriminate attacks

Of the customary law rules governing the conduct of "attacks"¹⁶¹, the prohibition on indiscriminate attacks¹⁶² is particularly important with respect to the technological characteristics of explosive weapons (as weapons that may be projected to a target and that affect an area around a point of detonation). In broad terms this prohibition is about the extent to which it is permissible to kill and injure civilians.

The legal concept of "indiscriminate" attacks has evolved with particular reference to explosive weapons and populated areas

The genesis of modern legal controls over weapons was spurred by the transformation of explosive weapons in the 19th century.¹⁶³ Since that time, a number of international law treaties and various draft instruments and non-binding declarations, identify specific instances of explosive weapon use as either permitted or prohibited, with particular reference to the context of 'populated areas.' In the general rules of international humanitarian law, this has primarily developed

through discussion of “bombardment” as a method of attack. There is no legal definition of “bombardment” but the term can be considered to apply where multiple munitions are being used and where these are being projected towards a target. An early example is found in the 1899 Hague Convention (II) which states under Article 25 that “the attack or bombardment of towns, villages, habitations or buildings which are not defended, is prohibited.” The 1907 Hague Conventions (IV and IX) prohibit the bombardment, by any means, of “towns, villages, dwellings, or buildings that are undefended.” A number of subsequent non-binding instruments also raise similar themes, such as the 1923 Hague Draft Rules on Aerial Warfare; the 1938 Amsterdam Draft Convention for Protection of Civilians Against New Engines of War; and the 1938 League of Nations Unanimous Resolution for Protection of Civilian Populations Against Bombing from the Air in Case of War.

All of these instruments engage with problems for the civilian population arising from certain uses of explosive weapons. Furthermore, where early legal formulations of indiscriminate attack described attacks that intentionally targeted civilians, some of these formulations started to describe as indiscriminate those attacks where the intention is to damage military targets but where the effect is likely to include harm to the civilian population (the so-called “double effect”).

Changing social and political contexts changed attitudes to technologies and to rules

These latter instruments were concerned particularly with the development of bombing from the air and its potential harm to civilians. They represented a response to the changing technology of warfare during the first three decades of the century. Such concerns were driven in part by a realisation that aerial bombing, which was increasingly being practiced against foreigners in colonies (over whose populations categorically different standards were applied),¹⁶⁴ might become a dominant form of warfare between states. Whilst bombing “other” populations could be considered acceptable, its greater application amongst “civilised” populations at war looked increasingly likely.

The preventative efforts of the 1920s and 1930s to establish a policy-based constraint on practice were insufficient.¹⁶⁵ The pattern of practice during World War II (culminating in the nuclear bombings of Hiroshima and Nagasaki), contributed to a recalibration of expectations of explosive violence in the decades to follow.

Making “indiscriminate” explicit – but vague

In the 1950s the ICRC prepared a set of Draft Rules in an effort to persuade states better to protect civilian populations from the effects of bombardment, taking into account the rapid development of new methods and means of warfare.¹⁶⁶ However, it took further widespread use of explosive weapons, and certain other conventional weapons, in South East Asia during the 1960s and early 1970s to build renewed concern regarding indiscriminate attacks, including specific weapons likely to have severe effects on civilians.

“My whole family is in hospital,” Mohammed Ghaben, the father, said yesterday, his voice flat and drained of emotion. “If I'd been here, I would be injured or dead, too.”

The blast killed Mr. Ghaben's 8½-year old daughter Hadil and left his 15-year-old daughter Tahrir blinded, likely for life. His young son was hit in the back by shrapnel, and may be paralyzed. The other children all lie in hospital, several with disfiguring injuries.

In 1974, a Working Paper submitted to the Geneva Diplomatic Conference on international humanitarian law highlighted the problematic area-effect of certain types of explosive weapons. Specifically it proposed that “cluster warheads with bomblets which act through the ejection of a great number of small calibre fragments or pellets [be] prohibited for use.”¹⁶⁷ No such rule was adopted by the Conference but this theme was returned to in the 2008 Convention on Cluster Munitions which is discussed in more detail further below.

Discussions in the 1970s resulted in the most recent formulation of the general prohibition on indiscriminate attacks¹⁶⁸ in Articles 48 and 51 of Additional Protocol I of 1977 to the Geneva Conventions (for Article 51 see inset text opposite). Article 51, 5 (a) again uses a particular example of bombardment in areas of civilian concentration to illustrate the kind of attack that is prohibited. This specific rule is closely modelled on the 1956 ICRC proposal’s Article 10 that is explicitly concerned with “bombing”. This further reaffirms the strong link between “bombardment” and explosive weapons and consequently the link between the development of the prohibition on indiscriminate attacks and the development and use of explosive weapons.

However, this rule is still open to wide interpretation – making it vague in practice. Rappert and Moyes (2004) noted that, “While indiscriminate attacks are prohibited under IHL, the meaning of terms such as ‘attack’, ‘excessive’ civilian loss of life and damage, and ‘concrete and direct military advantage’ are not clear. While those employing [weapons] have spoken about military advantage in a broad fashion, including advantages to the war strategy as whole and advantages gained in particular tactical encounters, when it comes to determining proportionality there have been moves to see humanitarian impact only in relation to immediate effects.”¹⁶⁹

The history of legal discussion regarding indiscriminate attacks illustrates that, even within the context of armed conflict, explosive weapons have presented a problematic technological category

The broad argument that is being set out in the sections above is that explosive weapons, even in the context of armed conflict, have presented particular concerns regarding their propensity to kill and injure people who were supposedly not the ‘intended’ targets of the attack.¹⁷⁰ Thus between 1907 and 1977, the historical development of the legal concept of “indiscriminate attack” in general rules of IHL can be seen to have been consistently tied to concerns about certain uses of explosive weapons in populated areas.

The concept of indiscriminate attacks has developed further through specific instruments relating to explosive weapons

The 1980 Convention on Certain Convention Weapons (CCW) is concerned, amongst other things, with weapons “that may be deemed to have indiscriminate effects.”¹⁷¹ As such it is concerned with how certain categories of technology, if used in certain contexts, may tend to contradict the general rules of IHL. Significantly for the argument of this report, Protocol III of the CCW provides a definition of a “concentration of civilians” as “any concentration of civilians, be it permanent or temporary, such as in inhabited parts of cities, or inhabited towns or villages, or as

Article 51 of Additional Protocol I (1977) states that:

4. Indiscriminate attacks are prohibited. Indiscriminate attacks are:

- (a) those which are not directed at a specific military objective;
- (b) those which employ a method or means of combat which cannot be directed at a specific military objective; or
- (c) those which employ a method or means of combat the effects of which cannot be limited as required by this Protocol;

and consequently, in each such case, are of a nature to strike military objectives and civilians or civilian objects without distinction.

5. Among others, the following types of attacks are to be considered as indiscriminate:

- (a) an attack by bombardment by any methods or means which treats as a single military objective a number of clearly separated and distinct military objectives located in a city, town, village or other area containing a similar concentration of civilians or civilian objects; and
- (b) an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.

in camps or columns of refugees or evacuees, or groups of nomads.”

Elsewhere in the CCW, Amended Protocol II (1996), under its definition of “other devices”, covers improvised explosive weapons that are placed by hand and where the attacker detonates the weapon manually by remote control.¹⁷² Theoretically, such devices represent the form of explosive weapons that can most readily be used with consideration of the general rules of IHL.¹⁷³ Article 7 (3) of Amended Protocol II begins with the presumption of illegality for such explosive attacks “in any city, town, village or other area containing a similar concentration of civilians” in which “combat between ground forces is not taking place or does not appear to be imminent.” However, this rule is subject to further qualifications to the point of being incoherent.¹⁷⁴ However, the rule again links explosive weapons and “concentration[s] of civilians.” In 2009, one government suggested under the framework of Amended Protocol II that efforts should be made to “stigmatise the use of IEDs in populated areas.”¹⁷⁵

Broadening the concept of “indiscriminate” – the post-conflict effects of explosive weapons

From the early 1990s, a very significant theme of legal engagement with explosive weapons has focused on the continued post-conflict threat posed by these weapons to non-combatants. Following the widely perceived failure of CCW negotiations to provide a sufficient legal response to the problems caused by landmines,¹⁷⁶ the 1997 Mine Ban Treaty established a prohibition that has been built upon subsequently.¹⁷⁷ Taken together, the anti-personnel Mine Ban Treaty, Protocol V of the CCW (2003) and the Convention on Cluster Munitions (2008) suggest an emerging legal norm against weapons that continue to kill and injure after the cessation of hostilities.¹⁷⁸

CCW Protocol V on Explosive Remnants of War is of particular importance to this analysis because in its concern with “explosive ordnance” it adopts a broadly categorical approach to explosive weapons.¹⁷⁹ Protocol V establishes that the users of explosive weapons have a special responsibility to minimize the post-conflict risks and effects of explosive weapons and that this responsibility even extends to minimising the risks and effects to populations in territory under the control of other parties.¹⁸⁰

The broad principles that underpin Protocol V's concern with the ongoing harm caused by explosive weapons can be seen to be based primarily on the customary law requirements for distinction between combatants and non-combatants and to take precautions to minimise the effects of attacks on civilian populations. Through the principles of distinction and proportionality, the post-conflict risks can contribute to an attack being "indiscriminate" under the general rules of IHL.¹⁸¹

The 2008 Convention on Cluster Munitions adopts a prohibition in response to the area-effect and post-conflict risks posed by a specific type of explosive weapon

The recently adopted Convention on Cluster Munitions (CCM) is explicitly concerned with the suffering and casualties caused by cluster munitions at the time of their use as well as when they fail to function as intended and when they are left abandoned.¹⁸² Whilst it builds on the concerns of the anti-personnel Mine Ban Treaty and Protocol V regarding the risks to civilians after conflict, it also returns to long-standing concerns regarding the risk of certain explosive weapons to civilian populations at the time of attacks, due to their area-effect.¹⁸³ Prior to the stream of discussions that led to the adoption of this treaty, 25 countries issued a joint declaration in favour of an agreement that would, amongst other things, prohibit the use of cluster munitions "within concentrations of civilians."¹⁸⁴ This again raises the context of "populated areas" as a potential mechanism for regulating explosive weapons.

The CCM brings together the two primary streams of humanitarian concern regarding explosive weapons as a broad category (i.e. their risk to civilians at the time of use and after use through items left unexploded) and in response to these concerns it prohibits the use, production, stockpiling and transfer of cluster munitions as a defined category of weapons.¹⁸⁵ Excluded from the definition of a cluster munition and thus from prohibition are weapons with submunitions that meet certain technical criteria in order "to avoid indiscriminate area effects and the risks posed by unexploded submunitions."¹⁸⁶ Given that explosive weapons in general create some degree of "area effect" and some risk from unexploded ordnance, the criteria of the CCM definition set a demanding standard against which to judge explosive weapons more broadly.

Indeed, what is particularly significant about the prohibition of cluster munitions is that these weapons are very similar to other explosive weapons.¹⁸⁷ The problems that motivated this prohibition are the same, to differing degrees, as those that continue to be caused by other explosive weapons and which underpin states' exclusion of explosive weapons from the domestic context. Ironically, the similarity of cluster munitions to other explosive weapons was widely asserted by politicians and diplomats arguing against legal reforms to protect civilians from these weapons.¹⁸⁸

CONCLUSIONS

Although explosive weapons have not been an explicit category subject to IHL regulation until Protocol V of the CCW, humanitarian concerns regarding certain types and uses of explosive weapons have been a driving force in the ongoing evolution of international humanitarian law from the middle of the 19th century. In particular, the problem of certain types of explosive weapon use causing harm to civilian populations during attacks in populated areas has been a consistent point of discussion and legal reference. Another important legal concern emerging more recently has been the ongoing civilian harm that explosive weapons consistently continue to cause after attacks. Through both of these themes explosive weapons have been, and continue to be, central to the ongoing negotiation of what is “indiscriminate” in the use of force in armed conflict.

The issues at stake in discussion of what should be considered “indiscriminate” in attacks during armed conflict are essentially the same as those that seem to underpin the exclusion of explosive weapons from the domestic context, i.e. the likelihood of ‘uninvolved’ people being killed and injured. The extent to which this characteristic of explosive weapons is considered “unacceptable” has been calibrated differently at different times and in different social and political contexts. By contrast, the trend of international interconnectivity and interdependence, at least in formal discourses, is towards greater coherence of standards across different contexts.

Whilst they can be seen to have developed out of a concern over the use of explosive weapons in populated areas, certain rules of international humanitarian law may serve to sustain this practice of explosive violence because they are vague and open

to wide interpretation; they are ‘non-categorical’ and are taken to require a case-by-case approach which makes all determinations dependent upon specific facts that are difficult if not impossible to determine before or after events. The inadequacy of this approach is evident in the ongoing problem of civilian harm from explosive weapons. An effective response must build categorical boundaries of technology and context that allow for a more appropriate calibration of the acceptability of explosive violence. The humanitarian boundaries of ‘explosive weapons’ and ‘populated areas’ can support such a recalibration and are consistent with existing themes in the legal discourse.

Fa’ida: The original ruling [al-asl] for using a bomb (the medieval precedents: Greek fire [qitâl bil-nâr or ramy al-naft] and catapults [manjanîq]) as a weapon is that it is makrûh [offensive] because it kills indiscriminately [ya’ummu man yuqâtilû wa-man lâ yuqâtilû], as opposed to using rifles (medieval example: a single bow and arrow). If the indiscriminate weapon is used in a place where there are civilians, it becomes harâm except when used as a last resort [min darûra] (and of course, by those military personnel authorised to do so).

*‘Defending The Transgressed By Censuring The Reckless Against The Killing Of Civilians’
Shaykh Muhammad Afifi al-Akiti (2005)*



Photo © Marc Garlasco.
Destroyed buildings in
Beirut, August 2006.

CONCLUSIONS

Achieving a strong stigma against the use of explosive weapons in populated areas is a plausible goal for collective action by states, international organisations and civil society. There are, of course, many challenges to achieving that goal, and many counter arguments that might be presented to stall, divert or fragment such an effort. It may take some time. However, almost every day presents new examples in the media of civilian death and injury as a result of this combination of technology (explosive weapons) and context (populated areas). So long as these incidents are seen and represented, at least in part, through this non-political humanitarian lens (a lens of civilian harm, weapon technology and context) then the stigma against explosive weapons in populated areas will grow. Importantly, such a framing is not incompatible with a parallel recognition that these incidents have complex political, social and economic causes – it is not exclusive. Rather it draws a line, based on a commitment to protect civilians, and challenges those that cross this line to demonstrate responsibility and local accountability for their actions.

A context of globalisation and increased transnational interdependence between peoples and states argues for stronger requirements of local accountability for potential users of explosive weapons, for raising the threshold of acceptability for explosive weapons and increasing the burden of justification for explosive weapon use. In piecemeal ways there are signs that such a process is already happening. The announcements in June 2009 that the US would be taking greater precaution in its use of airstrikes in Afghanistan speak to a recognition that civilian casualties run directly counter to strategic interests. The simple ‘cost-benefit’ logic of much international humanitarian law, that sees military needs and civilian needs in opposition to each other, is slowly breaking down; the avoidance of civilian casualties can be a positive military advantage, not an impediment imposed on military efforts.

The recent prohibition of cluster munitions was substantially assisted by the direct participation of cluster munition survivors – primarily people who had been injured by cluster munitions, or who had lost family members to cluster munitions. Amongst other things, this participation served to break down a complacency that imagines the harm from weapon technologies occurring to “others” whilst the benefits of these technologies accrue to ourselves. With respect to explosive weapons, this report appeals for a movement towards the moral orientation that generally pertains where the users of force are accountable to the population amongst whom they are operating. In other words, the humanitarian standards states apply to their own populations, they should aspire to apply to the populations of others.

Photo © REUTERS/Ahmad Masood courtesy www.alertnet.org - An Afghan family sits around a fire in a destroyed building in Kabul, Afghanistan January, 2006.



This report makes recommendations, detailed in the Executive Summary, to:

- ✘ Build the debate – in order to see wider recognition of explosive weapons in populated areas as a distinct humanitarian problem;
- ✘ Build transparency – for states to recognise their responsibility to gather and publish data on the impact of explosive violence in order better to understand the nature and extent of this humanitarian problem;
- ✘ Build accountability – for the users of explosive weapons to demonstrate how the interests of civilian populations are factored into their policies;
- ✘ Build recognition of the rights of victims – to ensure the realisation of rights for the tens of thousands of people suffering from the impact of explosive weapons.

Taken together, these recommendations provide a platform for building new standards of responsibility and accountability in the protection of civilians, and for assistance to the victims of armed violence.

“I am increasingly concerned at the humanitarian impact of explosive weapons, in particular when used in densely populated areas.”

Report of the Secretary-General on the protection of civilians in armed conflict, S/2009/277, United Nations Security Council, 29 May 2009

NOTES

¹ Adapted from the definition of 'armed violence' established in the policy paper Organisation for Economic Co-operation and Development, "Armed Violence Reduction: enabling development," 2009, browse.oecdbookshop.org/oecd/pdfs/browseit/4309151E.PDF, accessed 30 July 2009.

² Gen. Sir Rupert Smith, *The Utility of Force: The Art of War in the Modern World* (London: Penguin Books, 2006), p. 1.

³ See The Geneva Declaration on Armed Violence and Development, online at www.genevadeclaration.org. The declaration had been signed by 105 states as of 11 August 2009: Afghanistan (2006); Albania (2008); Angola (2007); Argentina (2007); Australia (2006); Austria (2006); Bangladesh (2008); Benin (2007); Bosnia and Herzegovina (2006); Brazil (2006); Brunei Darussalam (2008); Bulgaria (2006); Burkina Faso (2007); Burundi (2007); Canada (2006); Cameroon (2007); Chile (2006); Colombia (2008); Congo, Democratic Republic of the (2007); Costa Rica (2006); Côte d'Ivoire (2007); Croatia (2008); Cyprus (2009); Denmark (2008); Dominican Republic (2007); Ecuador (2007); El Salvador (2006); Ethiopia (2007); Fiji (2008); Finland (2006); France (2006); Germany (2006); Ghana (2006); Greece (2006); Guatemala (2006); Guyana (2008); Holy See (2006); Honduras (2006); Hungary (2006); Iceland (2007); Indonesia (2006); Ireland (2006); Italy (2007); Jamaica (2006); Japan (2006); Jordan (2006); Kazakhstan (2008); Kenya (2006); Korea, Democratic People's Republic of (2008); Korea, Republic of (2006); Kyrgyzstan (2008); Lebanon (2006); Lesotho (2007); Liberia (2006); Libyan Arab Jamahiriya (2007); Liechtenstein (2008); Lithuania (2009); Luxembourg (2009); Madagascar (2007); Malawi (2007); Malaysia (2008); Mali (2006); Mauritius (2007); Mexico (2006); Mongolia (2008); Montenegro (2008); Morocco (2006); Mozambique (2006); Nauru (2008); Nepal (2008); Netherlands (2006); New Zealand (2006); Nicaragua (2009); Niger (2007); Nigeria (2006); Norway (2006); Palau (2008); Panama (2007); Papua New Guinea (2006); Peru (2007); Portugal (2006); Qatar (2006); Romania (2008); Rwanda (2007); Samoa (2008); Senegal (2006); Serbia (2008); Sierra Leone (2006); Slovenia (2006); Solomon Islands (2008); South Africa (2006); Spain (2007); Sudan (2007); Sweden (2006); Switzerland (2006); Tajikistan (2008); Thailand (2006); The Philippines (2008); Timor-Leste (2006); Uganda (2007); United Kingdom of Great Britain and Northern Ireland (2006); Uzbekistan (2008); Vanuatu (2008); Zambia (2007); Zimbabwe (2007).

⁴ It is also important to note that the category 'explosive weapons' is not synonymous with so-called 'conventional weapons.' In his analysis, *The Conduct of Hostilities under the Law of Armed Conflict*, Yoram Dinstein divides weapons into two categories: conventional weapons and weapons of mass destruction. The category of conventional weapons as used here is broad, encompassing poisons, incendiary weapons and lasers, and presumably also firearms, in addition to explosive weapons. Yoram Dinstein, *The Conduct of Hostilities under the Law of Armed Conflict* (United Kingdom: Cambridge University Press, 2004), p. 73.

⁵ "I am increasingly concerned at the humanitarian impact of explosive weapons, in particular when used in densely populated areas. As demonstrated by this year's hostilities in Sri Lanka and Israel's campaign in Gaza, the use in densely populated environments of explosive weapons that have so-called "area effect" inevitably has an indiscriminate and severe humanitarian impact. First, in terms of the risk to civilians caught in the blast radius or killed or injured by damaged and collapsed buildings. Secondly, in terms of damage to infrastructure vital to the wellbeing of the civilian population, such as water and sanitation systems. I urge Member States, in consultation with relevant United Nations and other actors, to consider this issue further." United Nations Security Council, "Report of the Secretary-General on the protection of civilians in armed conflict," S/2009/277, 29 May 2009.

⁶ Paul McMaster, "Sri Lankan war: 'We have 450 beds and now have 1,700 patients'," *The Guardian*, 25 April 2009, www.guardian.co.uk/world/2009/apr/25/sri-lanka-war, accessed 30 July 2009.

⁷ ICRC News Release No. 09/81, "Sri Lanka: ICRC calls for exceptional precautionary measures to minimise further bloodshed in 'no-fire zone'," 21 April 2009.

⁸ Human Rights Watch, "Sri Lanka: Government Admission Shows Need for UN Inquiry," REUTERS AlertNet, 27 April 2009, www.alertnet.org/the-news/newsdesk/HRW/dba4d458f48f0c3ca5812bbaf848cb7d.htm, accessed 30 July 2009.

⁹ "Colombo rejects UN civilian plea," BBC news online, 23 April 2009, news.bbc.co.uk/2/hi/south_asia/8014312.stm, accessed 30 July 2009.

¹⁰ Statement by Mr. John Holmes, Under-Secretary-General for Humanitarian Affairs and Emergency Relief Coordinator, UN Security Council, S/PV.6151, 26 June 2009, pp. 3-4.

¹¹ In 2005, Taback and Coupland examined a sample of data drawn from newswire reports on incidents of armed violence. See Robin Coupland and Nathan Taback, "Towards Collation and Modelling of the Global Cost of Armed Violence on Civilians," *Medicine, Conflict and Survival*, Vol. 21, No. 1, 2005, pp. 19 - 27. They noted that "some of the results from this initial study are striking and deserve comment. First, a common phenomenon of people using explosives against civilians as a means to express their grievances could be highlighted. To our knowledge, this has not been expressed or examined as a discrete policy issue or in public health terms."

¹² See Katie Harrison and Richard Moyes, 2009, *Ambiguity in Practice: Benchmarks for the implementation of CCW Protocol V, Landmine Action* (London:2009)

¹³ Joseph Needham, *Science and civilization in China: Vol. 5; Part 6: Chemistry and chemical technology; Military technology: missiles and sieges* (United Kingdom: Cambridge University Press, 1994).

¹⁴ Wang Ling, "On the Invention and Use of Gunpowder and Firearms in China," *Isis*, Vol. 37, No. 3/4, July 1947, pp. 160-178.

¹⁵ Joseph Needham, *Science and civilization in China: Vol. 5; Part 6: Chemistry and chemical technology; Military technology: missiles and sieges* (United Kingdom: Cambridge University Press, 1994).

¹⁶ Rodrigo Garcia y Robertson, "Failure of the Heavy Gun at Sea, 1898-1922," *Technology and Culture*, Vol. 28, No. 3, July 1987, pp. 539-557.

¹⁷ Rodrigo Garcia y Robertson, "Failure of the Heavy Gun at Sea, 1898-1922," *Technology and Culture*, Vol. 28, No. 3, July 1987, pp. 539-557.

¹⁸ Major William C. Schneck, "The Origins of Military Mines," *Engineer Bulletin*, July 1998.

¹⁹ Eric Prokosch, *The Technology of Killing* (London: Zed Books, 1995), p.6.

²⁰ See Dan L. Morrill, "Nicholas II and the Call for the First Hague Conference," *The Journal of Modern History* Vol. 46, No. 2, June 1974, pp. 296-313. The implications of new weapon technologies were both humanitarian and practical.

²¹ See Sven Lindqvist, *A History of Bombing*, (London: Granta Publications, 2001). In the chapter "Bombing the Savages," various examples are listed: 1912 - French planes bombed villages, markets and grazing herds in Morocco; 1913 - Spanish planes bombing elsewhere in Morocco; 1915 - British planes bombing Pathans on India's north-western border; 1916 - British planes "bombed revolutionaries in Egypt and the rebellious Sultan of Darfur"; 1917 - British bombing put down an uprising in Mashud on India's border with Afghanistan; 1919 - Dacca, Jalalabad and Kabul were bombed by a British squadron chief (Arthur Harris); 1919 - British bombing in Egypt in context of demands for independence; 1920 - British planes bombing in Somaliland; 1920 - British bombing in Enzeli, Iran; and 1921-1930s - British bombing in Iraq as part of a policy of public order. As Lindqvist notes, "this kind of thing was, only ten years after the first bomb, already routine."

²² A.C. Grayling, *Among the Dead Cities: Was the Allied Bombing of Civilians in WWII a Necessity or a Crime?*, (London: Bloomsbury Publishing, 2006), p. 6.

²³ Walter R. Dornberger, "The German V-2," *Technology and Culture*, Vol. 4, No. 4 (Autumn, 1963) pp.393-409; and Eugene M. Emme, "The History of Rocket Technology," *Technology and Culture*, Vol. 4, No. 4 (Autumn, 1963), pp. 393-409.

²⁴ John Borrie has pointed out that the US Strategic Bombing Survey (USSBS) noted the power of Hiroshima in terms of existing bomber

capacity (private correspondence). For more discussion, see David Edgerton, *The Shock of the Old*, (Profile Books, 2006), Chapter 1; and Disarmament Insight blog post: disarmamentinsight.blogspot.com/2008/07/use-of-weapons.html, accessed 30 July 2009.

²⁵ Eric Prokosch, *The Technology of Killing* (London: Zed Books, 1995), p.6.

²⁶ See for more recent examples U.S. Department of State, Significant Terrorist Incidents, 1961-2003: A Brief Chronology, <http://www.state.gov/r/pa/ho/pubs/fs/5902.htm> accessed 11 August 2009.

²⁷ U.S. House of Representatives, Committee on Armed Services, Subcommittee on Oversight & Investigations, "The Joint Improvised Explosive Device Defeat Organization: DOD's Fight Against IEDs Today and Tomorrow," November 2008, p.11.

²⁸ For more information on the model behind this methodology see Insecurity Insight (www.insecurityinsight.org) as well as Robin Coupland and Nathan Taback, "Towards Collation and Modelling of the Global Cost of Armed Violence on Civilians," *Medicine, Conflict and Survival*, Vol. 21, No. 1, 2005, pp. 19 – 27.

²⁹ For general background see Robin Coupland, "Armed Violence," *Medicine & Global Survival*, Vol. 7, No. 1, April 2001; and Robin Coupland and Nathan Taback, "Towards Collation and Modelling of the Global Cost of Armed Violence on Civilians," *Medicine, Conflict & Survival*, Vol. 21, No. 1, 2005, pp. 19 – 27; and Insecurity Insight (www.insecurityinsight.org). Landmine Action, in partnership with Medact, gathered data from English language newswire sources on incidents of explosive violence occurring internationally from April to September 2006 inclusive. The source data was English language reports on the Factiva newswire service (www.factiva.com) and only incidents that met the inclusion criteria were recorded onto the database. An initial filter captured all newswire stories containing one or more terms from each the following lists: [missile* or bomb* or grenade* or mortar* or artillery or mine* or explosion* shell* or rocket* or munition* or explosive] and [or dead or death* or kill* or murder* or massacre* or wound* or injure* or torture* or mutilate* or maim* or mangle* or hurt* or survive* or uninjured]

These reports were then assessed against the following criteria before being entered into a database:

Inclusion Criteria: Weapon must be identified and it must be an explosive; Date (day/month/year) must be present; Place (city/location and country) must be present; Headline includes at least one of the search terms.

Exclusion Criteria: Any event that occurred prior to April 1, 2006; Any event that does not meet the above inclusion criteria.

A total of 1,836 incidents comprise the final data set.

³⁰ No claims are made here that this sample of data represents all incidents of explosive violence globally within the period in question. Similarly it is recognised that there are very different levels of reporting between different contexts (i.e. between regions, countries and areas) that constitute substantial biases in the source data. Furthermore certain types of explosive violence are not captured effectively by the methodology used. The methodology is based on an analysis of discrete incidents where these can be ascribed to a specific time and location. Instances of widespread use of explosive force in many locations simultaneously are not generally reported as discrete incidents and hence are significantly under reported in this data set. Furthermore, combatant casualties amongst incidents away from media coverage are also likely to be significantly under reported. Coupland and Taback describe limitations of the methodology as follows:

Media Bias

Most epidemiological and public health approaches to armed violence must rely on, for example, monthly, quarterly or yearly data from government sources, yet armed violence occurs on a daily basis. Information pertaining to the character of the violence, such as victim vulnerability or perpetrator intention, is usually not captured as part of this data. Moreover, many countries where armed violence is a serious daily issue, such as Iraq, Afghanistan and Haiti, do not even have national statistical agencies. However, journalists write stories about armed violence in every country throughout the world, and many of these stories become part of a searchable large database of general news reports. A standard

criticism of using media reports as a data source is that the media is both inaccurate and biased. King and Lowe reflect our position:

"[Media] accounts constitute an imperfect summary . . . coverage is not uniform, and it varies according to the needs of the reporters rather than the scholarly need for representativeness . . . it is imperfect, and much additional research could and should be done to identify and correct the biases, but journalism is the source of most information that academics have about the international community outside of official government sources. And there should be no controversy over the claim that the immense volume of reportage... constitutes an enormous, and insufficiently mined, treasure of information."

Language

Only English language reports or reports translated into English were used. Bias introduced because of this could be reduced if reports from local newspapers or other media services in other languages could be similarly collated.

Quantifying Risk Factors

We recognise that other investigators might select different surrogate variables to quantify the four constructs proposed by Coupland. However, we feel that the surrogate variables chosen are canonical surrogate variables for two reasons. Firstly, the surrogate variables chosen are amenable to standard statistical analyses, and secondly, we discussed these variables with a number of people having long experience of working in armed conflict with the International Committee of the Red Cross (ICRC). There was agreement that the variables chosen are valid measures of the four constructs.

Robin Coupland and Nathan Taback, "Towards Collation and Modelling of the Global Cost of Armed Violence on Civilians," *Medicine, Conflict & Survival*, Vol. 21, No. 1, 2005, pp. 19 – 27.

³¹ Where I=incidents, K=killed and W=wounded: Iraq, I=696, K=2,908, W=6,850; Afghanistan, I=260, K=954, W=1,148; Pakistan, I=137, K=298, W=591; India, I=116, K=273, W=1,158; Sri Lanka, I=116, K=532, W=554; Israel, I=87, K=173, W=455; Turkey, I=71, K=66, W=287; Lebanon, I=68, K=462, W=434; Thailand, I=41, K=44, W=241; Russia, I=40, K=43, W=109; Bangladesh, I=34, K=16, W=109; Philippines, I=19, K=26, W=64; Colombia, I=14, K=28, W=71; Nepal, I=13, K=24, W=48; Algeria, I=10, K=4, W=30; United States, I=10, K=3, W=10; Burundi, I=9, K=18, W=110; Egypt, I=8, K=34, W=14; Georgia, I=6, K=4, W=7; Somalia, I=5, K=57, W=22; Ethiopia, I=4, K=11, W=87; Indonesia, I=4, K=7, W=11; Mexico, I=4, K=5, W=49; Albania, I=3, K=2, W=9; Cambodia, I=3, K=17, W=3; China, I=3, K=15, W=10; Serbia and Montenegro, I=3, K=0, W=24; Tajikistan, I=3, K=5, W=4; Ukraine, I=3, K=3, W=15; United Kingdom, I=3, K=1, W=5; Vietnam, I=3, K=10, W=3; Yemen, I=3, K=5, W=22; Armenia, I=2, K=2, W=2; Azerbaijan, I=2, K=1,7; Bosnia and Herzegovina, I=2, K=1, W=5; Canada, I=2, K=6; France, I=2, K=2, W=3; Greece, I=2, K=2, W=2; Italy, I=2, K=0, W=2; Kenya, I=2, K=2, W=2; Moldova, I=2, K=8, W=36; Peru, I=2, K=5, W=5; Uganda, I=2, K=5, W=12; Bahrain, I=1, K=0, W=2; Burma, I=1, K=2, W=5; Congo, Democratic Republic of, I=1, K=0, W=10; Hungary, I=1, K=1, W=2; Jordan, I=1, K=2,4; Kazakhstan, I=1, K=0, W=3; Kyrgyzstan, I=1, K=1; Latvia, I=1, K=0, W=1; Macedonia, Former Yugoslav Rep., I=1, K=1; Malawi, I=1, K=0, W=8; Nigeria, I=1, K=2; Rwanda, I=1, K=1; Senegal, I=1, K=1, W=3; Sudan, I=1, K=22, W=1; Taiwan, I=1, K=0, W=1

³² It should be noted that incidents were only analysed on the basis of reports filed shortly after the event. No mechanism was used for assessing whether people reported as wounded subsequently died from these injuries. There is no systematic baseline for what level of injury would constitute an individual being reported as wounded in the original source data. No mechanism was used for assessing harm caused by incidents beyond immediate death and injury. 111 incidents explicitly reported the number killed to be a minimum and 100 incidents explicitly reported the number wounded to be a minimum.

³³ The research codebook uses the definition of 'concentration of civilians' as stated in Protocol III of the 1980 Convention on Certain Conventional Weapons (CCW): "Concentration of civilians any concentration of civilians, be it permanent or temporary, such as in inhabited parts of cities, or inhabited towns or villages, or as in camps or columns of refugees or evacuees, or groups of nomads."

³⁴ In Afghanistan, Human Rights Watch documented a distinct "drop-off"

in civilian casualties caused by air-strikes in the second half of 2007. They considered a "prime reason" for this to be a shift in the use of air-strikes to sparsely populated areas where civilians were less likely to be present. Human Rights Watch, "Troops in Contact: Airstrikes and Civilian Deaths in Afghanistan," September 2008, p. 6, www.hrw.org/sites/default/files/reports/afghanistan0908webwcover_0.pdf, accessed 30 July 2009, accessed 29 July 2009. In Lebanon, Human Rights Watch has also undertaken an in-depth investigation of over 94 separate cases of Israeli air, artillery, and ground attacks during the 2006 conflict. These attacks claimed 510 civilian lives and 51 combatants, nearly half of the Lebanese deaths in the conflict. They concluded that, primarily due to a mistaken assumption that civilians had left the area, "Israel also engaged in widespread bombardment of civilian areas that was indiscriminate, which endangered many of the civilians who had remained behind" (Human Rights Watch, "Why they died: Civilian casualties in Lebanon during the 2006 war," September 2007, www.hrw.org/en/reports/2007/09/05/why-they-died, accessed 30 July 2009).

³⁵ "A dossier of civilian casualties 2003-2005," Iraq Body Count, 2005, reports.iraqbodycount.org/a_dossier_of_civilian_casualties_2003-2005.pdf, accessed 30 July 2009.

³⁶ Peter M. Bagnall, M.Res., Hamit Dardagan, Gabriela Guerrero Serdán, M.A., Madelyn Hsiao-Rei Hicks, M.D., M.R.C.Psych., John A. Sloboda, Ph.D., F.B.A., and Michael Spagat, Ph.D., "The Weapons That Kill Civilians – Deaths of Children and Non-combatants in Iraq, 2003–2008," *The New England Journal of Medicine*, 16 April 2009, content.nejm.org/cgi/content/full/360/16/1585, accessed 30 July 2009.

³⁷ In relation to larger incidents, Coronado, Sasser, Sattin and Sullivent, "The Epidemiology and Triage of Blast Injuries," in James L. Atkins and Nabil M. Elsayed (ed.), *Explosion and Blast-Related Injuries* (London: Academic Press, 2008) survey a wide range of literature on bombing victims and produce the following summary of common patterns:

- * most injuries will be minor (this reflects the note made earlier about large numbers of people that may be affected by a single incident);
- * most injuries seen in survivors of a bombing will be due to secondary and tertiary blast mechanisms;
- * explosions in a confined space result in a higher incidence of primary blast injury, including lung injury;
- * traumatic amputation is rare in immediate survivors, but is commonly noted in fatalities at the scene and indicates close proximity to the blast;
- * structural collapse results in a high number of deaths.

³⁸ Coronado, Sasser, Sattin and Sullivent, "The Epidemiology and Triage of Blast Injuries," in James L. Atkins and Nabil M. Elsayed (ed.), *Explosion and Blast-Related Injuries* (London: Academic Press, 2008).

³⁹ For example, in a 1989 study of over 800 victims of explosions in Northern Ireland, 14% died of complete body disruption, 39% had multiple injuries, 21% had head or chest injuries, 12% had only head injuries, and 11% had only chest injuries – Cooper & Mellor 1989 quoted in Coronado, Sasser, Sattin and Sullivent, "The Epidemiology and Triage of Blast Injuries," in James L. Atkins and Nabil M. Elsayed (ed.), *Explosion and Blast-Related Injuries* (London: Academic Press, 2008), pp. 13-18. It has also been noted that some victims killed by air emboli or cardiac dysrhythmias may have no externally apparent injuries, see for example "as many as 30% of the fatalities in cases of suicide bombing in Israel have had no obvious external cause of death" in Aharonson-Daniel, Almogy, Bahouth, Feigenberg, Kluger, Peleg, Rivkind and Tadmor, "Mass Casualty Events – Suicide Bombing: The Israeli Perspective", in James L. Atkins and Nabil M. Elsayed (ed.), *Explosion and Blast-Related Injuries* (London: Academic Press, 2008), p. 314.

⁴⁰ See for example, "effect of environment on immediate mortality in mass casualty bombings" (from Arnold et. al. 2004) for comparison on immediate mortality rate as determined by type of environment: Bombing with structural collapse, 1 in 4; Bombing in confined space, 1 in 12; Bombing in open space, 1 in 25. Figures quoted from Coronado, Sasser, Sattin and Sullivent, "The Epidemiology and Triage of Blast Injuries," in James L. Atkins and Nabil M. Elsayed (ed.), *Explosion and Blast-Related Injuries* (London: Academic Press, 2008), p.24.

⁴¹ See Blackbourne, Eastridge, Holcomb, Ritenour, Wade and Young, "Explosion Injuries Treated at Combat Hospitals in the Global War on Terrorism", in James L. Atkins and Nabil M. Elsayed (ed.), *Explosion and Blast-Related Injuries* (London: Academic Press, 2008), p. 314. Also, Coronado, Sasser, Sattin and Sullivent present a comparison of bombing victims against non-bombing trauma victims based on a 2004 study in James L. Atkins and Nabil M. Elsayed (ed.), *Explosion and Blast-Related Injuries* (London: Academic Press, 2008), p.25 following Kluger, Peleg, Daniel-Aharonson, & Mayo, A., "The special injury pattern in terrorist bombings," *Journal of American College of Surgeons*, Vol. 199, 2004, pp. 875-879.

⁴² Aharonson-Daniel, Almogy, Bahouth, Feigenberg, Kluger, Peleg, Rivkind and Tadmorm, "Mass Casualty Events – Suicide Bombing: The Israeli Perspective", in James L. Atkins and Nabil M. Elsayed (ed.), *Explosion and Blast-Related Injuries* (London: Academic Press, 2008), p. 331.

⁴³ James L. Atkins and Nabil M. Elsayed (ed.), *Explosion and Blast-Related Injuries* (London: Academic Press, 2008), pp. xiv-xv.

⁴⁴ For detailed discussion see: Pamela J. Fitzpatrick, PhD, Michael S. Jaffee, MD; Jan E. Kennedy, PhD; Felix O. Leal, MA; Gregory A. Leskin, PhD; James W. Stokes, MD; "Posttraumatic stress disorder and posttraumatic stress disorder-like symptoms and mild traumatic brain injury," *Journal of Rehabilitation Research & Development (JRRD)*, Vol. 44, No. 7, 2007, pp. 895-920.

⁴⁵ The *Journal of Rehabilitation Research and Development* has reported that slightly more than half of US combat injuries incurred early in "Operation Iraqi Freedom" were from explosive blasts and that between January 2003 and February 2007, 29 percent of the patients evacuated from the combat to Walter Reed Army Medical Center in Washington, DC, had evidence of a traumatic brain injury (TBI). Pamela J. Fitzpatrick, PhD, Michael S. Jaffee, MD; Jan E. Kennedy, PhD; Felix O. Leal, MA; Gregory A. Leskin, PhD; James W. Stokes, MD; "Posttraumatic stress disorder and posttraumatic stress disorder-like symptoms and mild traumatic brain injury," *Journal of Rehabilitation Research & Development (JRRD)*, Vol. 44, No. 7, 2007, pp. 895-920.

⁴⁶ Henry L. Lew (2007), "Team approach to diagnosis and management of traumatic brain injury and its comorbidities," *Journal of Rehabilitation Research and Development (JRRD)*, Vol. 44, No. 7, 2007, p. vii.

⁴⁷ For further discussion see Pamela J. Fitzpatrick, PhD, Michael S. Jaffee, MD; Jan E. Kennedy, PhD; Felix O. Leal, MA; Gregory A. Leskin, PhD; James W. Stokes, MD; "Posttraumatic stress disorder and posttraumatic stress disorder-like symptoms and mild traumatic brain injury," *Journal of Rehabilitation Research & Development (JRRD)*, Vol. 44, No. 7, 2007, pp. 895-920.

⁴⁸ Pamela J. Fitzpatrick, PhD, Michael S. Jaffee, MD; Jan E. Kennedy, PhD; Felix O. Leal, MA; Gregory A. Leskin, PhD; James W. Stokes, MD; "Posttraumatic stress disorder and posttraumatic stress disorder-like symptoms and mild traumatic brain injury," *Journal of Rehabilitation Research & Development (JRRD)*, Vol. 44, No. 7, 2007, pp. 895-920.

⁴⁹ See McDermott et al., 2004 quoted in "The particular circumstances of children in Northern Ireland" by Goretti Horgan, Research Fellow, School of Policy Studies, University of Ulster, November 2005, www.childrenslawcentre.org/ParticularCircumstancesofChildreninNorthernIreland-GorettiHorgan.htm, accessed 30 July 2009. Also Luce A, Firth-Cozens J, Midgley S, et al. "After the Omagh bomb: posttraumatic stress disorder in health service staff," *Trauma Stress* 2002 Feb; 15(1):27-30.

⁵⁰ Stephen Hosmer, *The Conflict Over Kosovo: Why Milosevic Decided to Settle When He Did*, (RAND, 2001), p. 57.

⁵¹ Survivor Corps, *Connecting the dots: Victim Assistance and Human Rights*, December 2008. Available at: <http://www.survivorcorps.org/Net-Community/Page.aspx?pid=303>

⁵² Landmine Monitor, 2008, Executive Summary, p. 41.

⁵³ Handicap International Belgium, *Life after the bomb – a study of child survivors of UXO accidents in Lao PDR*, 2004, Handicap International, UNICEF, Lao Youth Union, (Vientiane: 2004).

⁵⁴ Andrew Stephen, "Iraq: the hidden cost of the war," *New Statesman*,

Vol. 136, Issue 4835, 12 March 2007, www.newstatesman.com/world-affairs/2007/03/iraq-war-wounded-bilmes-cost, accessed 30 July 2009.

⁵⁵ For example, on 18 June 2007 Lloyd's of London reported that the MoD was to pay £4.7 million to a former soldier who had suffered a brain injury from an exploding mortar round. This outcome resulted from a Court of Appeal rejection of the MoD's efforts to have the level of damages reduced (Lloyd's List Product Liability International, Awards & Settlements – "MoD pays £4.7mn to brain damaged soldier", Lloyd's of London Press Ltd. 18 June 2007). Another soldier with injuries to the brain had an initial lump-sum offer of £152,000 (in addition to pension and other payments) revised to £285,000 after pressure from his family and through the media. (See for example Ned Temko, "Legs amputated, brain injury - and a cheque for £152,000," *The Observer*, 5 August 2007, www.guardian.co.uk/uk/2007/aug/05/military.afghanistan1, accessed 30 July 2009; and Richard Norton-Taylor, "MoD to pay more for worst war injuries", *The Guardian*, 12 October 2007, www.guardian.co.uk/politics/2007/oct/12/uk.military, accessed 30 July 2009.

⁵⁶ See for example, Oleg Hoeffding, "Bombing North Vietnam: An appraisal of economic and political effects", Memorandum RM-5213010ISA, The Rand Corporation, December 1966.

⁵⁷ See for example, Statement by Kate Gilmore, Executive Deputy Secretary General of Amnesty International, "Israel/Lebanon: Evidence indicates deliberate destruction of civilian infrastructure," Amnesty International Press Release, 23 August 2006, www.amnesty.org/en/library/info/MDE02/018/2006, accessed 30 July 2009.

⁵⁸ See the "precautionary" orientation advocated in Dr. Brian Rappert and Richard Moyes, 2006. *Failure to protect: A case for the prohibition of cluster munitions*, Landmine Action (London: 2006)

⁵⁹ UNDP –BCPR, "Post-Conflict Economic Recovery: Enabling Local Ingenuity. Crisis Prevention and Recovery Report 2008," p. 22.

⁶⁰ Geneva Declaration Secretariat, "The Global Burden of Armed Violence," 2008, p. 31.

⁶¹ See for a specific example GICHD, "Humanitarian Impact from Mines other than Anti-Personnel Mines," Geneva, 2004.

⁶² Oleg Hoeffding, "Bombing North Vietnam: An appraisal of economic and political effects", Memorandum RM-5213010ISA, The Rand Corporation, December 1966, pp. 6-7.

⁶³ Stephen Hosmer, *The Conflict Over Kosovo: Why Milosevic Decided to Settle When He Did*, (RAND, 2001).

⁶⁴ Stephen Hosmer, *The Conflict Over Kosovo: Why Milosevic Decided to Settle When He Did*, (RAND, 2001), p. 55 and p. 70.

⁶⁵ Countries in which explosions were reported on or around public transport in Landmine Action data-set, April - Nov 2006: Afghanistan, Colombia, India, Iraq, Lebanon, Moldova, Pakistan, Russia, Thailand, Sri Lanka, Turkey. Within the data-set a total of 31 incidents were specified as being on or around public transport (buses, bus stations, train stations, etc.)

⁶⁶ See "Two children killed in blast on rail tracks in Pakistan", *The Press Trust of India Ltd.*, 16 July 2008 and "Bomb blast injures 7 in south western Pakistan", *Xinhua News Agency*, 21 July 2008.

⁶⁷ See Landmine Action, "Anti-vehicle mines: understanding the impact and managing the risk – a resource for security management," November 2006, www.landmineaction.org/resources/resource.asp?resID=1044, accessed 31 July 2009.

⁶⁸ Countries in which explosions were reported in markets or shopping areas, Landmine Action data-set, April - September 2006: Afghanistan, Algeria, Bangladesh, India, Iraq, Israel, Pakistan, Philippines, Russia, Sri Lanka, Thailand, Ukraine. A minimum of 78 incidents were specified as having occurred in markets or shopping areas were recorded within this period (however this was only identified by analysis of report headline, rather than full text.)

⁶⁹ The explosive incidents in markets resulted in average of 6.3 people killed and 21.6 people wounded per incident - compared to an average of 3.3 dead and 6.9 wounded per incident for the dataset as a whole.

⁷⁰ Human Rights Watch, "Lives Destroyed: Attacks Against Civilians in the

Philippines," July 2007, p. 17, www.hrw.org/reports/2007/philippines0707/philippines_lives_destroyed.pdf, accessed 30 July 2009; and "Philippines market blast kills 14," *Agence France-Presse (AFP)*, 15 December 2004.

⁷¹ Stephen Hosmer, *The Conflict Over Kosovo: Why Milosevic Decided to Settle When He Did*, (RAND, 2001).

⁷² UNDP –BCPR, "Post-Conflict Economic Recovery: Enabling Local Ingenuity. Crisis Prevention and Recovery Report 2008," p. 51.

⁷³ See John Robb, "Iraq: Electricity Disruption," *Global Guerrillas Blog Post*, 29 June 2004, globalguerrillas.typepad.com/globalguerrillas/2004/06/iraq_electricit.html, accessed 30 July 2009.

⁷⁴ Nicola Reindorp, UN Representative, Oxfam International, "Briefing to the UN Security Council on the Humanitarian Situation in Iraq", 9 April 2003, www.globalpolicy.org/component/content/article/185/40078.html, accessed 30 July 2009.

⁷⁵ Since 2000, such attacks have occurred in Colombia, India, Iraq, Iran, Mexico, Nigeria, Pakistan, Russia, Turkey and possibly elsewhere.

⁷⁶ Attacks on energy infrastructure have been reported as using a wide variety of weapons. In Colombia members of FARC are reported as using a crude bomb made of dynamite and fertiliser. In other reports attacks have been made using explosive charges, remote-controlled explosive devices, rocket propelled grenades, mortars, and landmines. See Karl Penuhal, "Protection for Oil Pipeline Raises US Profile in Colombia: New Policy Stirs Fears Bush Seeks to Widen War," *CommonDreams Newscentre*, 16 February 2002, www.commondreams.org/headlines02/0216-03.htm, accessed 30 July 2009; "Up to 1,200 firms hurt by Mexico pipeline blasts," *REUTERS*, 12 July 2007, www.REUTERS.com/article/worldNews/idUSN1222862120070712, accessed 30 July 2009; "Assam separatists admit oil raid," *BBC Online*, 8 August 2005, news.bbc.co.uk/1/hi/world/south_asia/4129254.stm, accessed 30 July 2009; Jamie Wilson, "Iraq hit by fresh attack on oil pipeline", *The Guardian*, 18 August 2008, www.guardian.co.uk/world/2003/aug/18/iraq.jamiewilson, accessed 30 July 2009; "Gas pipelines blown up in Assam blasts", *Times of India*, 10 June 2006, timesofindia.indiatimes.com/articleshow/1636154.cms, accessed 30 July 2009.

⁷⁷ Explosive attacks on pipelines often close down oil and gas flows for approximately 3-7 days while repairs are conducted. Oil pipelines vary in carrying capacity, but a standard pipeline may move between 50,000 and 200,000 barrels of oil per day. Closure of pipelines for even a limited number of days therefore has significant impact on revenue generation for the state and private companies.

⁷⁸ José de Córdoba, "News in Depth: In a modernizing Mexico, blasts reveal a shadowy side," *Wall Street Journal*, 14 November 2007, online, wsj.com/article/SB119500639086792293.html?mod=hpp_us_pageone, accessed 30 July 2009.

⁷⁹ Improving the security of energy infrastructure is a key focus for energy extractor countries, importing countries and multinational oil companies, and arrangements to increase security levels have taken a variety of forms. See, for example Witness for Peace, "The Real Costs of Pipeline Protection in Colombia," July 2002, www.amazonwatch.org/amazon/CO/uwa/reports/plancof_0207_wfp_arauca.pdf, accessed 31 July 2009; Andrew England, "Saudis set up force to guard oil plants," *Financial Times*, 26 August 2007, www.ft.com/cms/s/0/f90795c0-5430-11dc-9a6e-0000779fd2ac.html?nclick_check=1, accessed 31 July 2009; "26 killed in truck horror," *AFP*, 11 March 2006; Carl Mortished, "Gazprom to Raise its Own Private Army to Protect Oil Installations", *The Times*, 5 July 2007, business.timesonline.co.uk/tol/business/industry_sectors/natural_resources/article2029023.ece, accessed 31 July 2009; Michael Klare, "Oil Wars: Transforming the American Military into a Global Oil-Protection Service," *CommonDreams Newscentre*, 8 October 2004, www.commondreams.org/views04/1008-23.htm, accessed 31 July 2009; and information by Westminster International Ltd. at www.wg-plc.com/international/security/pipeline+protection+systems/pipeline.html, accessed 30 July 2009.

⁸⁰ Hooman Peimani, "Armed violence and poverty in Chechnya: A mini case study for the Armed Violence and Poverty Initiative," *Centre for International Cooperation and Security, Department of Peace Studies, Bradford University*, pp. 9-10.

- ⁸¹ Amnesty International, "Georgia-Russia conflict: Amnesty urges security for civilians and accountability for governments," 30 September 2008, www.amnesty.org.uk/news_details.asp?NewsID=17892, accessed 30 July 2009.
- ⁸² "Pakistani offensive sparks 'massive displacement' of civilians", CNN.com Asia, 9 May 2009, edition.cnn.com/2009/WORLD/asiapcf/05/08/pakistan.swat.taliban.fighting/index.html, accessed 30 July 2009.
- ⁸³ Eric Hoskins, "Public Health and the Persian Gulf War," in Barry S. Levy & Victor W. Sidel, *War and Public Health*, (New York: Oxford University Press, 2007), p. 265.
- ⁸⁴ See interview with Monica Zanarelli, ICRC deputy head of operations for South Asia, "Sri Lanka: ICRC maintains support for hospital hit by shelling," ICRC, 2 February 2009, www.icrc.org/Web/Eng/siteeng0.nsf/html/sri-lanka-interview-020209, accessed 30 July 2009.
- ⁸⁵ Tamil Information Centre, "Enduring War and Health Inequality in Sri Lanka," 2009, p. 68-69, www.tamilinfo.org/aboutreport.php, accessed 31 July 2009.
- ⁸⁶ ICRC online statement, 27 January 2009, originally online at: www.icrc.org/web/eng/siteeng0.nsf/html/israel-palestine-news-270109-!OpenDocument and also: www.icrc.org/web/eng/siteeng0.nsf/htmlall/palestine-news-270109?opendocument
- ⁸⁷ See for example, Article 12, "Medical units shall be respected and protected at all times and shall not be the object of attack," Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.
- ⁸⁸ Geneva Declaration Secretariat, *The Global Burden of Armed Violence 2008*, September 2008, p. 34, www.genevadeclaration.org/pdfs/Global-Burden-of-Armed-Violence.pdf, accessed 31 July 2009.
- ⁸⁹ Geneva Declaration Secretariat, *The Global Burden of Armed Violence 2008*, September 2008, pp. 2-3, www.genevadeclaration.org/pdfs/Global-Burden-of-Armed-Violence.pdf, accessed 31 July 2009.
- ⁹⁰ See for example, Richard Moyes, "Tampering: deliberate handling and use of live ordnance in Cambodia," Handicap International-Belgium, Mines Advisory Group, Norwegian Peoples Aid, August 2004, www.stopclustermunitions.org/wp/wp-content/uploads/2008/07/tampering-npa.pdf, accessed 30 July 2009; and Richard Moyes and Lamphane Vannachack, "A study of scrap metal in Lao PDR," GICHD, Geneva, September 2005, www.stopclustermunitions.org/wp/wp-content/uploads/2008/07/scrap-metal-collection-in-laopdr-gichd.pdf, accessed 30 July 2009.
- ⁹¹ Explosive ordnance broadly refers to all forms of explosive weapons with the exception of improvised explosive devices (IEDs). The distinction between these categories is based on the method of manufacture; however, there is no real clarity as to the border line between these groups and IEDs often use items of explosive ordnance.
- ⁹² Landmine Action, Mines Action Canada & Actiongroup Landmine.de, "Explosive remnants of war and mines other than anti-personnel mines: Global survey 2003-2004," March 2005, www.landmineaction.org/resources/UKWGLM.pdf, accessed 30 July 2009.
- ⁹³ Handicap International, "Fatal Footprint: The Global Human Impact of Cluster Munitions," November 2006, www.mineaction.org/downloads/1/Fatal_Footprint_HI_report_on_CM_casualties.1.pdf, accessed 31 July 2009.
- ⁹⁴ Committee for Planning and Investment, Lao PDR, "National Socio-Economic Development Plan (2006-2010)," October 2006, p. 123, unesco.org/fileadmin/user_upload/culture/cultureMain/Instruments/The_Sixth_Five_Year_NSEDP.pdf, accessed 31 July 2009.
- ⁹⁵ Landmine Action analysis of UXO impact on infrastructure projects in Lao for UNDP (including 171 separate ADB projects between 1995 and 2007).
- ⁹⁶ NGO Survey conducted by Landmine Action.
- ⁹⁷ Landmine Action, "Counting the cost: The economic impact of cluster munition use in Lebanon," May 2008, pp. 3-4, www.stopclustermunitions.org/wp/wp-content/uploads/2008/07/counting-the-cost-lma.pdf, accessed 30 July 2009.
- ⁹⁸ For a comprehensive analysis of issues regarding the international problem of anti-personnel mines see editions of the Landmine Monitor Report, years 1999-2008 (and 2009 forthcoming).
- ⁹⁹ See for example: Landmine Action, Mines Action Canada & Actiongroup Landmine.de, "Explosive remnants of war and mines other than anti-personnel mines: Global survey 2003-2004," March 2005; GICHD, "Humanitarian Impact from Mines other than Anti-Personnel Mines," October 2004, gichd.ch/fileadmin/pdf/publications/Humanitarian_Impact_from_MOTAPM.pdf, accessed 31 July 2009; Landmine Action, "Anti-vehicle mines: understanding the impact and managing the risk – a resource for security management," November 2006, www.landmineaction.org/resources/resource.asp?resID=1044, accessed 31 July 2009.
- ¹⁰⁰ The ICBL, *Landmine Monitor Report, Executive Summary*, 2008, p. 53.
- ¹⁰¹ See ICBL, *Landmine Monitor Report*, 2008, p. 475; Andrew Harding, "UK begins paying Kenya compensation," BBC online, 20 November 2002, news.bbc.co.uk/1/hi/world/africa/2495847.stm, accessed 30 July 2009.
- ¹⁰² GICHD, "A Guide to Ammunition Storage," November 2008, pp. 57-63, www.gichd.org/fileadmin/pdf/publications/Ammunition-Storage-2008.pdf, accessed 31 July 2009.
- ¹⁰³ Presentation by Thomas Frisch, Deputy Head of Arms Control Division, Ministry of Defence, Berlin, to the European Regional Conference on Cluster Munitions, Brussels, 30 October 2007.
- ¹⁰⁴ Landmine Action, Mines Action Canada & Actiongroup Landmine.de, "Explosive remnants of war and mines other than anti-personnel mines: Global survey 2003-2004," March 2005, p. 10, www.landmineaction.org/resources/UKWGLM.pdf, accessed 30 July 2009.
- ¹⁰⁵ Richard Moyes, "Tampering: deliberate handling and use of live ordnance in Cambodia," Handicap International-Belgium, Mines Advisory Group, Norwegian Peoples Aid, August 2004, www.stopclustermunitions.org/wp/wp-content/uploads/2008/07/tampering-npa.pdf
- ¹⁰⁶ IFRC, "Minor Emergency Report" 05ME014, 27 October 2006. <http://www.ifrc.org/docs/appeals/05/05ME014fr.pdf>
- ¹⁰⁷ Landmine Action, "The history and legacy of cluster munitions in South Sudan," 2006 (unpublished research paper).
- ¹⁰⁸ ICRC, "Gaza: political action needed to resolve humanitarian crisis," 23 January 2009, www.icrc.org/web/eng/siteeng0.nsf/html/palestine-israel-news-230109!OpenDocument, accessed 30 July 2009.
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- ¹¹⁰ Human Rights Watch, "Rain of Fire: Israel's Unlawful Use of White Phosphorus in Gaza," 25 March 2009, p. 1, www.hrw.org/en/reports/2009/03/25/rain-fire-0, accessed 31 July 2009.
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- ¹¹³ Human Rights Watch, "Israel: Stop Shelling Crowded Gaza City: Effect of 155mm Artillery Indiscriminate in Populated Areas", 16 January 2009, www.hrw.org/en/news/2009/01/16/israel-stop-shelling-crowded-gaza-city, accessed 30 July 2009.
- ¹¹⁴ "UN schools reopen in the wake of Gaza war," ABC News, 25 January 2009, www.abc.net.au/news/stories/2009/01/25/2473769.htm, accessed 30 July 2009.
- ¹¹⁵ Human Rights Watch, "Israel: Stop Shelling Crowded Gaza City: Effect of 155mm Artillery Indiscriminate in Populated Areas", 16 January 2009, www.hrw.org/en/news/2009/01/16/israel-stop-shelling-crowded-gaza-city

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¹¹⁶ See, e.g. Canadian Medical Association Journal, "Rescue workers in disasters suffer long-term health consequences," Mental Health Foundation website, <http://www.mhf.org.uk/information/news/?entryid17=45682&p=115>, accessed 30 July 2009.

¹¹⁷ Griff Witte, "For Children of Gaza, Scars to Last a Lifetime: Many Fear That Young Will Suffer Psychological Effects of War for Decades," Washington Post, 26 January 2009, www.washingtonpost.com/wp-dyn/content/story/2009/01/25/ST2009012502177.html, accessed 30 July 2009.

¹¹⁸ Karin Laub, "Gaza children scarred, experts say - Fighting may produce long-term psychological effects, promote militancy, counsellors fear," The Associated Press, 26 January 2009.

¹¹⁹ United Nations Office for the Coordination of Humanitarian Affairs, "Field update on Gaza from the Humanitarian Coordinator," 24-26 January 2009, www.ochaopt.org/gazacrisis/admin/output/files/ocha_opt_gaza_humanitarian_situation_report_2009_01_26_english.pdf, accessed 31 July 2009.

¹²⁰ Disaster Emergency Committee, "Needs to be met by DEC Member Agencies," 22 January 2009, www.dec.org.uk/cgi-bin/item.cgi?ap=1&id=319, accessed 30 July 2009.

¹²¹ For example: Stewart Bell, " Hamas rocket attack impact 'primarily psychological': Canadian Report," National Post, 21 January 2009 www.nationalpost.com/related/topics/story.html?id=1203726, accessed 30 July 2009; "Life on a Kibbutz, In the Shadow of Gaza," National Public Radio (NPR): All Things Considered, 16 January 2009, www.npr.org/templates/story/story.php?storyId=99468254, accessed 30 July 2009; Haviv Rettig Gur, "Funds to help rocket-battered towns pour in from Diaspora," The Jerusalem Post, 13 January 2009, www.jpost.com/servlet/Satellite?pagename=JPost%2FJPArticle%2FShowFull&cid=1231866576061, accessed 30 July 2009.

¹²² It is also worth noting that the pre-existing degraded state of infrastructure (e.g. water/sanitation, food, power, fuel, etc.) and its further degradation has implications for future dependency of Gaza on external aid and support.

¹²³ See maps online at: UNOSTAT, unosat.web.cern.ch/unosat/asp/prod_free.asp?id=120, accessed 30 July 2009.

¹²⁴ See Amnesty International, "Israel/Gaza - Operation 'Cast Lead': 22 Days of Death and Destruction," 2009, www.amnesty.org/en/library/asset/MDE15/015/2009/en/8f299083-9a74-4853-860f-0563725e633a/mde150152009en.pdf, accessed 30 July 2009.

¹²⁵ ICRC, "Gaza: hope emerging despite urgent needs and uncertainty about future," 25 January 2009, www.icrc.org/web/eng/siteeng0.nsf/htmlall/palestine-update-250109, accessed 30 July 2009.

¹²⁶ See Amnesty International, "Israel/Gaza - Operation 'Cast Lead': 22 Days of Death and Destruction," (London: 2009), www.amnesty.org/en/library/asset/MDE15/015/2009/en/8f299083-9a74-4853-860f-0563725e633a/mde150152009en.pdf, accessed 30 July 2009.

¹²⁷ ICRC, "Gaza: unexploded munitions a threat to civilians and humanitarian work," 21 January 2009, www.icrc.org/Web/Eng/siteeng0.nsf/htmlall/palestine-update-210109!OpenDocument, accessed 30 July 2009.

¹²⁸ United Nations Office for the Coordination of Humanitarian Affairs, "Field update on Gaza from the Humanitarian Coordinator," 24-26 January 2009, www.ochaopt.org/gazacrisis/admin/output/files/ocha_opt_gaza_humanitarian_situation_report_2009_01_26_english.pdf, accessed 31 July 2009.

¹²⁹ ICRC, "Gaza: hope emerging despite urgent needs and uncertainty about future," 25 January 2009, www.icrc.org/web/eng/siteeng0.nsf/htmlall/palestine-update-250109, accessed 30 July 2009.

¹³⁰ ICRC online statement, "Gaza: political action needed to resolve humanitarian crisis," 23 January 2009, www.icrc.org/web/eng/siteeng0.nsf/html/palestine-israel-news-230109!OpenDocument, accessed 30 July 2009.

¹³¹ United Nations Office for the Coordination of Humanitarian Affairs, "Field update on Gaza from the Humanitarian Coordinator," 24-26 January 2009, www.ochaopt.org/gazacrisis/admin/output/files/ocha_opt_gaza_humanitarian_situation_report_2009_01_26_english.pdf, accessed 31 July 2009.

¹³² ICRC online statement, 27 January 2009, originally at: <http://www.icrc.org/web/eng/siteeng0.nsf/html/israel-palestine-news-270109!OpenDocument>. See also ICRC, "Gaza: The crisis past, hospitals and their patients still facing severe hardship," 27 January 2009, www.icrc.org/web/eng/siteeng0.nsf/htmlall/palestine-news-270109?opendocument, accessed 31 July 2009.

¹³³ For example, a primary health care clinic in Gaza city, funded by Christian Aid has been destroyed by Israeli missile fire. See "Gaza clinic destroyed by Israeli jets," Ekklesia, 12 Jan 2009, www.ekklelesia.co.uk/node/8308, accessed 30 July 2009.

¹³⁴ See UN Office for the Coordination of Humanitarian Affairs (UN OCHA) reports in general, and specifically "Gaza Humanitarian Situation Report," UN OCHA, 3 Jan 2009, www.ochaopt.org/gazacrisis/admin/output/files/ocha_opt_gaza_situation_report_2009_01_03_english.pdf, accessed 30 July 2009.

¹³⁵ Online project documents, The World Bank, "Gaza Water and Sanitation Project," 26 May 2009, web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=294365&menuPK=294396&Projectid=P065920, accessed 30 July 2009.

¹³⁶ See for example: "UK makes £20m aid promise to Gaza," BBC News, 18 January 2009, news.bbc.co.uk/1/hi/uk_politics/7835937.stm, accessed 30 July 2009.

¹³⁷ See UK Firearms Act, 1968, online at: www.statutelaw.gov.uk/legResults.aspx?LegType=All+Legislation&searchDay=15&searchMonth=1&searchYear=2009&searchEnacted=0&text=grenades%0d%0a&extent=E%2bW%2bS%2bN.I.&extentMatchOnly=0&confersPower=0&blanketAmendment=0&NavFrom=0&activeTextDocId=1628564&PageNumber=1&SortAlpha=0, accessed 30 July 2009.

¹³⁸ US Code: Title 26, Chapter 53 "Machine Guns, Destructive Devices, and Certain Other Firearms," www4.law.cornell.edu/uscode/26/stEch53.html, accessed 31 July 2009. "The term "destructive device" means (1) any explosive, incendiary, or poison gas (A) bomb, (B) grenade, (C) rocket having a propellant charge of more than four ounces, (D) missile having an explosive or incendiary charge of more than one-quarter ounce, (E) mine, or (F) similar device; (2) any type of weapon by whatever name known which will, or which may be readily converted to, expel a projectile by the action of an explosive or other propellant, the barrel or barrels of which have a bore of more than one-half inch in diameter, except a shotgun or shotgun shell which the Secretary finds is generally recognized as particularly suitable for sporting purposes [...]"

¹³⁹ See USA 1968 Gun Control Act: 18 U.S.C. ch. 44; sec. 921(a)(4); 18 U.S.C. sec. 922(a)(4); 18 U.S.C. sec. 922(b)(4); 18 U.S.C. sec. 923(a), www4.law.cornell.edu/uscode/18/usc_sup_01_18_10_I_20_44.html, accessed 31 July 2009.

¹⁴⁰ The States in question are Delaware, Hawaii, Illinois, Indiana, Kansas, Massachusetts, Maryland, Missouri, Montana, Nebraska, New Jersey, New York, Pennsylvania, Rhode Island, and Washington.

¹⁴¹ See Kingdom of Cambodia, Nation Religion King, "Law On The Management of Weapons, Explosives and Ammunition" (Adopted on 26 April 2005), www.interior.gov.kh/document/Law_on_Arm_control.pdf, accessed 30 July 2009.

¹⁴² This incident occurred in Burundi, when a grenade was thrown into a crowd watching the football World Cup on television.

¹⁴³ For example, more paramilitary units, such as OMON in Russia and the joint military and police Rapid Action Battalion in Bangladesh may carry rifle grenades. The police in Afghanistan are authorised to use explosives under the 2005 Afghan Police Law (APL). A manual developed to support police implementation of the law notes that "this is a very serious matter compared to the use of other weapons or even firearms" (Hossein Gholami, "Basics of Afghan Law and Criminal Justice: A Manual for the Afghan Police and Legal Professionals," 2007, www.auswaertiges-amt).

de/diplo/de/Aussenpolitik/RegionaleSchwerpunkte/AfghanistanZentralasien/Downloads/Polizei-Legal-Manual.pdf, accessed 31 July 2009.) The manual highlights various procedures that must be followed, primarily designed to ensure that lethal force is only used as a last resort, but it also highlights the following prohibition: "According to Article 22 (2) APL "firearms and explosives shall not be used if they could harm uninvolved persons". This harm includes personal injuries, death or damage to property. Thus the police are obliged to anticipate the results of their actions when using firearms and explosives."

This prohibition is interesting because it contrasts with the regulated permissibility of harming "uninvolved persons" under international humanitarian law (IHL), a theme that we examine in detail in Chapter 4. That the Afghan Police have legal recourse to explosive weapons resonates with concerns expressed regarding the confusion of policing and military roles in that context (see Tonita Murray (Edited and Condensed by Simon de Saint-Claire), "Police-Building in Afghanistan: A Case Study of Civil Security Reform," *International Peacekeeping*, Issue 14:1, pp. 108 – 126, www.saint-claire.org/resources/Police%20Building%20in%20Afghanistan.pdf, accessed 31 July 2009.

¹⁴⁴ Such units as Austria's EKO Cobra, BOPE in Brazil, Emergency Response Team in Canada, SWAT in China, AKS in Denmark, GIGN and GIPN in France, SEK in Germany, Yamam in Israel, Special Assault Team in Japan, Special Action Force in the Philippines, SAJ and PTJ in Serbia, Special Tactics and Rescue in Singapore, GEO in Spain, Specialist Firearms Command in the UK are rarely if ever reported as using explosive weapons.

¹⁴⁵ By contrast, such teams are reported as using pistols, machine pistols, sub-machine guns, heavy machine guns, assault rifles, sniper rifles, shotguns and chemical riot control agents.

¹⁴⁶ Brian Rappert, *Controlling the Weapons of War: Politics, Persuasion, and the Prohibition of Inhumanity*, (New York: Routledge, 2006).

¹⁴⁷ Afghanistan, Burundi, Colombia, Georgia, India, Iraq, Israel, Lebanon, Nepal, Pakistan, Sri Lanka, Turkey.

¹⁴⁸ See: Upsala Universitet, Definition of armed conflict, www.pcr.uu.se/research/UCDP/data_and_publications/definition_of_armed_conflict.htm, accessed 30 July 2009. An armed conflict is considered "a contested incompatibility which concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths." See also, for instance, Margareta Sollenberg & Peter Wallensteen, "Armed Conflict 1989–2000", *PRIO Journal of Peace Research* 1993–2001, 2001, 38(5): 629–644, jpr.sagepub.com/cgi/content/abstract/38/5/629, accessed 31 July 2009.

¹⁴⁹ This considers Israeli forces operating in the Occupied Palestinian Territories to be operating on foreign soil.

¹⁵⁰ The extent of improvisation varies between devices, usually based on the availability of materials. Improvisation may relate to the main explosive charge, the means of initiation or the mechanism of delivery. Many IEDs are constructed around commercially manufactured explosive munitions which may be acquired from abandoned or poorly secured ammunition stores. Otherwise, a main explosive charge can be made from commercially available chemical products. IEDs can take a wide variety of forms including pipe-bombs, modified jackets for what are commonly called "suicide bombers", car bombs, and roadside bombs. Depending on their construction, devices may be initiated after a set period of time, automatically (for example by the contact of a vehicle), or by a command trigger, often using an electrical current transmitted directly through a wire or created using a communications device (mobile telephone, portable two-way radio or some other remote control device).

¹⁵¹ The detailed figures were: 196 killed (5.2%) and 28 wounded (0.3%) were amongst the actual users of these weapons; 732 killed (19.4%) and 1,303 wounded (14.3%) were other armed actors or were security personnel; 2,839 killed (80%) and 7,789 wounded (86%) were 'civilians'.

¹⁵² John Robb, *Brave New War: The next stage of terrorism and the end of globalization*, (New Jersey: John Wiley & Sons, Inc., 2007), p.99.

¹⁵³ See for examples "PM pays tribute to dead marines," BBC online, 13

December 2008, news.bbc.co.uk/1/hi/world/7781240.stm, accessed 30 July 2009; "PAKISTAN: Child suicide bombers 'victims of the most brutal exploitation'," IRIN News online, 12 February 2008, www.irinnews.org/Report.aspx?ReportId=76701, accessed 30 July 2009; ISAF (NATO) online report, "Two children, two ANA killed in suicide IED in Helmand," 13 July 2008, www.nato.int/isaf/docu/pressreleases/2008/07-july/pr080713-315.html, accessed 30 July 2009; Soraya Sarhaddi Nelson, "Disabled Often Carry Out Afghan Suicide Missions," NPR, 15 October 2007, www.npr.org/templates/story/story.php?storyId=15276485, accessed 30 July 2009; Jenny Booth and David Myers, "Exeter bomb suspect 'was Islamic convert'," Timesonline, 22 May 2008, www.timesonline.co.uk/tol/news/uk/crime/article3985830.ece, accessed 30 July 2009; and Joshua Partlow, "Iraqis Say Death Toll in 2 Blasts is Near 100," The Washington Post, 3 February 2008, www.washingtonpost.com/wp-dyn/content/article/2008/02/02/AR2008020201492.html, accessed 30 July 2009.

¹⁵⁴ See for examples the following set of media reports: Edmund Blair, "Jerusalem bombing kills 4 - Powell visits," REUTERS News, 12 April 2002; "White House Now Calls Suicide Attacks 'Homicide Bombings'," Dow Jones International News, 12 April 2002; Bill Hemmer and John King, "Newest Suicide Attack Offers Complications for Powell Visit," CNN: Breaking News, 12 April 2002, http://transcripts.cnn.com/TRANSCRIPTS/0204/12/bn.09.html, accessed 31 July 2009; "White House Coins New Phrase," AP Online, 12 April 2002; "Homicide? Suicide? It's a war of words," New York Post, 13 April 2002; American Morning with Paula Zahn, "Big Question: Has Media Changed Its View on Mideast?" CNN, 15 April 2002, transcripts.cnn.com/TRANSCRIPTS/0204/15/ltn.11.html, accessed 31 July 2009; Melissa Radler, "Genocide Bombing," The Jerusalem Post, 21 June 2002; Arthur Cohen, "Behind the suicide bombings," The Jerusalem Post, 28 June 2002; Steven Zak, "Suicide, homicide or genocide? : It matters greatly how we define Palestinian bombers," The Washington Times, 4 Dec 2002.

¹⁵⁵ Locations recorded as not being populated, and incidents where this field was left blank are combined in this representation.

¹⁵⁶ See for example, UK Working Group on Arms submission to UK Parliament Committees on Arms Export Controls, January 2009.

¹⁵⁷ The concept of the "propaganda of the deed" was developed in the second half of the 19th century as an explicit recognition of the symbolic and communicative potential of violence – in particular individual incidents of explosive violence.

¹⁵⁸ There were, however, a number of incidents where state forces were apparently inadvertently attacked by the military of another state, e.g. incidents in which Indian and Ghanaian troops serving with the UN were struck in attacks by Israel in south Lebanon.

¹⁵⁹ Amended Protocol II and Protocol V of the 1980 UN Convention on Certain Conventional Weapons (CCW), taken together, establish a special responsibility on states to record information on the use of explosive weapons and to provide such information on the cessation of hostilities so as to mitigate the post conflict risks caused – however they do not explicitly recognise explosive weapons as a whole category.

¹⁶⁰ See for example: The 1907 Hague Convention (IV) respecting the Laws and Customs of War on Land, Sec. II, Chp. 1; Additional Protocol I (1979) to the Geneva Conventions (1949), Art. 35, 1.

¹⁶¹ See 1949 Geneva Conventions; ICRC, *Customary International Humanitarian Law*, (United Kingdom: Cambridge University Press, March 2005); see also Jean-Marie Henckaerts, "Study on customary international humanitarian law: A contribution to the understanding and respect for the rule of law in armed conflict," *International Review of the Red Cross*, March 2005, 87(857), pp. 175–212. See also David Turns, "Weapons in the ICRC Study on Customary International Humanitarian Law," *Journal of Conflict and Security Law*, Vol 11, No. 2, 2006, pp.201–237, jcs.l.oxfordjournals.org/cgi/content/abstract/11/2/201, accessed 31 July 2009.

¹⁶² The prohibition on indiscriminate attacks is also linked to requirements for distinction and for proportionality.

¹⁶³ Swedish Working Group Study, *Conventional Weapons: Their Deployment and Effects from Humanitarian Aspect - Recommendations for the modernization of International Law*, (Stockholm: 1973), p.13.

¹⁶⁴ See Sven Lindqvist, *A History of Bombing*, (London: Granta Publications, 2001). On "Bombing the Savages", notes amongst others: 1912, French planes bombing villages, markets and grazing herds in Morocco; 1913, Spanish planes bombing elsewhere in Morocco; 1915, British planes bombing Pathans on India's north-western border; 1916, British planes "bombed revolutionaries in Egypt and the rebellious Sultan of Darfur"; 1917, British bombing put down an uprising in Mashud on India's border with Afghanistan; 1919, Dacca, Jalalabad and Kabul were bombed by a British squadron chief (Arthur Harris); 1919, British bombing in Egypt in context of demands for independence; 1920, British planes bombing in Somaliland; 1920, British bombing in Enzeli, Iran; 1921-1930s British bombing in Iraq as part of a policy of public order. As Lindqvist notes, "this kind of thing was, only ten years after the first bomb, already routine."

¹⁶⁵ Jonathan Glover, in his book *Humanity*, suggests that early in World War II there was a general presumption amongst the warring parties against bombing of civilian targets. However, he sees this general presumption being broken down by the realisation of the inaccuracy of bombing in practice. Such inaccuracy effectively presented a choice "between abandoning bombing altogether or intentionally continuing to bomb civilians. What gave way was the ban on civilian targets." Such a formulation brings to the fore the tension between the 'intended' and the foreseeable but 'unintended' outcomes of this use of explosive weapons.

Jonathan Glover, *Humanity: A Moral History of the Twentieth Century*, (Yale University Press, 1999), p70-71. Glover also notes that the acceptability of bombing civilians in World War II was facilitated by the blockade against Germany – that "the use of the blockade ... to starve large numbers of people to death broke through the moral barrier against the mass killing of civilians" (p.69).

¹⁶⁶ See ICRC introduction to the Draft Rules for the Limitation of the Damages Incurred by the Civilian Population in Time of War (1956), online at: icrc.org/ihl.nsf/9cfe510c4d401a8341256739003e636f/fea0b928100d3135c12563cd002d6c10!OpenDocument, accessed 30 July 2009.

¹⁶⁷ Working Paper CDDH/DT/2, 21 February 1974, to the 1974 Geneva Diplomatic Conference on the reaffirmation and development of international law applicable in armed conflicts, submitted by Egypt, Mexico, Norway, Sudan, Sweden, Switzerland and Yugoslavia. "Modern developments [...] have brought into production some fragmentation weapons which are apt to be indiscriminate in their effects [...] It would certainly be desirable to introduce a broad prohibition or restriction of use of fragmentation weapons which typically are employed against a very large area, with the substantial risk for indiscriminate effects that such use entails. The formulation of such a broad rule raises great difficulties."

"A specific ban on use is less difficult to devise in regard to one type of fragmentation weapons, namely, those which are constructed, in the form of a cluster of bomblets and which are primarily suited for use against personnel. These anti-personnel fragmentation weapons tend to have both indiscriminate effects and to cause unnecessary suffering. At detonation a vast number of small fragments or pellets are dispersed, evenly covering a large area with a high degree of hit probability for any person in the area [...]"

The following draft rule is submitted for examination: 'Cluster warheads with bomblets which act through the ejection of a great number of small calibre fragments or pellets are prohibited for use.'

¹⁶⁸ The prohibition on indiscriminate attacks is not, as is sometimes suggested, a prohibition on 'indiscriminate weapons.' See e.g. ICRC, *Customary International Humanitarian Law*, (United Kingdom: Cambridge University Press, March 2005).

¹⁶⁹ Dr. Brian Rappert and Richard Moyes, "Stop killing civilians, start taking responsibility: Searching questions about cluster munitions," November 2004, explosiveviolence.files.wordpress.com/2008/10/stop-killing-civilians.pdf, accessed 30 July 2009.

¹⁷⁰ This argument is limited in the examples above by the fact that discussion has focused around "bombardment", a form of attack which may be prone to being indiscriminate in populated areas for three reasons: because it uses multiple munitions, because these are being projected towards a target, and because of the characteristic feature of explosive

weapons as affecting an area around a point of detonation.

¹⁷¹ The term "indiscriminate effects" is not defined and is problematic in relation to the concept of "indiscriminate attacks". In the case of the latter the "indiscriminate" nature of the attack is dependent upon the intent of the attacker in relation to the balancing of certain contextual factors. It is not straightforward to transplant this concept of "indiscriminate" onto the "inherent" characteristics of the effects of certain weapons.

¹⁷² CCW Amended Protocol II contains regulations and prohibitions on "other devices," which are defined as "manually-emplaced munitions and devices including improvised explosive devices designed to kill, injure or damage and which are actuated manually, by remote control or automatically after a lapse of time." In developing Amended Protocol II specific attention was given to clarifying that the term "other devices" includes "improvised explosive devices" and that these might be actuated manually as well as by remote control or automatically after a lapse of time.

¹⁷³ An explosive device that is both manually emplaced and manually actuated offers, theoretically, the greatest degree of control over where and when an explosion occurs. In addition, there is no reason to assume that the area affected by an improvised explosive device, as defined here, would be any less predictable than for any other explosive weapon (which would be another factor that might limit implementation of the general legal rules).

¹⁷⁴ The practical significance of the initial presumption, and the legal coherence of Art 7 (3), are substantially weakened by the subsequent clauses Art 7 (3) a. and b. that allow such attacks where they occur "on or in the close vicinity of a military objective" or where "measures are taken to protect civilians from their effects, for example ... the issuing of warnings ..." After all, the general rules of international humanitarian law require all attacks to be "directed at a specific military objective," (Additional Protocol I (1977) of the 1949 Geneva Conventions, Article 51 (4)) and this is effectively reiterated in Article 3 (8) of Amended Protocol II of the CCW, subsequent to which Article 7 is presented "without prejudice." Part of the apparent legal incoherence of Article 7 (3) may stem from the diversity of weapon technologies that it is trying to regulate. It is concerned with "the use" of "booby traps and other devices." On the one hand it is concerned with weapons intended to be victim activated and on the other it is concerned with explosive attacks on specific targets using manually actuated devices.

¹⁷⁵ Landmine Action notes on discussions of the Group of Governmental Experts to Amended Protocol II of the Convention on Certain Conventional Weapons (CCW), 20 April 2009, Geneva.

¹⁷⁶ CCW Protocol II effectively established a platform for legal concern regarding the post-conflict risks to the civilian population from certain types from weapons. However, CCW Protocol II and then Amended Protocol II build in some respects on the precedent of the 1907 Hague VIII Convention Relative to the Laying of Automatic Submarine Contact Mines. A substantial number of states sought from 2001 to 2006 to establish within the CCW further controls on the technology and use of anti-vehicle mines (under the designation Mines Other Than Anti-Personnel Mines – MOTAPM). These efforts were not successful but resulted in a number of countries adopting a politically binding declaration on this issue.

¹⁷⁷ The Mine Ban Treaty also requires states to ensure the destruction of any anti-personnel mines that may be present on their territory, so as to prevent future victims of these weapons. The treaty, through its preamble, builds on the customary law prohibition on weapons that cause superfluous injury or unnecessary suffering and on the principle that a distinction must be made between civilians and combatants.

¹⁷⁸ Statement by Peter Herby, ICRC, to the Kampala Conference on Cluster Munitions, 30 September 2008.

¹⁷⁹ In order to avoid overlapping legal obligations with respect to mines, booby-traps and other devices (covered in CCW Amended Protocol II and in the anti-personnel Mine Ban Treaty) these types of explosive weapon are excluded from coverage under Protocol V.

¹⁸⁰ CCW Protocol V, Art 3 (1). Furthermore, Protocol V recognises the "serious post-conflict humanitarian problems" (CCW Protocol V, Preamble) caused by explosive weapons and establishes obligations on states to address these problems in territory they control (CCW Protocol V, Art

3 (1)). Protocol V also asserts that any “abandoned” explosive weapons must be brought under the control of state authorities or their partners – reaffirming the general international practice that explosive weapons are not allowed to circulate freely amongst the civilian population but should be under the effective control of the state (CCW Protocol V, Article 2 notes that “abandoned explosive ordnance” includes ordnance that may not have been prepared for use and has simply been left behind. Thus the obligations regarding the state control of this ordnance (firstly in Article 3 but elsewhere) do not stem from anything other than the intrinsic risk of explosive weapons.) Protocol V also requires states to record information on their use of explosive weapons and to make this data available later to support efforts to protect the civilian population.

¹⁸¹ This was reinforced by the 3rd Review Conference of the CCW which noted in November 2006 that the “foreseeable effects of explosive remnants of war on civilian populations are factors to be considered in applying the international humanitarian law rules on proportionality in attack and precautions in attack.”

¹⁸² 2008 Convention on Cluster Munitions, Preamble, www.clusterconvention.org/pages/pages_ii/iaa_textenglish.html, accessed 30 July 2009, accessed 30 July 2009.

¹⁸³ See Working Paper CDDH/DT/2, 21 February 1974, submitted by Egypt, Mexico, Norway, Sudan, Sweden, Switzerland and Yugoslavia.

¹⁸⁴ “Declaration on Cluster Munitions,” Third Review Conference of States Parties to the CCW, Geneva, CCW/CONF.III/WP.18, 17 November 2006.

¹⁸⁵ Convention on Cluster Munitions (CCM), 2008.

¹⁸⁶ See Landmine Action policy paper, “Implications of the Convention on Cluster Munitions for developing a norm against area-effect use of explosive weapons,” 23 July 2008, www.landmineaction.org/resources/The%20CCM%20and%20area-effect%20use%20of%20explosive%20weapons.pdf, accessed 31 July 2009. It is prohibited to use weapons where multiple explosive submunitions are scattered and distribute explosive force and fragmentation randomly across an area, regardless of the size of the area. None of the characteristics intended to avoid “indiscriminate area effects” relate to the accuracy of the container or dispenser. So “indiscriminate area effects” are not considered to result primarily from the risk of “area effects” being inadvertently projected in the wrong place – missing the target so to speak. These elements of the prohibition built upon a Declaration on Cluster Munitions endorsed by 25 states that due to their tendency of having “indiscriminate effects” states should “prohibit the use of cluster munitions within concentrations of civilians” (“Declaration on Cluster Munitions,” by Austria, Belgium, Bosnia-Herzegovina, Croatia, Costa Rica, Czech Republic, Denmark, Germany, Holy See, Hungary, Ireland, Liechtenstein, Lithuania, Luxembourg, Malta, Mexico, New Zealand, Norway, Peru, Portugal, Serbia, Slovakia, Slovenia, Sweden and Switzerland, Third Review Conference of the States Parties to the CCW, Geneva, CCW/CONF.III/WP.18, 17 November 2006.) With respect to the post-conflict risk of unexploded ordnance, the CCM also sets a demanding standard. As has been noted, all forms of explosive ordnance produce some level of UXO threat. In addition to limiting the number of submunitions (a key feature in determining UXO risk) the CCM requires permissible submunitions to have electronic self-destruction and self-neutralisation mechanisms. These represent “best practice” in terms of the current technological capacity to minimise the incidence of UXO.

¹⁸⁷ The primary technical points of distinction are that more than one explosive device is deployed from a common container and that these are projected to the target rather than being manually emplaced.

¹⁸⁸ See for example: Geoff Hoon MP, UK Secretary of Defence, 7 April 2003: “As I have said on previous occasions when that issue has arisen, the use of all weapons involves striking a balance. All weapons are capable of damaging the civilian population as well as those against whom they are targeted. It is necessary to strike a balance between not only the risk to civilians, but equally the protection of coalition forces. In relation to the use of cluster bombs, I am confident that the right balance has been struck.” Adam Ingram House of Commons Hansard London: HMSO 12 May 2004: Column 328W: “Cluster bombs are legal weapons that are not indiscriminate. They provide a unique capability for use against wide area or dispersed targets. Were we not to use them,

it would be necessary to use a large number of either unitary bombs or artillery shells to cover an equivalent area, involving a greater tonnage of explosive. Increasing the number of munitions launched also increases the risk that one or more launches may go astray. In many instances, using munitions other than cluster bombs may pose a far greater risk to civilians at the time of attack.” www.parliament.the-stationery-office.co.uk/pa/cm200304/cmhansrd/vo040512/text/40512w02.htm, accessed 31 July 2009.

Inset quotations are from the following sources:

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Data collection on explosive violence incidents undertaken in partnership with Medact www.medact.org

Research by Greg Crowther and Anne Siders

Edited by Sebastian Taylor, Chief Executive, Landmine Action

With thanks to: Dominic Ashton, Peter Bagnall, Simon Bagshaw, Marion Birch, John Borrie, Nerina Čevra, Simon Conway, Juliana Correa, Robin Coup-land, Rob Deere, Bonnie Docherty, Marc Garlasco, Katie Harrison, Atle Karlsen, Colin King, L. Paul Lewis, Anna Macdonald, Lou Maresca, Thomas Nash, Sarah Parker, Tom Porteous, Eric Prokosch, Brian Rappert, Samantha Rennie, Sara Schroeder, John Sloboda, Kerry Smith, Portia Stratton, Aaron Tovish, Jun Wang, Virgil Wiebe

Clarifications or corrections from all interested parties are most welcome.

Research and publication funded by:
The Diana, Princess of Wales Memorial Fund
The Government of Norway, Ministry of Foreign Affairs

Published in August 2009 by Landmine Action, 89 Albert Embankment, London SE1 7TP www.landmineaction.org

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Additional images provided by AlertNet www.alertnet.org

British Library Cataloguing in Publication Data. A catalogue record of this report is available from the British Library.

ISBN: 978-0-9551923-8-8

Landmine Action is a company limited by guarantee. Registered in England and Wales no. 3895803.

Graphic Design: Ben Branagan & Simon Elvins
Printed by Redlin Print Limited

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